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From Cash To Digital: The Impact Of Digital Payment System Transformation On Msme Performance In Bengkulu Province

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Abstract

The transformation of digital payment systems has created new opportunities for Micro, Small, and Medium Enterprises (MSMEs) to improve their business performance. However, the extent to which digital payment utilization contributes to measurable business improvements remains an important issue, particularly at the regional level. This study aims to examine the effects of digital payment transformation, usage intensity, transaction efficiency, and market access on MSME performance in Bengkulu Province, Indonesia. Primary data were collected through a survey involving 256 MSME operators who had transitioned from cash-based to digital payment systems. The data were analyzed using multiple linear regression and the Wilcoxon Signed-Rank Test. The regression results indicate that digital payment transformation, usage intensity, transaction efficiency, and market access have positive and statistically significant effects on MSME performance, both individually and simultaneously. Among these variables, digital payment usage intensity has the largest standardized coefficient (β = 0.356), indicating the strongest relative contribution within the model. The model explains 61.2% of the variation in MSME performance (R^2 = 0.612). Furthermore, the Wilcoxon test reveals statistically significant differences (p < 0.001) between pre- and post-adoption conditions across all five performance indicators: business revenue, production volume, number of transactions, number of customers, and business profit. These findings highlight the importance of not only adopting digital payment facilities but also utilizing them consistently and integrating them into broader business activities.

Keywords: Digital Payment Transformation; Usage Intensity; Transaction Efficiency; Market Access; MSME Performance

INTRODUCTION

Micro, Small, and Medium Enterprises (MSMEs) are one of the main pillars of the Indonesian economy. According to data from the Ministry of Cooperatives and SMEs, MSMEs contribute more than 60% to the national Gross Domestic Product (GDP) and

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absorb approximately 97% of the national workforce (Iin Esti Indraswanti et al., 2024). MSMEs play a strategic role in the Indonesian economy, not only by creating employment opportunities but also by serving as a source of household income and driving regional economic activities. At the regional level, their presence is particularly important, as the economic structure of a region is largely influenced by the ability of local businesses to produce goods and services, generate added value, and maintain business sustainability.

Despite their significant contribution, MSMEs continue to face various challenges in developing their businesses. These challenges include limited capital, restricted access to financing, marketing constraints, inadequate business management capabilities, and difficulties in keeping pace with technological developments. The rapid advancement of technology has also transformed the competitive business environment. Consumers are increasingly accustomed to searching for product information through the internet, placing orders online, and using cashless payment methods. This situation requires MSME operators to adapt their business practices to remain competitive and respond effectively to changing consumer behavior.

The development of digital technology has subsequently created new opportunities for MSMEs to expand their business activities. Digitalization enables business operators to utilize various technologies for marketing, sales, payment processing, transaction recording, and financial management. According to Statistics Indonesia (Badan Pusat Statistik/BPS), the E-Commerce Statistics 2024 publication indicates the continued growth of e-commerce activities in Indonesia. The publication covers business profiles, workforce characteristics, business activities, and e-commerce transaction values, with estimates available at the provincial level. BPS also reports that 96.91% of e-commerce businesses in Indonesia are MSMEs. This figure highlights the substantial role of MSMEs in the development of Indonesia's digital economy(*Statistik-e-Commerce-2024*, n.d.)

One form of digitalization that has become increasingly integrated into the daily business activities of MSMEs is the transition from cash-based transactions to digital payment systems. Payments that were previously conducted primarily in cash are now increasingly facilitated through mobile banking, digital wallets, electronic transfers, and the Quick Response Code Indonesian Standard (QRIS). This transformation provides consumers with more flexible payment options while offering MSMEs alternative methods of receiving payments.

QRIS has become one of the key instruments supporting the development of digital payments in Indonesia. Developed by Bank Indonesia, QRIS establishes a standardized QR code-based payment system, allowing business operators to accept payments from various payment service providers without having to display multiple QR codes. For MSMEs, this standardization can simplify the payment acceptance process.

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A study[3] examining MSMEs operating in traditional markets in Semarang City found that product knowledge, perceived usefulness, and perceived ease of use have positive and significant effects on the intention to adopt QRIS, whereas perceived risk has a negative effect. These findings indicate that the perceived benefits and convenience of digital payment systems are important factors influencing their adoption among business operators(Nurhapsari & Sholihah, 2022)

The adoption of digital payment systems is not solely determined by technological availability but is also influenced by business operators' ability to understand and utilize these technologies. Study(Rachmawati et al., 2023) found that financial literacy and the social environment influence QRIS adoption among MSMEs in Surakarta City. These findings suggest that financial knowledge and social influences play important roles in shaping the adoption of digital payment systems. Therefore, the successful digitalization of MSMEs requires more than simply providing technological infrastructure; it also depends on the capacity of business operators to integrate digital technologies into their daily business operations.

The transformation of payment systems may subsequently generate broader effects on business activities. Digital transactions can accelerate payment processes and reduce the need for businesses to handle and manage cash. Furthermore, digital transactions generate electronic records that can help business operators monitor sales performance and manage cash flows. For MSMEs that previously lacked proper transaction-recording systems, digital transaction data can serve as an important source of information for business evaluation and decision-making.

The impact of digital payment adoption on business activities has also been examined in empirical research. Study[5] investigated the effect of non-cash transactions through QRIS on employment levels in MSMEs. Using the *Two-Stage Least Squares* (2SLS) approach, the study found that QRIS adoption has a positive and statistically significant direct effect on the number of workers employed by MSMEs. This finding suggests that payment system transformation is not merely related to changes in consumer payment methods but may also be associated with changes in business activities and the scale of MSME operations (Dwiatma & Nuryakin, 2025).

In addition to digital payments, technological developments have also transformed the way MSMEs market their products. The use of online marketplaces provides MSMEs with opportunities to reach a wider consumer base without being entirely dependent on the geographical location of physical stores or traditional markets. Business operators can display their products, receive orders, communicate with consumers, and conduct transactions through digital platforms. In this context, digital payments and online marketplaces can complement each other. Marketplaces facilitate broader market access, while digital payment systems simplify the transaction process.

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This development is reflected in the increasing expansion of e-commerce activities in Indonesia. Through its E-Commerce Statistics 2024 publication, BPS provides information on the characteristics of e-commerce businesses, sales activities, workforce composition, and transaction values, including estimates at the provincial level. The availability of these data makes it possible to examine business digitalization not only at the national level but also in relation to the specific characteristics of individual regions[6].

Nevertheless, the increasing adoption of digital payment systems and online marketplaces does not necessarily translate into improved MSME performance. For instance, MSMEs that adopt QRIS may not experience higher revenues if technological adoption is not accompanied by an increase in customer numbers, product quality, effective marketing strategies, and adequate business management capabilities. Similarly, having an online store does not automatically lead to higher sales if products are unable to compete in the market, promotional activities are inconsistent, or business operators lack the capacity to manage digital transactions effectively.

This situation highlights the distinction between technology adoption and the economic benefits generated by such technology. Previous studies have primarily examined the factors influencing QRIS adoption among MSMEs, including perceived usefulness, ease of use, product knowledge, and perceived risk, as investigated in Study[3], as well as financial literacy and social environmental factors, as examined in Study[4]. Meanwhile, Study (Dwiatma & Nuryakin, 2025) has begun to explore the impact of QRIS adoption on MSME employment. However, further investigation is needed to understand whether the transformation of digital payment systems translates into measurable improvements in overall MSME business performance.

Based on the existing literature, an important research gap remains regarding whether a higher level of digital payment system transformation is actually associated with improved MSME performance. This issue deserves particular attention because business performance cannot be assessed solely based on the adoption of digital technologies. Instead, MSME performance can be evaluated through several indicators, including revenue growth, profitability, customer base expansion, transaction volume, and employment growth.

In the context of Bengkulu City, this issue is particularly relevant for further investigation. As an urban economic center, Bengkulu City has MSMEs operating across various business sectors and market segments, with potentially different levels of technological adoption. Differences in digital infrastructure, internet access, consumer characteristics, and business operators' technological capabilities may contribute to variations in the adoption of digital payment systems among local MSMEs. Consequently, findings from previous studies conducted in other regions may not necessarily reflect the actual conditions of MSMEs in Bengkulu City.

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Therefore, this study aims to examine the impact of digital payment system transformation on MSME performance in Bengkulu Province. By focusing on the transition from cash-based transactions to digital payment methods, this research seeks to provide empirical evidence regarding the extent to which digital payment adoption contributes to business performance improvements. The findings are expected to provide insights for MSME operators, policymakers, and relevant stakeholders in formulating strategies to strengthen digital financial inclusion and enhance the competitiveness and sustainability of MSMEs at the regional level.

METHOD

This study was conducted in Bengkulu Province, Indonesia, using primary data collected through a survey of Micro, Small, and Medium Enterprises (MSMEs). The respondents consisted of MSME operators who had undergone a transition from cash-based to non-cash (digital) payment systems. According to data from Bank Indonesia's Bengkulu Representative Office, there were 153,769 QRIS merchants in Bengkulu Province. Based on this population, the sample size was determined using the Slovin formula, resulting in a total of 256 respondents.

Data Analysis Methods

The collected data were analyzed using several statistical techniques, as follows:

1. Multiple Linear Regression Analysis

Multiple linear regression was employed as the primary analytical method to examine the relationship between four dimensions of digital payment systems and MSME business performance. The regression model is specified as follows:

$$Y = \alpha + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \varepsilon$$

Where :

Y	:	MSME business performance score
α	:	Constanta
X_1	:	Digital payment transformation
X_2	:	I Digital payment intensity
X_3	:	Transaction efficiency
X_4	:	Market access
β_1- β_4	:	Regression coefficients
ε	:	Standart Error

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2. Wilcoxon Signed-Rank Test

The Wilcoxon Signed-Rank Test is a non-parametric statistical method used to examine differences between two related or paired observations, particularly when comparing conditions before and after an intervention (Martusa et al., 2024). In this study, the test was applied to assess changes in MSME business performance following the transformation from cash-based to digital payment systems.

The analysis focused on five key business performance indicators: business revenue, production volume, number of transactions, number of customers, and business profit. Each indicator was compared between the periods before and after the adoption of digital payment systems to determine whether the differences were statistically significant. This analysis provides empirical evidence regarding changes in MSME business performance associated with the adoption of digital payment systems.

DISCUSSION

1. Respondent Characteristics

Respondent characteristics provide an overview of the demographic profiles of the individuals included in the research sample. In this study, respondents were classified based on age, gender, and highest level of educational attainment. This information is important for understanding the background of the MSME operators participating in the study, particularly in examining digital payment system transformation and its relationship with business economic performance.

Table 1. Characteristics of Research Respondents

No.	Characteristics	Number of Respondents (Persons)	Percentage (%)
1	Age		
	20–30 years	53	20,7
	31–40 years	103	40,2
	41–50 years	79	30,9
	Above 50 years	21	8,2
2	Gander		
	Male	121	47,3
	Female	135	47,7
3	Educational Attainment		
	SD/SMP	10	3,9
	SMA/SMK	91	35,5
	Diploma	22	8,6
	S-1	115	44,9
	S-2	18	7

Source: Primary Data, Processed (2026)

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Based on the respondents' demographic characteristics, the 31–40 age group represented the largest proportion, comprising 103 respondents or 40.2% of the total sample. This was followed by respondents aged 41–50 years, accounting for 79 individuals (30.9%), those aged 20–30 years, totaling 53 individuals (20.7%), and respondents above 50 years of age, comprising 21 individuals (8.2%). These findings indicate that the majority of MSME operators participating in this study were between 31 and 50 years old, representing 71.1% of the total respondents. This distribution suggests that most of the businesses examined in this study were managed by individuals of productive age who had gained experience in conducting economic activities.

In the context of digital payment system transformation, the productive-age group represents a relevant demographic characteristic for understanding technology adoption in business activities. MSME operators within this age group may possess both practical business management experience and the capacity to adapt to increasingly evolving transaction methods. However, age does not automatically determine an individual's ability to utilize digital technology, as such capabilities are also influenced by digital literacy, prior experience, educational background, and infrastructure availability.

These findings are consistent with the study by Affandi et al. (2024), which analyzed data from 5,035 MSMEs across 17 provinces in Indonesia. The study identified business owners' demographic characteristics as one of the factors associated with differences in the levels of digital technology adoption among MSMEs. Furthermore, the findings revealed a positive and statistically significant relationship between digital adoption and business sales growth.

Based on gender distribution, female respondents accounted for 135 individuals (52.7%), while male respondents comprised 121 individuals (47.3%). These findings indicate that female respondents represented a slightly larger proportion of the sample than their male counterparts. This composition demonstrates that MSME activities in this study are not exclusively dominated by male business operators, as women also constitute a substantial proportion of business owners. This finding highlights the important role of women in entrepreneurial activities and business management, including the adoption of technology to support transaction and marketing activities.

Digital payment transformation, including the use of QRIS, digital wallets, and mobile banking, can provide greater convenience for business operators in receiving payments from consumers. These technologies also have the potential to facilitate transaction recording and business revenue management. However, the benefits derived from digital payment adoption may vary among business operators, depending on their transaction habits, financial literacy, and technological capabilities. A study by (Sutrisno & Nainggolan, 2025) involving 192 MSME owners who used QRIS across several cities in Indonesia, highlighted the importance of financial literacy and financial behavior in

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supporting the effective use of digital payment systems. The study also considered gender as a moderating variable in the relationship between financial literacy and financial behavior.

Based on the respondents' highest educational attainment, the largest proportion held a Bachelor's degree (S-1), accounting for 115 individuals (44.9%). This was followed by respondents with a senior high school or vocational high school education (SMA/SMK), totaling 91 individuals (35.5%), Diploma holders comprising 22 individuals (8.6%), Master's degree holders (S-2) accounting for 18 individuals (7.0%), and those with elementary or junior high school education (SD/SMP), totaling 10 individuals (3.9%). This distribution indicates that the majority of respondents had completed secondary or higher education. Combined, respondents with senior high school or vocational high school, Diploma, Bachelor's, and Master's degrees accounted for 96.0% of the total sample. Meanwhile, respondents with elementary or junior high school education represented only 3.9%.

Educational attainment is a relevant characteristic in research examining digital payment system transformation. Education may influence an individual's ability to access information, understand technological procedures, and learn how to use various digital payment instruments. MSME operators with higher levels of formal education may find it easier to understand the features and mechanisms of digital payment systems. Nevertheless, formal educational attainment does not necessarily reflect an individual's level of digital literacy, as technological skills can also be acquired through practical experience, training, and independent learning.

The study by (Timur et al., 2025) , which examined the factors influencing electronic payment adoption among microenterprise owners in Indonesia, identified owner characteristics and business-related factors as important aspects in understanding decisions to adopt digital payment systems. These findings reinforce the relevance of educational attainment as a respondent characteristic that should be considered in this study. Given the predominance of respondents with Bachelor's degrees (S-1) and senior high school or vocational high school qualifications, most MSME operators in the sample had secondary to higher levels of formal education. This provides an initial overview of the respondents' educational profiles. However, this demographic distribution alone is insufficient to conclude that a particular level of education leads to higher adoption of digital payment systems.

1. **Multiple Linear Regression Analysis**

This study examines the effects of digital payment transformation, usage intensity, transaction efficiency, and market access on MSME performance. Based on the multiple linear regression results, all four independent variables exhibit positive and statistically

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significant effects on MSME performance. These findings are indicated by the significance values of each variable, all of which are below the 0.05 threshold. This suggests that improvements in digital payment transformation, payment usage intensity, transaction efficiency, and market access are associated with better MSME business performance.

Table 2. Results of Multiple Linear Regression Analysis

Variabel Independen	Koefisien B	Std. Error	Beta	t-hitung	Sig.
Konstanta	0,092	0,181	–	0,506	0,613
Transformasi Pembayaran Digital (X1)	0,278	0,063	0,266	4,416	0
Intensitas Penggunaan (X2)	0,359	0,055	0,356	6,535	0
Efisiensi Transaksi (X3)	0,146	0,062	0,13	2,345	0,02
Akses Pasar (X4)	0,175	0,057	0,169	3,055	0,002

Source: Primary Data, Processed (2026)

The regression equation is specified as follows :

$$Y = 0{,}092 + 0{,}278X_1 + 0{,}359X_2 + 0{,}146X_3 + 0{,}175X_4 + e$$

a. The Effect of Digital Payment Transformation on MSME Performance

The regression results indicate that digital payment transformation has a regression coefficient of 0.278, a t-statistic of 4.416, and a significance value of 0.000. Since the significance value is below the 0.05 threshold, digital payment transformation has a positive and statistically significant effect on MSME performance. This indicates that the more effectively MSMEs transform their payment systems toward digital methods, the greater the tendency for their business performance to improve, holding other variables constant.

The positive regression coefficient of 0.278 indicates that a one-unit increase in digital payment transformation is associated with a 0.278-unit increase in MSME performance, assuming that payment usage intensity, transaction efficiency, and market access remain constant. Digital payment transformation enables MSMEs to adapt their business operations to technological developments, particularly through the adoption of non-cash payment methods such as QRIS, digital wallets, and electronic transfers.

The implementation of digital payment systems also provides greater convenience for consumers when conducting transactions. Consumers are no longer required to carry

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cash at all times, while MSME operators can receive payments through more practical and accessible methods. Furthermore, the use of digital payment systems can facilitate transaction recording, thereby contributing to more organized business financial management.

These findings are consistent with the study by (Affandi et al., 2024), which examined digital technology adoption and the performance of micro, small, and medium enterprises in Indonesia. The study demonstrated that digital technology adoption, including digital payment systems, constitutes an important component of the digitalization process associated with business performance. These findings support the results of the present study, suggesting that digital payment transformation can serve as one of the factors contributing to improved MSME performance.

b. The Effect of Digital Payment Usage Intensity on MSME Performance

The regression results show that digital payment usage intensity has a regression coefficient of 0.359, a t-statistic of 6.535, and a significance value of 0.000. These findings indicate that digital payment usage intensity has a positive and statistically significant effect on MSME performance. Accordingly, the more frequently and consistently MSME operators use digital payment systems in their business activities, the greater the likelihood of improved business performance. Among the four independent variables, usage intensity has the largest unstandardized regression coefficient, at 0.359. Furthermore, its Standardized Beta coefficient of 0.356 is the highest among all variables included in the regression model. This indicates that usage intensity is the most dominant variable in the regression model based on standardized regression coefficients. These findings suggest that the benefits of digital payments are not determined solely by an MSME's decision to adopt such technology but also by the extent to which it is actively utilized in daily business transactions. When digital payment systems are merely available as an alternative but are rarely used by consumers or business operators, their potential benefits for business activities may remain limited.

Conversely, consistent utilization of digital payment systems can broaden consumers' payment options, reduce dependence on cash transactions, and enable MSME operators to manage transactions more conveniently. Usage intensity may also reflect the level of business operators' acceptance and integration of digital payment technology into their operational activities.

These findings are supported (Putri et al., 2026a), who examined the effect of digital wallet adoption on the performance of online MSMEs in Indonesia. Their study found that digital wallet adoption was associated with an increase in the monthly number of transactions among MSMEs. This finding reinforces the argument that digital payment adoption can generate more tangible business benefits when the technology is actively

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integrated into routine transaction activities. Based on these results, improving MSME performance requires active and sustainable utilization of digital payment systems rather than merely providing access to digital payment facilities.

c. The Effect of Transaction Efficiency on MSME Performance

The regression results indicate that transaction efficiency has a regression coefficient of 0.146, a t-statistic of 2.345, and a significance value of 0.020. Since the significance value is below the 0.05 threshold, transaction efficiency has a positive and statistically significant effect on MSME performance. The positive coefficient indicates that improvements in transaction efficiency are associated with better MSME performance, holding the other independent variables constant. Nevertheless, the Standardized Beta coefficient for transaction efficiency is 0.130, the lowest among the four independent variables. This suggests that its relative contribution to the regression model is smaller than that of digital payment transformation, digital payment usage intensity, and market access.

Transaction efficiency is one of the expected benefits of adopting digital payment systems. Digital payments can make transactions faster and more convenient. Business operators no longer need to spend as much time handling cash, counting money, or preparing change. Simplified payment processes may also reduce recording errors and help MSME operators manage business revenues more effectively. These efficiency gains may be particularly beneficial for MSMEs with relatively high transaction volumes. Time previously spent handling cash payments can be redirected to other business activities, such as serving customers, managing inventory, and developing the business.

These findings are supported by (Ramadhan & Salsabila, 2026) , who examined the impact of QRIS adoption on revenue growth and cost efficiency among micro and small enterprises in Yogyakarta using panel data from 162 MSMEs during the 2022–2024 period. Their study found that QRIS adoption increased revenue growth by approximately 6–7 percentage points and reduced the operational cost ratio by around 5 percentage points. These results indicate that the adoption of digital payment systems can contribute to improved operational efficiency and business performance. In line with these findings, the present study highlights that transaction efficiency is an important factor supporting MSME performance. Therefore, the benefits of digital payment systems extend beyond facilitating payment processes, as they can also help MSMEs improve operational efficiency and strengthen their overall business performance.

d. The Effect of Market Access on MSME Performance

Market access has a regression coefficient of 0.175, a t-statistic of 3.055, and a significance value of 0.002. These results indicate that market access has a positive and

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statistically significant effect on MSME performance. This means that better market access is associated with a greater likelihood of improved business performance, holding the other variables constant. The Standardized Beta coefficient for market access is 0.169, indicating that its relative contribution to MSME performance is greater than that of transaction efficiency, but smaller than those of digital payment transformation and digital payment usage intensity.

Market access is related to the ability of MSMEs to reach consumers and market their products to a broader customer base. In the context of the digital economy, digital payment systems can support this process by providing consumers with a wider range of payment options. Convenient payment methods may reduce transaction barriers, particularly when MSMEs serve customers through social media, messaging applications, and e-commerce platforms.

Nevertheless, digital payments do not automatically expand market reach. MSMEs still need effective marketing strategies, good product quality, reliable customer service, and the ability to utilize digital technology to reach consumers. In other words, digital payments serve as a supporting facility, while market expansion also depends on business operators' ability to manage marketing activities and maintain customer relationships.

These findings are supported by (Kurniasari et al., 2025) , who examined the relationships among financial literacy, financial technology adoption, access to financing, MSME performance, and business sustainasbility in Indonesia. Their study showed that factors related to access to and utilization of financial services are associated with business performance. This provides broader support for the importance of access to and utilization of financial facilities in promoting MSME development. However, access to financing is not directly equivalent to the market access variable examined in the present study. Therefore, improving market access requires broader utilization of digital technology, including online marketing, product information management, and the provision of payment options that meet consumer needs.

e. The Simultaneous test (F-test)

The simultaneous test (F-test) results show an F-statistic of 98.912 with a significance value of 0.000. Since the significance value is below the 0.05 threshold, it can be concluded that digital payment transformation, usage intensity, transaction efficiency, and market access jointly have a statistically significant effect on MSME performance. These findings indicate that MSME performance is not associated with only one aspect of digital payments. Improvements in business performance need to be understood in terms of the relationship among several aspects, ranging from the adoption of payment technology and the consistency of its use to the resulting transaction

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efficiency and its contribution to market reach. Digital payment transformation provides MSMEs with the means to accept electronic payments. Usage intensity reflects the extent to which these facilities are utilized in daily business activities. Transaction efficiency, in turn, represents the operational benefits that can be achieved, while market access relates to the opportunities available to MSMEs to reach consumers. These four aspects complement one another in supporting business activities.

These findings are consistent with (Kallmuenzer et al., 2025) , who examined digitalization adoption and performance outcomes in small and medium-sized enterprises. Their study explains that digitalization is a process that can influence various aspects of business activities and firm performance. Therefore, the utilization of digital technology needs to be viewed comprehensively, focusing not only on the availability of technology but also on how it is integrated into business operations. Based on these results, improving MSME performance through digital payments requires an integrated approach. MSME operators should not merely provide digital payment facilities; they also need to use them consistently, take advantage of the convenience they offer, and integrate them into marketing activities and customer services.

f. Coefficient of Determination (R-Squared)

Based on the Model Summary results, the multiple correlation coefficient (R) is 0.782. This value indicates a strong relationship between digital payment transformation, usage intensity, transaction efficiency, and market access, taken together, and MSME performance. The R-squared value of 0.612 indicates that 61.2% of the variation in MSME performance can be explained by the four independent variables included in the research model. The remaining 38.8% is explained by other factors outside the scope of this model.

The Adjusted R-squared value of 0.606 indicates that, after adjusting for the number of independent variables and observations, the model explains 60.6% of the variation in MSME performance. Meanwhile, the Standard Error of the Estimate of 0.32332 represents the standard deviation of the model's prediction errors, expressed in the units of the dependent variable. These results indicate that the four variables examined in this study have substantial explanatory power in accounting for variations in MSME performance. Nevertheless, other factors have not been included in the model, such as managerial capabilities, financial literacy, business capital, product quality, innovation, competitive conditions, and marketing strategies. These factors may be considered in future research to provide a more comprehensive understanding of the determinants of MSME performance.

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2. Wilcoxon Signed-Rank Test

The Wilcoxon Signed-Rank Test was employed to determine whether there were differences in MSME conditions before and after the adoption of digital payment systems. The test was conducted using five indicators: business revenue, production volume, number of transactions, number of customers, and business profit.

Based on the Ranks table generated by SPSS, most respondents experienced higher values after adopting digital payment systems. This is reflected in the higher number of Positive Ranks compared with Negative Ranks across all five indicators. These findings suggest that the adoption of digital payment systems was associated with improvements in various aspects of MSME business performance, particularly in terms of revenue, production, transaction volume, customer numbers, and business profit.

Table 3. Summary of Positive and Negative Ranks for MSME Performance Indicators

No.	Indicator	Negative Ranks	Positive Ranks	Ties	Asymp. Sig. (2-tailed)
1	Business Revenue	28	225	3	0,00
2	Production Volume	51	200	5	0,00
3	Number of Transactions	38	212	6	0,00
4	Number of Customers	44	196	16	0,00
5	Business Profit	30	223	3	0,00

Source: Primary Data, Processed (2026)

Based on Table 3, the Wilcoxon Signed-Rank Test results show that all MSME performance indicators have an Asymp. Sig. (2-tailed) value of 0.00 in the SPSS output. In academic reporting, these values should be expressed as $p < 0.001$. Therefore, statistically significant differences exist between the conditions before and after the adoption of digital payment systems across all five indicators examined. Furthermore, the number of Positive Ranks exceeds the number of Negative Ranks for all indicators. This indicates that most respondents experienced improvements in the respective performance indicators after adopting digital payment systems. The discussion of each indicator is presented below.

a. Changes in Business Revenue

The Wilcoxon Signed-Rank Test results show that business revenue recorded 225 Positive Ranks, 28 Negative Ranks, and 3 Ties. The substantially higher number of

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Positive Ranks indicates that most MSMEs experienced an increase in revenue after adopting digital payment systems. The significance value of $p < 0.001$ indicates that the difference in business revenue before and after the adoption of digital payments is statistically significant. The increase in revenue may be associated with the convenience of payment methods available to consumers. The availability of QRIS and digital wallets provides alternatives to cash payments, allowing consumers to complete transactions more conveniently. Such convenience may reduce payment barriers and support increased sales activity.

These findings are consistent with the study by (Ramadhan & Salsabila, 2026) , which analyzed the effects of QRIS adoption on revenue growth and cost efficiency among 162 MSMEs in Yogyakarta over the 2022–2024 period. Their study found that QRIS adoption increased revenue growth by approximately 6–7 percentage points. This finding further supports the results of the present study, suggesting that the use of digital payment systems can contribute to increased MSME revenue.

b. Changes in Production Volume

For the production volume indicator, the results show 200 Positive Ranks, 51 Negative Ranks, and 5 Ties. These findings indicate that more respondents experienced an increase in production volume than a decrease. The significance value of $p < 0.001$ indicates a statistically significant difference in production volume before and after the adoption of digital payment systems.

An increase in production volume may occur when greater transaction convenience is accompanied by higher sales and consumer demand. As sales activity increases, MSME operators may adjust their production levels to meet market demand. Therefore, changes in production volume may represent an operational response to the expansion of business activities.

The study by (Affandi et al., 2024) , which involved 5,035 micro and small enterprises across 17 provinces in Indonesia, found that digital technology adoption was associated with business performance. The technologies examined included digital payments, electronic marketing, sales systems, and e-commerce. These findings support the argument that the utilization of digital technology can facilitate business development, although their study did not specifically measure changes in production volume before and after the adoption of digital payment systems.

c. Changes in Number of Transactions

The Wilcoxon Signed-Rank Test results show that the number of transactions recorded 212 Positive Ranks, 38 Negative Ranks, and 6 Ties. The higher number of Positive Ranks indicates that most MSMEs experienced an increase in the number of

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transactions after adopting digital payment systems. The significance value of $p < 0.001$ indicates that this difference is statistically significant. The increase in the number of transactions may be associated with the convenience and flexibility offered by digital payment systems. Consumers are no longer required to have cash available at all times to make purchases. Meanwhile, MSME operators have additional payment options, allowing transactions to be completed more conveniently.

These findings are supported by the study conducted by (Putri et al., 2026b), which examined the effect of digital wallet adoption on the performance of online MSMEs in Indonesia. Using data from 31,724 observations, the study found that digital wallet adoption was associated with an average increase of approximately 119 transactions per month. This finding reinforces the results of the present study, suggesting that the utilization of digital payment systems can support increased transaction activity among MSMEs.

d. Changes In Number of Customers

For the number of customers indicator, the results show 196 Positive Ranks, 44 Negative Ranks, and 16 Ties. These findings indicate that the majority of respondents experienced an increase in the number of customers after adopting digital payment systems. The significance value of $p < 0.001$ indicates a statistically significant difference in the number of customers before and after the adoption of digital payments. The increase in the number of customers may be associated with the wider range of payment options provided by MSMEs. Consumers who are accustomed to cashless payments may find it more convenient to make purchases when businesses offer digital payment facilities. Such convenience can improve the customer experience and potentially encourage purchasing decisions. Nevertheless, digital payments are not the only factor determining customer growth. Product quality, pricing, business location, promotional activities, and customer service also play important roles in attracting and retaining consumers. Therefore, digital payments are more appropriately viewed as a supporting facility that can enhance the convenience and overall customer transaction experience.

e. Changes In Business Profit

The Wilcoxon Signed-Rank Test results show that business profit recorded 223 Positive Ranks, 30 Negative Ranks, and 3 Ties. The predominance of Positive Ranks indicates that most respondents experienced an increase in business profit after adopting digital payment systems. The significance value of $p < 0.001$ indicates a statistically significant difference in business profit before and after the adoption of digital payments. The increase in business profit may be associated with higher revenue and transaction volumes, as well as potential improvements in payment process efficiency. The use of

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digital payment systems can facilitate the recording of business receipts and reduce some of the obstacles associated with cash transactions. If increased revenue is not accompanied by a proportionately larger rise in operating costs, this may contribute to higher business profits. These findings can be compared with the study by (Ramadhan & Salsabila, 2026), which found that QRIS adoption reduced the operating cost ratio by approximately 5 percentage points among the MSMEs examined. This reduction suggests that digital payments have the potential to support financial performance through improved operational efficiency. However, lower operating costs do not automatically translate into higher profits, as profitability is also influenced by production costs, selling prices, and other business-related factors.

CONCLUSION

This study demonstrates that digital payment transformation plays an important role in supporting MSME performance in Bengkulu Province. The multiple linear regression results show that all four independent variables—digital payment transformation, usage intensity, transaction efficiency, and market access—have positive and statistically significant effects on MSME performance. These findings indicate that the benefits of digital payment systems extend beyond the availability of electronic payment facilities and are also related to how intensively and effectively these systems are utilized in business operations.

Among the four independent variables, digital payment usage intensity has the largest standardized beta coefficient (0.356). This finding suggests that consistent and active utilization of digital payment systems makes the strongest relative contribution to MSME performance within the estimated regression model. Digital payment transformation also has a positive and significant effect, with a standardized beta coefficient of 0.266. Meanwhile, market access and transaction efficiency contribute positively, with standardized beta coefficients of 0.169 and 0.130, respectively. The simultaneous test further confirms that the four variables jointly have a statistically significant effect on MSME performance, as indicated by an F-statistic of 98.912 ($p < 0.001$). The coefficient of determination (R^2) of 0.612 indicates that the model explains 61.2% of the variation in MSME performance, while the remaining 38.8% is associated with other factors outside the model.

The Wilcoxon Signed-Rank Test provides additional evidence of differences in MSME business conditions before and after the adoption of digital payment systems. All five performance indicators—business revenue, production volume, number of transactions, number of customers, and business profit—show statistically significant differences ($p < 0.001$). Furthermore, the number of positive ranks exceeds the number of negative ranks across all indicators, indicating that most respondents reported

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improvements following digital payment adoption. These results suggest that digital payment utilization is associated with improvements in both financial and operational aspects of MSME activities.

Based on these findings, MSME development policies should focus not only on expanding access to digital payment facilities but also on encouraging their consistent utilization. Training in digital financial literacy, transaction recording, and business management is necessary to help MSME operators maximize the benefits of digital payments. In addition, digital payment systems should be integrated with online marketing, marketplace utilization, and improved customer services to strengthen market access and business competitiveness.

Nevertheless, 38.8% of the variation in MSME performance remains unexplained by the variables included in this study. Future research should therefore consider additional factors, such as managerial capabilities, financial literacy, business capital, product innovation, product quality, and marketing strategies. Further studies could also employ longitudinal data or more robust research designs to examine the longer-term relationship between digital payment adoption and MSME performance.

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