“The impact of electronic commerce adoption on the performance of microenterprises: Do technological context, organizational context, and external environment matter?”

AUTHORS	Suyanto Suyanto Arvin Winatha Olivia Tanaya

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Suyanto Suyanto (Indonesia), **Arvin Winatha** (Indonesia), **Olivia Tanaya** (Indonesia)

THE IMPACT OF ELECTRONIC COMMERCE ADOPTION ON THE PERFORMANCE OF MICROENTERPRISES: DO TECHNOLOGICAL CONTEXT, ORGANIZATIONAL CONTEXT, AND EXTERNAL ENVIRONMENT MATTER?

Abstract

Electronic commerce is gaining importance as a hub for product sourcing, helping businesses earn a competitive edge, and connecting with consumers. Despite its enormous benefits, very few microenterprises in Indonesia adopted electronic commerce. This study analyzes three determinants influencing electronic commerce adoption in microenterprises and evaluates the impacts of these three determinants on firm performance. The paper adopts the TOE (technology, organization, external environment) framework. The quantitative explanatory method uses a questionnaire distributed directly to 113 Indonesian microenterprises' owners registered in the database of the East Java Department of Cooperative, Micro, Small, and Medium Enterprises from October 2023 to July 2024. The collected data were processed via structural equation modeling partial least squares (SEM-PLS). The findings indicate that a decision to adopt technology has a direct, positive, and significant impact on the adoption of electronic commerce in Indonesian enterprises. Second, organizational context (such as firm size or age) has a positive and significant effect on the willingness to adopt electronic commerce. Third, the external environment has a positive influence on the adoption of electronic commerce. The results confirm the positive impact of the adoption of electronic commerce on the performance of Indonesian microenterprises. These findings justify the importance of TOE contexts in supporting electronic commerce adoption in Indonesian microenterprises and, in turn, increase the performance of the corresponding micro-firms.

Keywords technology, organization, environment, commerce, performance, Indonesia

JEL Classification D22, D23, L10, L21, L25

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Suyanto Suyanto, Dr., Professor, Department of Economics, Faculty of Business and Economics, University of Surabaya, Indonesia, Center of Excellence for Financial Literacy and Intergeneration Well-being, Indonesia. (Corresponding author)

Arvin Winatha, Associate Researcher, Department of Economics, Faculty of Business and Economics, University of Surabaya, Indonesia.

Olivia Tanaya, Assistant Professor, Department of Economics, Faculty of Business and Economics, University of Surabaya, Indonesia.

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INTRODUCTION

A survey on digital commerce highlighted that Southeast Asia's internet-based economy experienced impressive growth, rising from USD 32 billion in 2019 to USD 105 billion in 2020, and is projected to continue rising to an estimated USD 309 billion by 2025 (Google et al., 2022). Indonesia, as the region's largest economy, represents about 40% of this digital market. The country's electronic commerce sector has expanded rapidly, growing from USD 140 million in 2012 to USD 15.6 billion in 2022, driven in part by the COVID-19 pandemic (Oosga, 2023). Out of a total of 64 million microenterprises (MEs) that contributed to more than 60% of Indonesian employment before the pandemic, approximately 9 million MEs were using digital technol-

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ogy. There has been an addition of around 12 million MEs during the pandemic. Currently, the number of MEs has reached 21 million, accounting for approximately 32% of the total 64 million MEs. This indicates that 68% of MEs have not yet utilized the digital space for their economic development (Limanseto, 2022). However, not all MEs can easily transition to digitization. A government-conducted survey reveals that approximately 28% of MEs have a dominant difficulty in penetrating the digital market due to the lack of understanding of electronic commerce. MEs that have not adopted digitization have reported a decrease in sales transactions and net profits due to increased online competition (Department of Cooperatives, Small and Medium Enterprises in East Java, 2021).

Given the evidence regarding the challenges in adopting electronic commerce by Indonesian microenterprises, a further investigation into the major determinants impacting the adoption of e-commerce is urgently needed. Since over 60% of MEs in Indonesia have not utilized digital technologies yet, this study seeks to provide evidence on the main factors impacting the intention to utilize e-commerce in Indonesian MEs. It offers a unique perspective on technology adoption in Indonesia, providing a model for the implementation of electronic commerce in Indonesian microenterprises. These two contributions provide a more in-depth analysis of the adaptation process and its impact on business performance in Indonesian microenterprises.

1. LITERATURE REVIEW

Electronic commerce refers to the process where microenterprises (MEs) modify their business models to buy and sell goods or services electronically (Lim et al., 2017). The World Trade Organization (WTO) defines e-commerce as a range of commercial activities conducted through computers, including online trading, data exchange, and electronic fund transfers. The advantages of e-commerce are divided into tangible benefits, such as process automation, increased efficiency, expanded market share, and reduced costs, and intangible benefits, including enhanced customer education, loyalty, and competitive edge (Kuzic et al., 2002). The TOE (technological, organizational, and external environmental) framework, introduced by Tornatzky et al. (1990), helps analyze e-commerce implementation, emphasizing the role of technology, organizational conditions, and the industrial environment in driving innovation.

The technological context in the TOE framework examines how both internal and external technological factors influence e-commerce adoption, including compatibility, perceived benefits, and costs (Shin et al., 2019). It also involves the technical knowledge required for digital media marketing and the available technologies for adoption (Rahayu & Day, 2015). The organizational context examines internal factors, such as organizational culture, business size and age, management support, and workforce quality, that influence technological innovation (Fonseka et al., 2021; Jovanovic et al., 2020). The external environmental context addresses factors outside the organization, including competition, consumer pressures, government incentives, and infrastructure (Grandon & Pearson, 2003; Miftahurrohman et al., 2022). The TOE framework is ideal for analyzing e-commerce adoption in microenterprises due to its strong theoretical foundation, empirical support, and comprehensive approach to understanding the factors influencing technology implementation (Awa et al., 2015; Handayani & Mahendrawathi, 2019).

The decision to adopt technology depends on market availability and how well the technology aligns with a company's existing infrastructure. According to Fonseka et al. (2021), the technological context is crucial for e-commerce adoption in microenterprises (MEs), with factors such as perceived benefits, compatibility, and costs influencing the decision. Perceived benefits, such as improved sales, cost efficiency, better customer service, and market expansion, can directly or indirectly impact business operations (Mehrtens et al., 2001). Compatibility refers to how well e-commerce aligns with a business's technology, practices, and culture. Adoption is more likely when the technology is of high quality, solves organizational issues, and fits the company's culture (Ghobakhloo & Tang, 2013). The cost of adopting

new technology plays a crucial role in its feasibility for microenterprises. Lower adoption costs make technology more accessible, and financial resources significantly impact the decision to implement new technology (Kuan & Chau, 2001). MEs with sufficient financial resources are more likely to adopt new technology, as it often requires significant investment (Ghobakhloo & Tang, 2013). Abed (2020) emphasizes the importance of technology in e-commerce adoption.

The organizational context focuses on ME readiness for transformation and assessing infrastructure adequacy for e-commerce adoption (Turban et al., 2004). MEs are typically owner-dominated, with leaders often possessing strong IT skills, technological readiness, and a willingness to innovate (Nelson & Shaw, 2003). The organizational context plays a crucial role in e-commerce adoption among microenterprises, with factors such as human capabilities, business resources, technical ability, and awareness influencing implementation (Molla & Licker, 2005). Organizational readiness, which includes IT knowledge and financial capacity, is also key. The higher the IT knowledge, the more likely the organization is to embrace new technology (Chwelos et al., 2001).

The environmental context, which encompasses customer, competitor, and supplier pressures, as well as external support, significantly impacts e-commerce adoption (Fonseka et al., 2021). Competitor pressure, for instance, can prompt companies to adopt e-commerce in order to maintain a competitive advantage (Zhu & Kraemer, 2005). External support, including government policies and regulations, also plays a role by providing protection and speeding up technology acceptance (Alrawabdeh, 2014; Bagale, 2014; Ocloo et al., 2020). However, the misaligned regulations create uncertainty, which negatively impacts e-commerce growth (Tirtana et al., 2022; Hussain et al., 2020).

The global adoption of electronic commerce has a significant impact on microenterprises, enhancing sales growth, cost efficiency, service quality, and overall performance (Daniel & Grimshaw, 2002; Kurnia et al., 2015). E-commerce adoption leads to shifts in business strategies, improving service speed, accessibility to information, and reducing costs, which in turn boosts sales and profits (Alzahrani, 2019). However, the relationship between e-commerce and business performance is complex, with some studies showing mixed results. E-commerce's impact on performance depends on factors such as how it is used by the business and its integration with Internet sales channels (Jovanovic et al., 2020; Tirtana et al., 2022). If used appropriately, e-commerce can bring benefits to society; otherwise, it may pose a threat to the future of the younger generation.

Business performance is a measure of a company's success in achieving its stated objectives. Business performance for MEs can be measured through three indicators: increased sales, profits, and customer satisfaction. E-commerce reduces coordination and transaction costs attributed to the automation of online transactions, thereby increasing the efficiency and profitability of MEs (Kraemer et al., 2005).

The above literature shows that the aim of this study is to examine the impact of e-commerce adoption on microenterprises performance under the context of technology, organization, and external environment. Therefore, there are four hypotheses put forward in accordance with the research objective:

H1: Technological context has a positive effect on electronic commerce adoption.

H2: Organizational context has a positive effect on electronic commerce acceptance.

H3: External environmental context has a positive effect on electronic commerce adoption.

H4: E-commerce adoption has a positive effect on microenterprise performance.

The framework for testing these four hypotheses is presented in Figure 1.

2. METHODS

This study employs a quantitative methodology obtained from a questionnaire distributed to the 113 Indonesian microenterprises' owners record-

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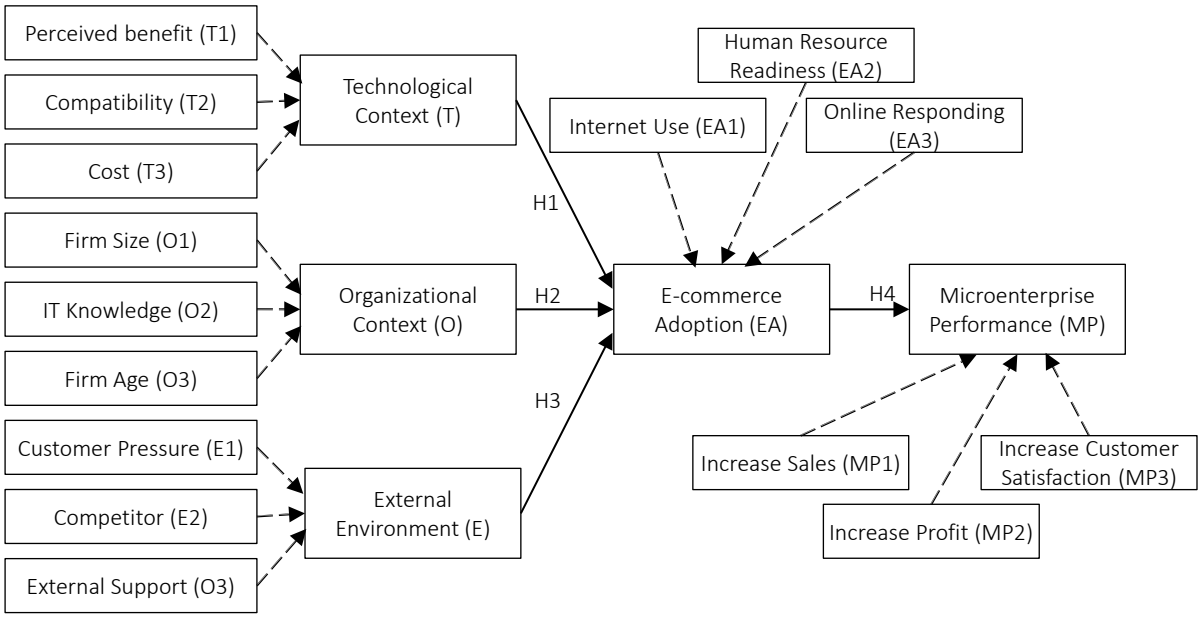

Figure 1. Theoretical framework

ed in the database of the East Java Department of Cooperative, Micro, Small, and Medium Enterprises from October 2023 to July 2024. The respondents agreed to the informed consent form provided at the beginning of the questionnaire and were fully aware that all information given was confidential and presented in statistical numbers. The questionnaire covers data on how the technological context, organizational context, and external environment influence the readiness of microenterprises to adopt electronic commerce and its impact on firm performance. The questions in the survey are based on Ahmad et al. (2014), Fonseka et al. (2021), Hussain et al. (2020), Jovanovic et al. (2020), and Kartiwi et al. (2018). Table 1 displays the latent construct of variables and items.

The research data were subsequently analyzed using statistical techniques. Several variables are used for analysis purposes. These include one endogenous variable in the form of microenterprise performance (MP) and three exogenous variables consisting of technological context (T), organizational context (O), and external environmental context (E), along with one mediating variable, e-commerce adoption (EA). The primary source of the data is the responses to questionnaires distributed among ME owners in East Java, Indonesia, using a 5-point Likert scale. A higher rating from the respondent indicates a positive response, while a lower rating suggests a less favorable response. The respondents meet specific criteria: (1) MEs that have known and adopted e-commerce, and (2) MEs that employ two to 300 employees. Based on the Lemeshow formula, the target sample size for this study is a minimum of 96 respondents. This analysis successfully collected responses from 113 ME that met the sample criteria.

Data investigation was conducted using the partial least squares (PLS) approach, facilitated by SmartPLS 3.0 software. It is a powerful method as it does not rely on parametric assumptions. For example, data do not need to be normally distributed, and the sample can be small (Hair Jr et al., 2014). The choice of the partial least squares (PLS) method is based on the presence of five latent variables, which are formed by reflective indicators. In the reflective model, it is assumed that the construct or the latent variable affects the indicator, and there exists a direction of causality from the construct to the indicator or vice versa; therefore, confirmation of the relationship between latent variables is required. Parameter estimation in PLS is grouped into three components. Firstly, there is the weight estimate for calculating latent variable scores. Secondly, the path estimate connects the latent variables with their indicators. Lastly, the means of parameters have constant values for both indicators and latent variables.

Table 1. Variables, items, and sources

Variable	Items		Description	Source
Technological context (T)	T1	Perceived benefit	Perceived benefit after implementing e-commerce	Ahmad et al. (2014), Fonseka et al. (2021), Hussain et al. (2020)
	T2	Compatibility	Compatibility of the e-commerce technology with business process	Ahmad et al. (2014), Fonseka et al. (2021), Hussain et al. (2020)
	T3	Cost	The costs of implementing e-commerce technology	Ahmad et al. (2014), Fonseka et al. (2021), Hussain et al. (2020)
Organizational context (O)	O1	Firm size	The firm size enables new e-commerce technology	Fonseka et al. (2021), Jovanovic et al. (2020)
	O2	IT knowledge	Knowledge and capability to operate e-commerce	Fonseka et al. (2021), Jovanovic et al. (2020)
	O3	Firm age	The age of firms supports e-commerce implementation	Fonseka et al. (2021), Jovanovic et al. (2020)
External environment (E)	E1	Customer/Supplier pressure	Pressure from suppliers or customers to adopt e-commerce technology	Fonseka et al. (2021), Jovanovic et al. (2020)
	E2	Competitor	Competition pressure for adopting e-commerce	Fonseka et al. (2021), Jovanovic et al. (2020)
	E3	External support	Support from the government to adopt e-commerce	Fonseka et al. (2021), Jovanovic et al. (2020)
E-commerce adoption (EA)	EA1	Internet use for product sales	The availability of an Internet connection to support e-commerce in sales	Ahmad et al. (2014), Fonseka et al. (2021), Hussain et al. (2020), Jovanovic et al. (2020)
	EA2	Readiness of human resources	Skills of human resources in using e-commerce technology	Ahmad et al. (2014), Fonseka et al. (2021), Hussain et al. (2020), Jovanovic et al. (2020)
	EA3	Responding to consumers online in a timely manner	The use of e-commerce simplifies the business process, especially in responding to customers' requests	Ahmad et al. (2014), Fonseka et al. (2021), Hussain et al. (2020), Jovanovic et al. (2020)
Microenterprise performance (MP)	MP1	Increased sales	E-commerce increases sales	Fonseka et al. (2021), Kartiwi et al. (2018)
	MP2	Increased profit	E-commerce increase profit	Fonseka et al. (2021), Kartiwi et al. (2018)
	MP3	Increased consumer satisfaction	E-commerce increases consumer satisfaction	Fonseka et al. (2021), Kartiwi et al. (2018)

Table 2. Demographic information

Demographic Component		Frequency	Percentage (%)
Business sector	Trading	24	21.24%
	Service	11	9.73%
	Manufacture	72	63.72%
	Construction	6	5.31%
	Agriculture	0	0%
Respondent's education level	Senior high school	9	7.97%
	Diploma	26	23.01%
	Bachelor's degree	65	57.52%
	Master's degree	13	11.50%
Work experience	Less than five years	45	39.82%
	5–10 years	34	30.10%
	11–15 years	18	15.93%
	16–20 years	11	9.73%
	More than 20 years	5	4.42%
Age of MEs	Less than five years	56	49.56%
	5–10 years	41	36.28%
	11–15 years	11	9.73%
	More than 15 years	5	4.43%
Size of MEs	Number of employees under 10 people	49	43.37%
	Number of employees 10–100 people	51	45.13%
	Number of employees above 100 people (< 300)	13	11.50%

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From Table 2, 24 out of 113 respondents (21.24%) are ME business actors operating in the trade sector, whereas 11 respondents (9.73%) are in the service sector. Respondents running manufacturing firms are the largest numbers, accounting for 63.72% or 72 respondents. Six respondents are from the construction sector, constituting 5.31% of the total respondents. Most respondents have a Bachelor's degree, accounting for 57.52%. The working experience of the respondents is mostly less than five years (39.82%). Firms are mostly less than five years (49.56%). The size of the firm is mostly ten to a hundred workers (45.13%).

3. RESULTS

The findings for validity and reliability tests are presented in Table 3. The validity is measured using both the average variance extracted (AVE) and the communality value. The AVE is a mean value of variance extracted (AVE) between items of a variable and represents a summary of convergent indicators. From the results presented in Table 3, it was found that the AVE values for all variables are greater than 0.5, suggesting a strong convergence validity. One can conclude that the items in the questionnaires for all the constructed variables are valid.

Next, composite reliability and Cronbach's alpha were used to test the reliability of data, and the findings are presented in Table 4. All constructs yielded composite reliability and Cronbach's alpha values exceeding 0.70. Consequently, the constructs have a reliable or strong internal consistency.

After the validity and reliability findings, the next step is to address the structural model. The inner model delineates the association between latent variables under the existing theory. Structural models in PLS are investigated through the path coefficients, model fit, *R*-squared, *F*-squared, and *Q*-squared. The findings of the structural model are provided in Figure 2.

Figure 2 shows that the technological context has a positive impact on e-commerce adoption, with a coefficient of 0.333. Similarly, the organizational context provides a positive effect on e-commerce adoption, with a coefficient of 0.305. The same sign is also found in the impact of external environment context on e-commerce adoption, which has a positive sign with a value of 0.385. Lastly, the e-commerce adoption variable and the ME performance variable are positively related by 0.626. The next finding is related to goodness of fit, and the result is presented in Table 5.

Table 5. Model fit

Goodness of Fit	Saturated Model	Estimated Model
NFI	0.778	0.743

The model is considered to have a high fit if the NFI value is close to 1. Table 5 highlights that the NFI value is 0.778, indicating a high goodness of fit for the model in representing the da-

Table 3. Convergent validity

Variable	AVE (Average Variance Extracted)	Communality	Conclusion
Technological context (T)	0.756	0.756	Valid
Organizational context (O)	0.728	0.728	Valid
External environment context (E)	0.703	0.703	Valid
E-commerce adoption (EA)	0.823	0.823	Valid
ME performance (MP)	0.748	0.748	Valid

Table 4. Reliability test

Construct	Composite Reliability	Cronbach's Alpha
Technological context (T)	0.903	0.842
Organizational context (O)	0.889	0.814
External environment context (E)	0.876	0.789
E-commerce adoption (EA)	0.933	0.892
ME performance (MP)	0.899	0.831

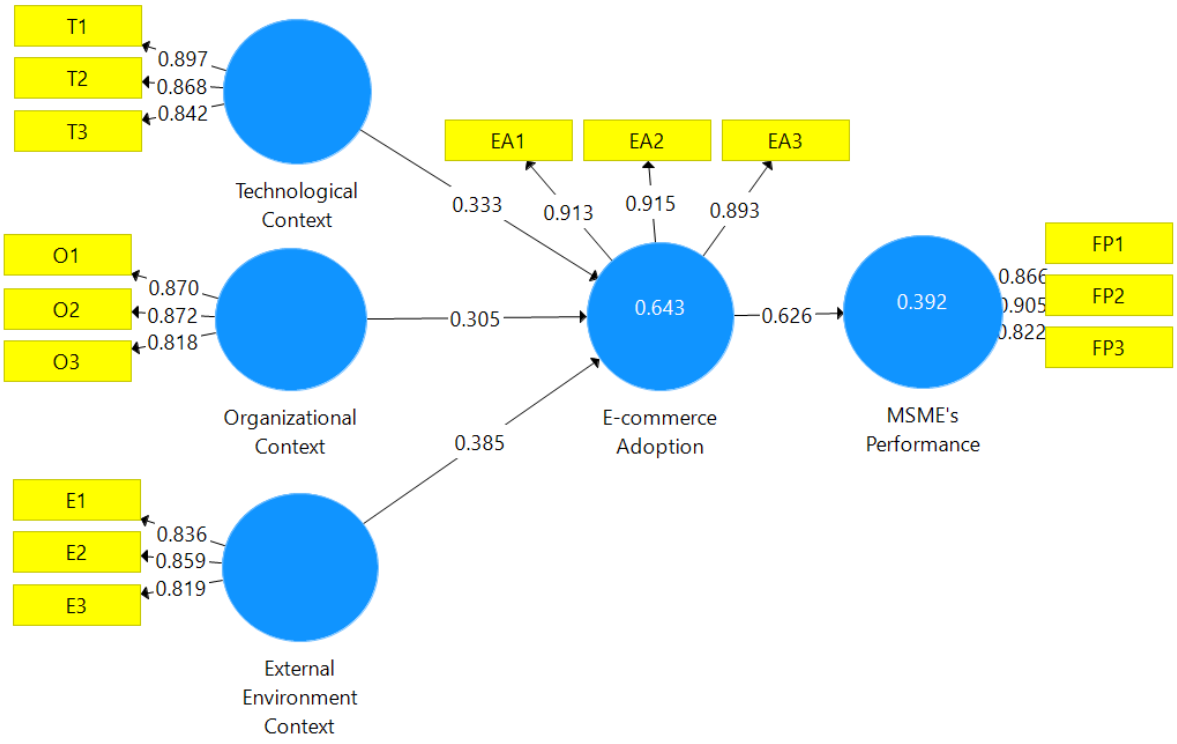

Figure 2. Structural model output

ta. Another goodness of fit test is performed in this study, namely the *R*-squared coefficient. The *R*-squared value is for assessing the influence of specific exogenous latent variables on the endogenous latent variables for determining whether the influence has a substantive effect. According to the results in Table 6, the *R*-squared value for e-commerce adoption (EA) was found to be 0.643. This indicates that the combined influence of the technological, organizational, and external environmental contexts on e-commerce adoption amounted to 64.3%, and the remaining 35.7% were explained by other variables outside the model. Furthermore, the *R*-squared value for the ME performance (MP) was found to be 0.392. This indicates that the simultaneous influence of technology, organization, external environment, and e-commerce adoption on ME performance accounts for 39.2%. The total *R*-squared value is greater than 0.33, suggesting that the model is both appropriate and strong.

Table 6. R-squared

No.	Variable	R-squared
1	Y1 (E-commerce Adoption)	0.643
2	Y2 (MEs performance)	0.392

To test for the structural goodness of fit, *F*-squared is performed in this study. The rule of thumb is that the effect is said to be a moderate effect when the *F*-squared is less than 0.3, and it is said to be a significant effect when the *F*-squared is more than 0.3. Table 7 reports *F*-squares values for each variable. The technological context variable has a moderate effect on electronic commerce acceptance with an *F*-squared value of 0.206. The relationship between organizational context and electronic commerce adoption is moderate, with an *F*-squared value of 0.176. The external environmental context variable provides a significant impact on electronic commerce acceptance with an *F*-squared value of 0.342. Finally, the effect of electronic commerce adoption on ME performance has a significant influence with an *F*-squared value of 0.645.

Furthermore, *Q*-squared (prediction relevance) was carried out to determine the predictive capability of the resulting value. When the *Q*-squared value is greater than zero, the model is considered adequate and predictive. The subsequent values represent the results obtained from the *Q*-squared formula.

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Table 7. F-squared

Variable	E-commerce adoption (EA)	Microenterprise performance (MP)
Technological context (T)	0.206	
Organizational context (O)	0.176	
External environment context (EE)	0.342	
E-commerce adoption (EA)		0.645

$$Q^2 = 1 - (1 - R1^2)(1 - R2^2)$$

$$Q^2 = 1 - (1\text{-}0.643)(1\text{-}0.392) \quad (1)$$

$$Q^2 = 1 - 0.217056$$

$$Q^2 = 0.782944$$

Based on the Q^2 formula, a Q^2 value of 0.782944 suggests that the model has high predictive relevance for the parameter estimates.

The next step is to test the hypotheses. The structural estimation is conducted on the path coefficients between variables, taking into account the significance values between constructs, *t*-statistics, and *p*-values. The hypotheses testing was conducted utilizing the bootstrapping method with the assistance of SmartPLS 3.0 software. The rule of thumb for the hypotheses test is that the value of the *t*-statistic should exceed 1.96, or the significance level of the *p*-value should be less than 0.05. The structural estimates are pictured in Figure 3.

Figure 3 and Table 8 show the results of hypotheses testing. The *p*-value of the technological context variable is 0.008, which is less than < 0.05, suggesting that the technological context has a significant positive effect on the adoption of electronic commerce (*H1* is supported). The finding of the positive significant effect of technological context on e-commerce adoption is in line with Abed (2020), Fonseka et al. (2021), Ghobakhloo and Tang (2013), Rahayu and Day (2015), and Shin et al. (2019). Likewise, either organizational context or external environment context has a positive and significant impact on e-commerce adoption (supporting *H2* and *H3*). The findings of the positive and significant impact of organizational context on e-commerce adoption are similar to those of Jovanovic et al. (2020), Molla and Licker (2005), Nelson and Shaw (2003), and Turban et al.

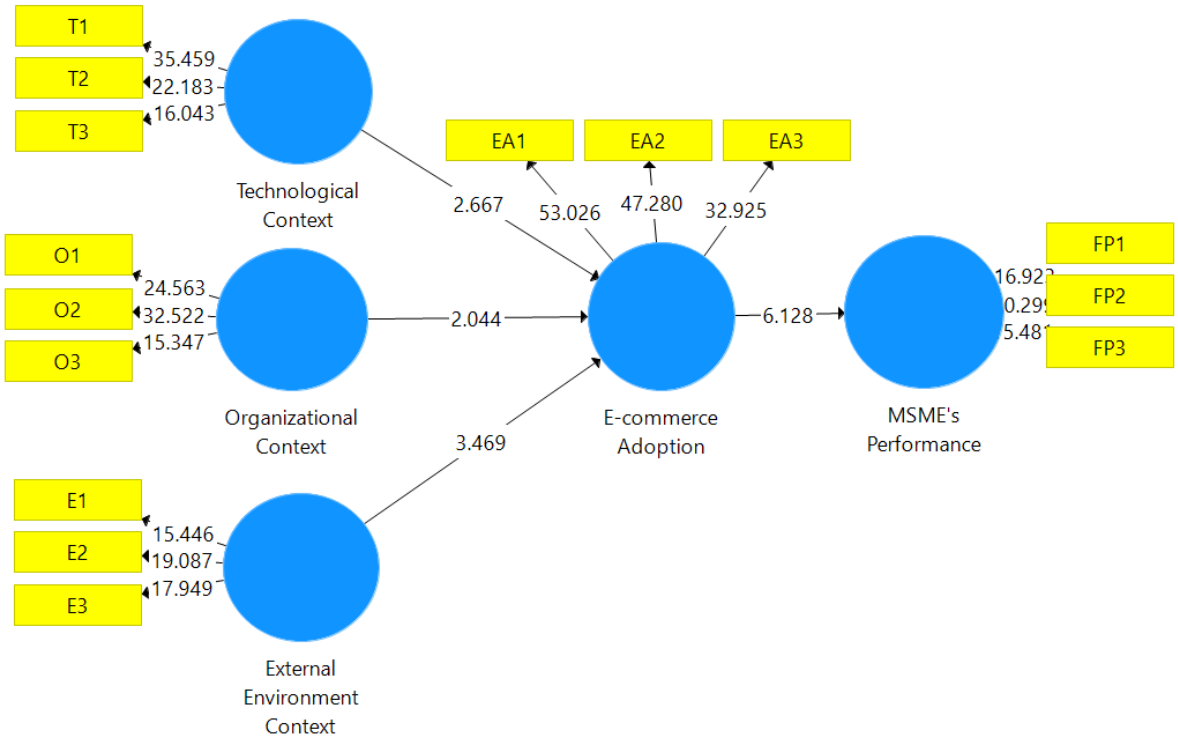

Figure 3. SEM results

Table 8. Hypotheses testing

Variable	Original Sample	Sample Mean	Standard Deviation	T-Statistic	P-Values	Conclusion
Technological → E-commerce adoption	0.333	0.349	0.125	2.667	0.008	*H1* supported
Organizational → E-commerce adoption	0.305	0.294	0.149	2.044	0.041	*H2* supported
External environment → E-commerce adoption	0.385	0.372	0.111	3.469	0.001	*H3* supported
E-commerce adoption → Performance	0.626	0.617	0.102	6.128	0.000	*H4* supported

(2004). The finding of a positive significant impact of the external environment on e-commerce adoption confirms the results of Awa et al. (2015), Grandon and Pearson (2003), Handayani and Mahendrawathi (2019), and Miftahurrohman et al. (2022). The final result shows that there is a positive and significant impact of the adoption of e-commerce on the performance of MEs (*H4* is supported), which is in line with findings by Ahmad et al. (2014), Fonseka et al. (2021), Hussain et al. (2020), and Jovanovic et al. (2020).

4. DISCUSSION

The validity and reliability tests produced correct and dependable results based on the evidence and observations. This study found that technological, organizational, and external environments influence the decision to adopt e-commerce. The technological context is assessed through the examination of three indicators: perceived benefits, compatibility, and cost. Among these, perceived benefits have the highest *t*-statistic value, followed by compatibility and cost. Perceived benefits encompass the benefits felt and gained from the implementation of e-commerce technology in organizations or businesses. Perceived benefits have a positive and significant influence on e-commerce adoption, serving as a crucial determinant in the adoption decisions of micro, small, and medium enterprises (Al-Alawi & Al-Ali, 2015; Ghobakhloo & Tang, 2013). Compatibility refers to the alignment of e-commerce with technological infrastructure, culture, values, and work practices. Compatibility has been identified as having a significant positive influence on the decisions of organizations or business actors in adopting e-commerce. Cost represents the expense that must be incurred by business actors to adopt e-commerce. In general, lower implementation costs increase the opportunities for e-commerce adoption by MEs. The findings of this study are consistent with Tirtana et al. (2022), who identified that the cost indicator in the technological context has a significant positive effect on e-commerce adoption.

The organizational context is assessed through the examination of three indicators: IT knowledge, firm size, and firm age. Among these, IT knowledge has the highest *t*-statistic value, followed by firm size and age. The level of knowledge about information technology and e-commerce accepted by MEs and business owners can facilitate the adoption of suitable e-commerce in the businesses they run. This finding aligns with previous evidence (Ahmad et al., 2014; Ghobakhloo et al., 2011), which emphasizes that IT knowledge has a significant positive effect on the success of e-commerce adoption in MEs. Firm size is identified as one of the factors in the organizational context that has a significant positive influence on e-commerce adoption in MEs (Ochola, 2015; Huy, 2012). Smaller businesses may exhibit less enthusiasm for leveraging information technology. On the other hand, larger business actors are more inclined to take advantage of information technology, including the adoption of e-commerce (Sparling et al., 2007). Firm age, as an indicator of organizational context, is found to have a significant positive effect on e-commerce adoption (Lun & Quaddus, 2011; Jovanovic et al., 2020). The age of a firm corresponds to the period from the establishment to its current operational status or indefinite future. Longer-operating MEs are considered to have a substantial market share and diverse business partnerships. In contrast, younger MEs have limited resources and experience, rendering them more vulnerable to risks, particularly in the adoption of e-commerce (Mahajan & Singh, 2013).

The external environmental context is assessed through the examination of three indicators: customer/supplier pressure, competitors, and external support. Among these, competitors demonstrate the highest *t*-statistic value, followed by

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external support and customer/supplier pressure. Competitor pressure entails the challenges within a business or organizational environment arising from threats posed by peers. This could include losing customers to competitors, thereby reducing market share. It is undeniable that competitor pressure positively influences the adoption of e-commerce in MEs. The adoption of e-commerce has become a strategic necessity for businesses to remain competitive. This result is consistent with previous research (Aderemi et al., 2018; Ocloo et al., 2020). Pressure from consumers indicates that MEs must be able to adapt to consumer spending trends, including the adoption of new technologies such as entering the e-commerce sphere (Wu et al., 2011). MEs adopt e-commerce to capture more customer attention and stimulate increased consumer spending. These results are consistent with Al-Alawi and Al-Ali (2015) and Kartiwi et al. (2018). In terms of external support, government support – both in terms of regulations and policies supporting information technology infrastructure and digital activities – can positively influence the adoption of e-commerce among MEs. External support from the government can incentivize the use of e-commerce by protecting consumer privacy and demonstrating a solid commitment to building promotional movements toward e-commerce.

The adoption of e-commerce can increase the performance of MEs. These results are consistent with Fonseka et al. (2021) and Grandon and Pearson (2003). E-commerce adoption is assessed by examining three key indicators: internet use for the product sales process, the readiness of human resources in e-commerce, and the ability to respond to consumers online promptly. Among these, Internet use for the product sales process has the highest *t*-statistic value, followed by the readiness of human resources in e-commerce and the ability to respond to consumers online promptly. The results are consistent with previous studies (Grandon & Pearson, 2003; Gregory et al., 2019), affirming that e-commerce adoption has a significant positive influence on the performance of MEs. The adoption of e-commerce can reduce inventory turnover levels, capital expenditure for new technology, and training expenses, thereby increasing the net profits achievable by MEs. The presence of MEs that have adopted e-commerce transforms the transaction process from sellers to consumers, rendering it more efficient and effective compared to conventional business processes. This shift to digital platforms can directly boost customer satisfaction in transactions, as previous challenges, such as distance and time, are overcome with the presence of e-commerce.

CONCLUSION

The objective of this study is to examine the key factors that drive e-commerce adoption among Indonesian microenterprises and to assess the subsequent impact on their overall performance. Based on the findings, it is concluded that all four hypotheses are supported. The technological context variable has a significant positive effect on e-commerce adoption, with perceived benefits serving as a key motivator for microenterprises to adopt e-commerce. Similarly, the organizational context variable significantly influences e-commerce adoption, highlighting the importance of information technology knowledge in encouraging microenterprises to integrate e-commerce into their business operations. The external environmental context variable positively impacts e-commerce adoption, particularly driven by competitor pressure. This finding suggests that the presence of competitors utilizing advanced technologies motivates microenterprises to adopt e-commerce to remain competitive. Furthermore, e-commerce adoption has a positive effect on the performance of microenterprises, demonstrating that increased adoption is associated with improved business outcomes, particularly in terms of profitability.

Based on the research results, several recommendations are proposed for microenterprises in Surabaya. Considering compatibility indicators, microenterprises should focus on company values and culture, as these aspects can provide direction for business development and enhance productivity in the future. Regarding cost indicators, microenterprises must regularly evaluate capital adequacy and align it with their business needs accurately. Since digitalization efforts entail substantial costs, microenter-

prises must carry out evaluations. If microenterprises force themselves to carry out their operational activities, it will be dangerous for their financial situation. Regarding IT knowledge, microenterprises should invest in providing comprehensive literacy on e-commerce through applicable training so that insight into the use of technology in microenterprises can develop. Lastly, regarding the challenges of the surrounding environment, including competitors, microenterprises can benefit from monitoring competitors in the industrial environment. This involves observing the activities and strategies employed by competitors in the industry and providing information on the development of strategies they implement. Such monitoring is crucial to ensure that microenterprises remain competitive in terms of technology, products, and market share.

AUTHOR CONTRIBUTIONS

Conceptualization: Suyanto Suyanto, Arvin Winatha, Olivia Tanaya.
Data curation: Arvin Winatha.
Formal analysis: Suyanto Suyanto, Arvin Winatha, Olivia Tanaya.
Funding acquisition: Suyanto Suyanto.
Investigation: Suyanto Suyanto, Arvin Winatha, Olivia Tanaya.
Methodology: Suyanto Suyanto, Arvin Winatha.
Project administration: Suyanto Suyanto.
Resources: Arvin Winatha.
Supervision: Suyanto Suyanto, Olivia Tanaya.
Validation: Suyanto Suyanto, Olivia Tanaya.
Visualization: Suyanto Suyanto.
Writing – original draft: Suyanto Suyanto, Arvin Winatha, Olivia Tanaya.
Writing – review & editing: Suyanto Suyanto, Arvin Winatha, Olivia Tanaya.

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