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The Influence of E-Payment and E-Commerce Services on Supply Chain Performance MSMEs

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A B S T R A C T

This study aims to examine the influence of e-payment and e-commerce services on MSME supply chain performance. A quantitative method was used by distributing questionnaires to 100 selected MSME respondents that utilize e-payment and e-commerce. The sampling technique applied was purposive sampling. SPSS version 26 was used for data analysis, specifically multiple linear regression. The findings show that e-payment and e-commerce services have a favorable and significant impact on the functioning of MSME supply chains. E-payment improves transaction efficiency and accelerates supplier payments, while e-commerce expands market reach and enhances distribution. These findings highlight the strategic role of digital services in strengthening supply chain performance among MSMEs.

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INTRODUCTION

Micro, Small, and Medium Enterprises (MSMEs) have a significant impact on the Indonesian economy, particularly after the Covid-19 pandemic, by contributing significantly to providing jobs and helping people maintain income amid economic challenges. According to the Ministry of Cooperatives and Small and Medium Enterprises, MSMEs comprise 99% of total business units, contribute 60.5% to GDP, and absorb 96.9% of the workforce (Ariyanti, 2023). In Bengkulu Province, the potential for developing MSMEs looks promising with the number of MSMEs in Bengkulu City reaching 44,471 units in 2023, increasing rapidly in the last three years (Indraswanti, 2024).

Behind this great contribution, there are still big challenges that must be answered together, namely the low participation of MSMEs in the global supply chain, as conveyed by Deputy Minister of SMEs**.** A supply chain is a complex flow that connects the various stages of production, distribution, and delivery of products from producers to end consumers (Sukmono, 2023). Although MSMEs have a vital role in the economy, they still face major barriers to participating more widely in global supply chains.

In Bengkulu City, MSMEs face significant challenges in supply chain management, especially related to the implementation of digital technologies such as e-payment and e-commerce. E-payment is an electronic payment system used to make transactions with digital payment methods without the need for cash (Solomon, 2018), while e-commerce is a platform that facilitates transactions for buying and selling goods or services carried out online via the internet (Laudon, 2020).Many MSMEs still use conventional methods, such as manual recording and cash payments, which result in limitations in operational efficiency and wider market access (Indraswanti, 2024). In addition, high logistics costs and limited infrastructure are obstacles to distributing products effectively, thus affecting the competitiveness of MSMEs in local and national markets (Adventy, 2024).

Lack of knowledge and skills in supply chain management is also a challenge, many MSMEs do not yet understand the importance of effective supply chain management, which includes demand planning and inventory management and coordination with suppliers and distributors. This results in operational inefficiencies and potential loss of market opportunities. MSMEs have difficulty reaching a wider market and are often trapped in traditional work patterns that limit the growth of MSMEs in Bengkulu (Panda, 2024). This phenomenon shows that although MSMEs are a vital sector of Bengkulu's economy, they still face major challenges in utilizing digital technology to increase competitiveness.

Factors that affect supply chain performance are market demand, information technology, inventory management, and transportation and logistics, in today's era the use of appropriate technology can help improve supply chain performance, especially in increasing demand, faster distribution, and customer satisfaction. By utilizing technology-based systems such as e-commerce and e-payment, the supply chain can be more efficient and effective in the long term, MSMEs facilitate the transaction process by providing fast, safe,

and integrated payment methods, which can increase customer satisfaction and accelerate the company's cash flow and expand market reach without being bound by geographical boundaries, thereby increasing sales opportunities and encouraging business growth (Nur Widyawati, 2023).

Currently, many MSMEs are utilizing the use of e-commerce in their business, based on data from the Indonesian Ministry of Trade, the presentation rate of e-commerce in Indonesia has continued to increase since 2020 to 2023, the presentation rate of e-commerce in Indonesia is 21.56%. The presence of e-commerce can support better supply chain management, such as accelerating the distribution process, increasing transparency in inventory management, and facilitating communication between suppliers, producers, and consumers. The use of e-payment itself has also been widely utilized by MSME actors, where 73% of MSMEs in Indonesia have utilized the use of e-payment (Ministry Of Financial And Cuisine Of The Republic Of Indonesia, 2023). *E-payment* providing a more secure and automated digital payment system, can speed up the transaction process between parties in the supply chain, reduce dependence on traditional payment methods, and minimize the risk of errors. By utilizing these two services, MSMEs can face their supply chain challenges more effectively, increase competitiveness, and reach a wider market.

The Resource-Based View (RBV) theory is used as a theoretical framework to analyze how internal resources and capabilities owned by MSMEs in Bengkulu can affect their supply chain performance in the context of e-commerce and e-payment services. This theory assumes that a company's competitive advantage comes from rare, valuable, inimitable, and difficult-to-substitute resources, which enable them to optimize operations and improve supply chain performance through digital technology.

Research conducted by (Currency, 2023) focuses on how e-commerce supports MSME development in general, but has not specifically examined its impact on supply chain performance. This research fills the gap by analyzing the influence of e-payment services and e-commerce on MSME supply chain performance, which is still rarely discussed in an integrated model. Bengkulu City, which has limited digital infrastructure and technological literacy, has also not been widely discussed in previous studies. Therefore, this study makes a novel contribution by presenting empirical evidence from an operational point of view and based on local conditions.

Based on the issues outlined above, this study is expected to provide a significant contribution in understanding how digital technology can improve the performance of the MSME supply chain, especially in Bengkulu City. Based on the differences in the results of previous studies, the study is interested in evaluating the influence of e-payment and e-commerce services on the performance of the MSME supply chain in Bengkulu City.

LITERATURE REVIEW

Theory Resource Based View (RBV)

The Resource-Based View (RBV) theory is a theory that emphasizes the importance of a company's internal resources in creating competitive advantage.

First introduced by Penrose (1959) and developed by Wernerfelt (1984) and Barney (1991), the Resource-Based View (RBV) focuses on how companies can utilize unique and difficult-to-imitate resources to achieve sustainable competitive advantage. According to Barney (1991), resources that can create competitive advantage must meet the VRIN (Valuable, Rare, Inimitable, Non-substitutable) criteria, namely valuable, rare, difficult to imitate, and irreplaceable. In MSMEs, the application of the Resource-Based View (RBV) has limitations in terms of physical resources but can compete by maximizing unique non-physical resources, such as innovation, networks, and special expertise.

In supply chain management, Resource-Based View (RBV) emphasizes that optimal utilization of internal resources can improve the efficiency and competitiveness of companies in the market, Resource-Based View (RBV) also faces criticism, especially related to the difficulty in identifying and evaluating truly strategic resources and the lack of attention to the dynamics of the external environment. In a study on the influence of e-payment and e-commerce on the performance of the supply chain of MSMEs in Bengkulu City, Resource-Based View (RBV) provides a strong framework for analyzing how digital technology can function as a strategic resource that can improve operational efficiency and create competitive advantage for MSMEs.

E-Payment Services on Supply Chain Performance

E-Payment in the supply chain can be analyzed throughResource-Based View (RBV) theory, a company's competitive advantage can be achieved through the utilization of valuable, rare, difficult to imitate, and irreplaceable (VRIN) resources, e-payment as one form of digital resources, meets these criteria by providing efficiency in financial transactions, reducing operational costs, and increasing the speed and convenience of payments. In the supply chain, the use of e-payment services can improve operational efficiency by speeding up the payment process to suppliers, reducing the risk of late payments, and improving cash flow.

Previous research revealed that the use of e-payment services, such as QRIS, has a significant positive impact on the performance of the MSME supply chain (Sholihah & Nurhapsari, 2023)stated that the adoption of e-payment accelerates the process of digitizing financial transactions, facilitates payments, and increases efficiency. The ease of use and perceived benefits encourage MSMEs to adopt e-payment in their operations, which ultimately increases competitiveness and business sustainability. Research (Pahlawi et al., 2024) also confirmed that the ease of digital payment services has an important role in improving the performance of MSMEs. This study also shows that good financial understanding and the implementation of easy-to-use digital payments can encourage the competitiveness of MSMEs in local and global markets, thereby strengthening their role in the MSME economy.

The implementation of e-payment in the MSME supply chain can increase efficiency and reduce operational costs. By using electronic payments, MSMEs can complete transactions faster and more accurately without being disturbed by time-consuming manual processes. Accelerate the delivery of goods and payments and reduce errors in calculations or cash management. In addition, E-

Payment provides more transparency because each transaction is recorded automatically and can be monitored at any time. With more accurate and secure transactions, MSMEs will find it easier to manage their finances and ensure the smooth operation of their supply chain. This will ultimately have a positive impact on overall business performance.
H1:E-Payment Services Affect Supply Chain Performance

E-Commerce Services on Supply Chain Performance

E-Commerce in the supply chain can be analyzed throughResource-Based View (RBV) theory, valuable, rare, difficult to imitate, and irreplaceable (VRIN) resources are key to creating competitive advantage, e-commerce can be considered as one of the strategic resources that meet these criteria. E-Commerce allows MSMEs to expand market reach, improve logistics efficiency, and optimize business processes through the use of customer data obtained from online transactions.

Previous research (Kilay et al., 2022) shows that the use of e-commerce services has a positive relationship with improving the performance of the MSME supply chain in Indonesia, especially in terms of operational efficiency and acceleration of goods distribution. This study proves that the use of e-commerce can simplify and accelerate transactions, which in turn improves supply chain performance. The study conducted by (Guo et al., 2023) revealed that e-commerce platforms have a positive impact on supply chain performance, especially for MSMEs. By utilizing digital technology, e-commerce facilitates the management of material, information, and financial flows in the supply chain more efficiently. One of its contributions is increasing MSME access to supply chain performance, which helps improve cash flow and reduce operational constraints.

The implementation of e-commerce in the MSME supply chain simplifies business processes that previously relied on manual systems. Fast and automated transactions speed up payments and deliveries, reduce operational costs, and increase productivity, allowing MSMEs to focus on business development such as marketing and innovation. E-commerce also provides access to more accurate information on market demand, stock, and finance, which supports more informed decision making. In addition, by expanding access to domestic and international markets, e-commerce strengthens the competitiveness of MSMEs and opens up opportunities for faster business expansion.
H2: E-Commerce Services Affect Supply Chain Performance

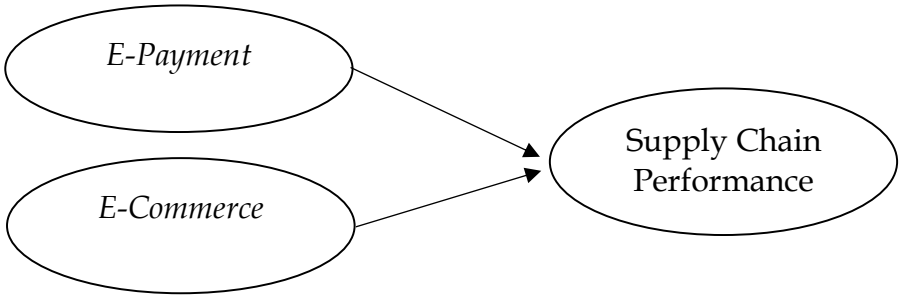

Figure 1 Conceptual Framework

METHODOLOGY

This study is quantitative, the population of this study covers all MSMEs in Bengkulu City, totaling 44,742 based on online data of MSMEs in Bengkulu City. In multivariate research, including multiple regression analysis, the sample size is recommended to be several times the number of variables, with a minimum of 10 times or more than the number of variables in the study (Roscoe, 1975 in Sekaran, 2015). Based on these considerations, the sample size in this study was set at 100 MSMEs spread across 9 Districts, namely Gading Cempaka, Kampung Melayu, Muara Bangka Hulu, Ratu Agung, Ratu Samban, Selebar, Singaran Pati, Sungai Serut, and Teluk Segara. The non-probability sampling method with purposive sampling technique, which considers special criteria, namely MSMEs that utilize e-payment and e-commerce services in the supply chain performance process. This study uses primary data collected directly from respondents using a questionnaire with a 5-point Likert scale.

Table 1. Measurement of Variables

No	Variables	Definition	Dimensions	Indicator	Source
1	Supply Chain Performance (Y)	Effectiveness and efficiency of MSME business processes related to suppliers and consumers	Communication	Able to build good communication with suppliers and consumers	(Kilay, 2022)
			Collaboration	Able to develop cooperation with suppliers	
			Reliability	Able to have reliable suppliers	
			Planning	MSMEs have inventory planning in uncertain conditions	
			Adaptation	MSMEs monitor developments in the business environment to find opportunities	
			Transparency	Inform suppliers and consumers about products openly	
2	*E-Payment*	Use of electronic	Understanding	Understanding the opportunities, benefits	

No	Variables	Definition	Dimensions	Indicator	Source
	(X1)	payment services to support MSME business processes.		and threats of E-Payment.	(Kilay, 2022)
			Profit	The belief that E-Payment is more profitable	
			Implementation	Third parties working with MSMEs have implemented e-payments	
			Integration	E-Payment system is coordinated and integrated with business partners and customers.	
			Security	MSMEs have implemented a security system in E-Payment	
			Ability	Ability to analyze changes that occur in e-payment services	
3	*E-Commerce* (X2)	Use of digital platforms for online product or service sales transactions.	Harmony	alignment of E-Commerce service systems according to business processes	(Kilay, 2022)
			Capability	MSME capabilities in meeting online business needs	
			Efficiency	E-Commerce Services in emphasizing operational costs	
			Development	The use of E-Commerce to accelerate business development	
			Effectiveness	*E-Commerce*improve the effectiveness of transaction communication	
			Market Access	*E-Commerce*helping SMEs dominate the market	

Management of tabulation data and calculation of survey results was carried out using the SPSS version 26 program.

Descriptive Statistical Analysis

According to (Ghozali, 2018) Descriptive statistics provide a summary or description of data based on the average value (mean), standard deviation, variance, maximum, minimum, total, range, kurtosis, and skewness.

Data Quality Test

a) Validity Test
   Validity Test is used to determine the extent to which each question item in the questionnaire can measure the desired variable. This test can be done using Product Moment Pearson Correlation.If the significance value is < 0.05 and has a positive value, then the statement item on the instrument is declared valid (Ghozali, 2018).
b) Reliability Test
   Reliability A questionnaire is used to assess a variable or concept. This test use Cronbach's Alpha. A dependable construct or variable has a Cronbach's Alpha (α) value greater than 0.7, or 70% (Ghozali, 2018).

Classical Assumption Test

a) Normality Test
   The normalcy test determines how the investigated data is distributed. The normality test ensures that the residual data from the regression model are regularly distributed. (Ghozali, 2018). This test uses *Kolmogorov-Smirnov Test* if Sig > 0.05 then the model can be said to be normal.
b) Multicollinearity Test
   This test uses the Variance Inflation Factor (VIF) and Tolerance indicating that there is no serious multicollinearity, the VIF value < 10, and Tolerance > 0.1 means that there is no multicollinearity (Ghozali, 2018).
c) Heteroscedasticity Test
   According to (Ghozali, 2018) This test is performed using the Glejser Testif the regression results show a p-value > 0.05, then there is no heteroscedasticity problem, meaning the variance of the error is constant (homoscedasticity). Conversely, if the p-value <0.05 there is heteroscedasticity.

Regression Analysis

a) F Model
   F Model to determine whether the model is goodness of fit or not. If F-count > F-table or Sig < 0.05, then the model is declared Fit, meaning the model is worthy of being studied (Ghozali, 2018).
b) Adjusted R^2
   Adjusted R^2 evaluates the amount to which independent variables in a model can explain the variation of the dependent variable, while accounting for the number of variables. Higher Adjusted R^2 values indicate a superior model's ability to explain the dependent variable (Ghozali, 2018).
c) Multiple Linear Regression Analysis
   Multiple linear regression is used to determine the direction and magnitude of the independent variable's influence on the dependent variable. If the

regression coefficient's p-value is less than 0.05, the independent variable has a substantial impact on the dependent variable (Ghozali, 2018).

RESEARCH RESULT

Analysis Descriptive Statistics

Table 2 Descriptive Statistics

Variables		Theoretical Table			Actual Table			Std Deviation
	n	Min	Max	Mean	Min	Max	Mean	
E-Payment	100	6	30	18	15	30	25.83	3,373
E-Commerce	100	6	30	18	18	30	26.49	2,496
Supply Chain Performance	100	6	30	18	18	30	26.29	2,656

Source: SPSS 26 Data Processing, Research Results 2025

Based on Table 2, E-Payment of MSME in Bengkulu City is good in terms of understanding, implementation, and security. The actual average value > theoretical average, indicating that MSME actors already understand the benefits of e-payment, are able to implement it in business transactions, and feel safe in using it.

E-Commerce MSMEs in Bengkulu City are good in terms of capability, effectiveness, and market access. With an actual average > theoretical average, this indicates that MSMEs are able to utilize e-commerce well, making it an effective means of marketing, and expanding market reach.

The performance of the supply chain of Bengkulu City's MSMEs shows positive developments, especially in terms of communication, collaboration, and reliability. With the actual average > theoretical average value, this shows that MSMEs have improved communication with suppliers and business partners, worked better together in the supply chain, and ensured reliability in inventory.

Data Quality Test

a) Validity Test

TestingThe validity of the instrument in this study uses Product Moment Person Correlation.If the significance value is <0.05 and has a positive value, then the questionnaire item is declared valid. The significance value in this study can be seen in the following table:

Table 3 Validity Test

Variables	Pearson Correlation	Sig	Information
E-Payment	0.707 – 0.852	0,000	Valid
E-Commerce	0.675 - 0.761	0,000	Valid
Supply Chain Performance	0.666 - 0.759	0,000	Valid

Source: SPSS 26 Data Processing, Research Results 2025

Based on the results of the validity test in table 3, it shows that all statements can be used in research because they are declared valid, which can be shown by a significance value of <0.05 and has a positive value.

b) Reliability Test

The Cronbach's Alpha value is said to be reliable when the value obtained is > 0.7. The results of the reliability test for the Cronbach's alpha value can be seen in the following table:

Table 4 Reliability Test

Variables	Statement Items	Cronbach's Alpha	Std
E-Payment	6	0.871	0.7
E-Commerce	6	0.803	0.7
Supply Chain Performance	6	0.803	0.7

Source: SPSS 26 Data Processing, Research Results 2025

According to the findings of the reliability test in table 4, all variables have a Cronbach's Alpha value more than 0.7, indicating that the research instrument is reliable.

Classical Assumption Test

a) Normality Test

Testing to detect data normality can be done using non-parametric statistics with the One-Sample Kolomogorov-Smirnov Test.Testing normally distributed data if the significance is > 0.05. The following table shows the results of the Kolmogorov-Smirnov test:

Table 5 Normality Test

	Unstandardized Residual
Asymp. Sig. (2-tailed)	0.200

Source: SPSS 26 Data Processing, Research Results 2025

Table 5 shows that the significance level is greater than 0.05, implying that the residual value is regularly distributed.

b) Multicollinearity Test

VIF value < 10 and Tolerance > 0.1 indicates that there is no serious multicollinearity. The table shows the multicollinearity test results for VIF and tolerance settings:

Table 6 Multicollinearity Test

Variables	Tolerance	VIF
E-Payment	0.481	2,078
E-Commerce	0.481	2,078

Source: SPSS 26 Data Processing, Research Results 2025

Based on table 6, it can be seen that all variables in this study have VIF values <10 and Tolerance> 0.1. Therefore, it can be concluded that the results do not have a serious correlation.

c) Heteroscedasticity Test

Heteroscedasticity testing is done using the Glejser Test, by looking at the p-value > 0.05 then there is no heteroscedasticity problem. The p-value in this study can be seen in the following table:

Table 7 Heteroscedasticity Test

Variables	Sig
E-Payment	0.537
E-Commerce	0.378

Source: SPSS 26 Data Processing, Research Results 2025

Based on table 7, it can be seen that the significant value of the Glejser Test results is > 0.05, so it can be concluded that the e-payment and e-commerce variables do not have heteroscedasticity problems, meaning that the variance of the error is constant (homokedasticity).

Regression Analysis

a) F Model

If F count > F table or Sig < α (0.05), then the model is declared fit or feasible. The F count and Sig values in this study can be seen in the following table:

Table 8 F Model

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	456,501	2	228,250	91,455	,000b
	Residual	242,089	97	2,496		
	Total	698,590	99			

Source: SPSS 26 Data Processing, Research Results 2025.

Based on table 8, it can be seen that the calculated F value is 91.455 with a significance of 0.000 <0.05, so it can be concluded that the Fit model means it is suitable for further analysis.

b) Adjusted R^2

A higher Adjusted R^2 value indicates the model's ability to explain the dependent variable well. The following table displays the test results for AdjustedR^2:

Table 9 Adjusted R2

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	0.808	0.653	0.646	1,580

Source: SPSS 26 Data Processing, Research Results 2025

According to table 9, the coefficient of determination value is represented by the Adjusted R Square value of 0.646, which suggests that the influence of e-payment and e-commerce on the supply chain is 64.6%, while the remaining 35.4% is influenced by other variables not included in the study.

c) *Multiple Linear Regression Analysis*

Table 10 Multiple Linear Regression

Model		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	t	Sig.
1	(Constant)	4,772	1,692		2,820	,006
	E-Payment	,304	,068	,386	4,477	,000
	E-Commerce	,516	,092	,485	5,629	,000

Source: SPSS 26 Data Processing, Research Results 2025

Based on table 10 shows that e-payment has a positive effect on supply chain performance with a significance value of 0.000 (p-value <0.05). This shows that the use of e-payment supports transaction efficiency in the supply chain by accelerating the payment process, reducing the risk of delays.

E-Commerce has a positive effect on supply chain performance with a significance value of 0.000 (p-value <0.05). This shows that e-commerce services increase speed and accuracy in stock management, order processing, and distribution of goods.

DISCUSSION

The Impact of E-Payment on Supply Chain Performance

This study found that e-payment has a favorable impact on supply chain performance, implying that the more e-payment is used in business transactions, the better the MSME supply chain performs. The findings of this study are consistent with those of the study (Sholihah & Nurhapsari, 2023) which states that e-payment services accelerate the process of digitizing financial transactions, facilitate payments, and increase operational efficiency in the supply chain. In addition, research conducted by (Pahlawi et al., 2024) states that e-payment contributes to the acceleration of financial flows, reducing the risk of late payments, and increasing coordination between business actors and suppliers. In line with the Theory *Resource Based View (RBV) e-payment* considered as a technological resource that provides strategic value for MSMEs, as it enables

them to manage financial transactions more effectively and increase competitiveness in the supply chain ecosystem. The consequence of this result is that MSMEs that utilize digital payment services can more easily collaborate with suppliers and business partners, and have better financial stability. Therefore, support is needed from the government and digital financial service providers to expand MSME access to more modern and inclusive payment technology.

The Impact of E-Commerce on Supply Chain Performance

This study demonstrates that e-commerce has a favorable impact on supply chain performance, indicating that the higher the utilization of e-commerce in business processes, the better the performance of the MSME supply chain. The results of this study are in line with the results of Kilay's research (2022), which states that the use of e-commerce increases the operational efficiency of the supply chain by accelerating the ordering process, expanding market access, and optimizing the distribution of goods. In addition, Guo's research (2023) also found that E-Commerce contributes to increasing information transparency in the supply chain, accelerating data-based decision making, and reducing dependence on slower and less efficient conventional transactions. In line with the Theory *Resource Based View (RBV) e-commerce* become a strategic asset that provides competitive advantage because it allows MSMEs to adapt to market changes through the use of digital technology. The consequence of this result is that MSMEs that adopt an e-commerce system can be more responsive to market demand, reduce geographical limitations in product distribution, and increase the effectiveness of coordination with suppliers and customers. Therefore, it is necessary to strengthen digital infrastructure and education for MSMEs so that they can optimize the use of e-commerce in increasing competitiveness and improving the supply chain as a whole.

CONCLUSION AND RECOMMENDATION

This research demonstrates that e-payment and e-commerce services have a favorable impact on the performance of the MSME supply chain. in Bengkulu City. e-payment contributes to increasing transaction efficiency, accelerating payments to suppliers, and reducing the risk of delays that can hinder the smoothness of the supply chain. E-commerce helps expand market reach, increase distribution efficiency, and provide more transparency in inventory management and business relationships. This study emphasizes the importance of enhancing both technologies to improve operational efficiency.

These findings reinforce that digitalization not only impacts the ease of transactions or marketing, but also plays a strategic role in shaping more resilient and adaptive supply chains. In the context of MSMEs in Bengkulu City, the utilization of e-payment and e-commerce is a solution to various physical and geographical limitations that often-become obstacles to the distribution of goods. This research also proves that digital technology can be an important lever in improving the competitiveness of local MSMEs in the midst of increasingly technology-based competition. Thus, the implementation of digital technology

needs to be continuously improved through training, policy support, and infrastructure strengthening so that the benefits can be felt more widely and evenly by MSME actors.

ADVANCED RESEARCH

Further research is expected to explore other factors that influence the efficiency of supply chain performance such as long-term relationships, information sharing, Agile, Process Integration and the main obstacles in the adoption of digital technology by MSMEs. In addition, it is recommended to use a larger sample and wider geographic coverage in order to obtain a more representative generalization of the results.

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