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PERSPECTIVE OF TECHNOLOGY, ORGANIZATION, AND ENVIRONMENT (TOE) ON THE ADOPTION OF E-COMMERCE BY SME IN TANGERANG REGENCY

PERSPEKTIF TEKNOLOGI, ORGANISASI, DAN LINGKUNGAN (TOE) TERHADAP ADOPSI E-COMMERCE OLEH UKM DI KABUPATEN TANGERANG

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ABSTRACT

This study focuses on analyzing the technology, organization, and environment (TOE) factors that influence the adoption of e-commerce by SMEs in the fashion industry of Tangerang Regency. Utilizing a quantitative approach and structural equation modeling (SEM) analysis through SEM-PLS software, this research aims to investigate how these factors interact and impact the adoption of e-commerce technology. Data for the study were collected via an online questionnaire using Google Forms, distributed to active SMEs that primarily utilize the Shopee platform for their sales channels. A total of 210 responses were successfully gathered, representing the SME population within the fashion industry of Tangerang Regency. The findings indicate that technology factors, including aspects such as relative advantage and compatibility, significantly influence e-commerce adoption. Organizational factors, encompassing organizational readiness and top management support, also have a substantial impact on e-commerce adoption. Environmental factors, which include competitive pressure and vendor support from e-commerce platforms, contribute positively to the adoption of e-commerce. These findings provide a deeper understanding of the key factors affecting SMEs' adoption of e-commerce, particularly in the fashion sector and within the geographic context of Tangerang Regency. The implications of this research highlight the importance for SMEs to leverage TOE factors in strategizing the adoption of e-commerce technology to enhance business performance and capitalize on the vast potential of the digital market.

Keywords: *Technological Factors, Organizational Factors, Environmental Factors, Technology, Organization, and Environmental (TOE), Adoption to Ecommerce*.

ABSTRAK

Penelitian ini berfokus pada analisis faktor-faktor teknologi, organisasi, dan lingkungan (TOE) yang mempengaruhi adopsi e-commerce oleh UKM di industri fesyen Kabupaten Tangerang. Dengan menggunakan pendekatan kuantitatif dan analisis pemodelan persamaan struktural (SEM) melalui perangkat lunak SEM-PLS, penelitian ini bertujuan untuk menyelidiki bagaimana faktor-faktor tersebut berinteraksi dan berdampak pada adopsi teknologi e-commerce. Data untuk penelitian ini dikumpulkan melalui kuesioner online menggunakan Google Formulir, yang didistribusikan ke UKM aktif yang terutama memanfaatkan platform Shopee untuk saluran penjualan mereka. Sebanyak 210 tanggapan berhasil dikumpulkan, mewakili populasi UKM dalam industri fesyen di Kabupaten Tangerang. Temuan menunjukkan bahwa faktor teknologi, termasuk aspek-aspek seperti keunggulan relatif dan kompatibilitas, secara signifikan mempengaruhi adopsi e-commerce. Faktor organisasi, yang mencakup kesiapan organisasi dan dukungan manajemen puncak, juga memiliki dampak yang besar terhadap adopsi e-commerce. Faktor lingkungan, yang meliputi tekanan persaingan dan dukungan vendor dari platform e-commerce, berkontribusi positif terhadap adopsi e-commerce. Temuan ini memberikan pemahaman yang lebih dalam tentang faktor-faktor kunci yang mempengaruhi adopsi e-commerce oleh UKM, khususnya di sektor fesyen dan dalam konteks geografis Kabupaten Tangerang. Implikasi dari penelitian ini menyoroti pentingnya bagi UKM untuk memanfaatkan faktor TOE dalam menyusun strategi adopsi teknologi e-commerce untuk meningkatkan kinerja bisnis dan memanfaatkan potensi pasar digital yang sangat besar.

Kata Kunci: Faktor Teknologi, Faktor Organisasi, Faktor Lingkungan, Teknologi, Organisasi, Dan Lingkungan (TOE), Adopsi Ecommerce.

INTRODUCTION

The importance of the digital economy sector in transforming the

economic landscape is reflected in the valuation of Indonesia's digital economy, which accounts for 40% of the total in Southeast Asia (Kominfo, 2020). It is projected that Indonesia's digital economy will grow to $110 billion by 2025 (Google, 2023). The upward trend in Indonesia's digital economy has shown significant growth over the past few years, with a compound annual growth rate (CAGR) of 20% from 2021 to 2022, followed by a decline to 8% from 2022 to 2023. Bain analysis predicts a 15% increase by 2025, reaching $110 billion. The Indonesian e-commerce industry experienced a slowdown post-pandemic in 2023, with a 20% decline compared to 2021 and 2022. According to Bain analysis, e-commerce in Indonesia remains the largest contributor to transaction value in the digital economy, experiencing significant growth with a CAGR of 20% from 2021 to 2022. The anticipated increase in the value of the digital economy is driven by the growth of e-commerce in Indonesia by 2025 (Google, 2023).

The shift in market competition from traditional to digital highlights the necessity for organizations to adopt e-commerce to remain relevant and competitive (Koe & Afiqah Sakir, 2020). E-commerce refers to the buying and selling of goods or services involving individuals or organizations conducted through computer networks using methods specifically designed for the delivery and exchange of products, services, and/or information (Ahi et al., 2023; Alyoubi, 2015).

Small and Medium Enterprises (SMEs) play a central role in supporting economic growth in Indonesia, providing employment and significantly contributing over 60% to the GDP, with more than 80% of SMEs participating in the digital ecosystem (Kominfo, 2020). The implementation of digitalization programs can be key to enhancing SME performance, which includes the adoption of the latest technologies in business processes, efficient data management, and the use of digital platforms for marketing and distribution (Gupta et al., 2023).

Tangerang holds a significant role as a key supporting area for Jakarta, the largest metropolitan city in Indonesia. Furthermore, Tangerang has recorded impressive achievements in the economic sector, with the Gross Regional Domestic Product (GRDP) of Tangerang Regency reaching 5.47% growth in 2022, surpassing the national GDP growth average of 5.31% (BPS Kab Tangerang, 2022).

The importance of research into the Technology-Organization-Environment (TOE) model in adopting e-commerce responds to the need for greater relevance in the context of SMEs, considering the unique characteristics of these enterprises (Bening et al., 2023). Previous studies have investigated the factors influencing SMEs in adopting technology. Several significant factors impacting technology adoption include organizational, technological, and environmental aspects framed within the TOE theory (Abdullahi et al., 2022). When management understands the benefits of e-commerce well, the likelihood of support for its implementation increases (Hendricks & Mwapwele, 2023).

Given the existing gap, there remains potential for the adoption of e-commerce in the fashion industry on the Shopee platform, particularly in Tangerang, which supports Jakarta as the largest metropolitan city in Indonesia. The primary objective of this research is to evaluate the impact of TOE on e-commerce adoption, understand its implications for performance, and

identify the factors most influencing performance within an organization. This underscores the importance of investigating the factors that drive SMEs in adopting e-commerce to optimize business performance (Abdullahi et al., 2022).

LITERATURE REVIEW

Technological Factors Variable

Technological factors refer to the entirety of technological infrastructure necessary for the adoption of e-commerce (Hendricks & Mwapwele, 2023). The scope of technological factors encompasses both internal and external aspects, experience and future prospects, as well as the selection of technologies that need to be tested or tried, which are available in the market and deemed suitable for organizations to operate effectively (Eze et al., 2019). Humans often represent the most challenging component in adopting new technologies, as not everyone is inclined to change their behavior to embrace new systems. When users can interact more effectively with technological systems, they become more skilled in operating them. The better a system or technology is learned, the more individuals tend to develop a positive attitude toward it (Soedewa et al., 2021).

This research delves into two characteristics of innovation in the adoption of e-commerce by SMEs: relative advantage and compatibility. Relative advantage refers to the tangible and intangible benefits perceived following an organization's adoption of an innovation (Abdullahi et al., 2022). SMEs are likely to embrace innovations when they perceive that the benefits significantly outweigh the risks associated with their implementation within the organization (Qalati et al., 2022). In this study, the dimension of relative advantage will be measured using three indicators related to e-commerce adoption (Oliveira et al., 2014): (1) Increasing productivity, (2) Providing new opportunities, and (3) Assisting in advertising and marketing.

Compatibility refers to the alignment between the e-commerce platform and the values upheld by the organization, the preferences for work practices, as well as the methods employed by suppliers and customers in conducting their business (Hussein et al., 2020). It has been found that Small and Medium Enterprises (SMEs) tend to seek information regarding compatibility when making decisions to adopt the latest information systems, aiming to ensure the extent to which these systems can adapt to the existing technologies within the company without imposing a burden on the adaptation process (Eze et al., 2019). Compatibility has emerged as a significant driver of technology adoption that is frequently evaluated (Maroufkhani et al., 2022).

Organizational Factors

Organizational variables are directly linked to the existence and utilization of internal resources within an organization (Bening et al., 2023). Organizational factors refer to those elements that influence an organization or company, including governance or management and its performance. Key aspects of organizational factors include the attitudes, commitment, support, and motivation of management regarding the adoption of technology (Lekmat, 2018; Sila, 2019; Hendricks & Mwapwele, 2023). This study focuses on two aspects that affect the adoption of e-commerce by SMEs: top management support and organizational readiness.

Top management support can be described as the level of support and involvement from top executives in the organization during the process of

adopting new technology (Abed, 2020). Top management has the authority to allocate resources and possesses the capability to effectively promote the implementation of new technologies within their companies (Abdullahi et al., 2022). According to the TOE theory, an organization's inclination to adopt an innovation is significantly influenced by the support of top management for that innovation (Koe & Afiqah Sakir, 2020; Matikiti et al., 2018). The measurement of the top management support dimension requires three indicators (Oliveira et al., 2014): (1) Management knowledge, (2) Management support, and (3) Management oversight.

Organizational readiness describes the preparedness of the organization to adopt new technologies, encompassing financial capacity, infrastructure, and the organization's knowledge regarding the adoption of new technologies (Abdullahi et al., 2022). In the context of SMEs, the resources possessed by an organization are crucial for maintaining business continuity. Abed (2020) and Maroufkhani et al. (2022) assert that organizational readiness is a key factor influencing the success of e-commerce adoption. In this study, the dimension of organizational readiness will be measured using three indicators (Oliveira et al., 2014): (1) Employee education, (2) Financial resources, and (3) Supporting technology.

Environmental Factors

The environmental context involves factors such as industry structure, the availability of technology service providers, and the organizational dogmas in place (Abed, 2020). Innovation can be influenced by external driving factors (Ahani et al., 2017). SMEs are more likely to adopt e-commerce when they recognize that these platforms have the potential to strengthen their competitive advantages and enhance their business performance (Abdullahi et al., 2022). This study examines two important factors that drive external environmental influences: the legal and regulatory environment and competitive pressure.

Support from technology vendors refers to the assistance provided by platform service providers for the technological innovations implemented by SMEs (Purwandari et al., 2019). The availability of vendor support creates a positive perception of technology and serves as a catalyst for adopting information technology (Yadegaridehkordi et al., 2020). SMEs often evaluate the experience, background, and credibility of service providers, as well as the functionality of new solutions, and compare different online platform providers (Eze et al., 2019). This research measures three indicators: (1) The marketing activity of the platform, (2) Adequate technical support from the platform, and (3) Sufficient training provided by the platform.

Competitive pressure refers to the level of pressure arising from competition faced by an organization (Qalati et al., 2022). Competition in business increases the likelihood of organizations adopting technology in response to competitive challenges (Ahani et al., 2017). The intensity of competition among players in similar industries illustrates how businesses utilize e-commerce as a means to enhance organizational profits and gain a competitive edge (Abdullahi et al., 2022; Hendricks & Mwapwele, 2023). This study measures indicators related to the e-commerce adoption process, including: (1) Pressure from competitors, (2) Impact on competition, and (3) Competitors already using the platform.

Adoption to E-Commerce Variable

Adopting e-commerce has the potential to reduce costs, improve service quality, and strengthen customer relationships, which in turn can enhance customer satisfaction and productivity. Collectively, this can lead to increased sales and profitability for the company (Hendricks & Mwapwele, 2023). This makes the adoption of e-commerce measurable in terms of a company's willingness to continue using or regularly maintain e-commerce practices, both currently and in the future (Hussein et al., 2020). This study assesses indicators reflecting company behavior towards e-commerce adoption, including: (1) Willingness to adopt effectively, (2) Intent to use in the future, and (3) Integration into daily operations.

Relationship Between Variables

1. **Influence of Technology Factors on E-Commerce Adoption**

   Based on several previous studies (Abed, 2020) examining the implementation of technological attributes within organizations, Qalati et al. (2022) analyzed a sample of SMEs operating in Thailand and found a positive relationship between technology and business performance among SMEs. This is supported by research from Kulathunga et al. (2020), which investigated the positive effects of technology usage on SME performance, highlighting technology as a crucial component of resources within companies. The study by Asanprakit & Kraiwanit (2023) identified that technological factors, including user interface, features that enhance user experience, and the overall appeal of technology platforms, play a key role in driving user participation. This aligns with findings from Abdullahi et al. (2022), which confirm that relative advantage significantly influences the use of technology as a strategy by SMEs.

   The organization's considerations of the benefits and risks associated with adopting new technology will impact the e-commerce adoption process. This study examines how technological perspectives influence the adoption of e-commerce by SMEs. Based on the discussion, the following hypothesis can be formulated:

   H1: There is an influence of technology factors on e-commerce adoption.

2. **Influence of Organizational Factors on E-Commerce adoption**

   Top management support has a positive and significant impact on the adoption of Facebook by SMEs. This support increases the likelihood of SMEs adopting Facebook as a marketing strategy (Abdullahi et al., 2022). Organizational readiness also serves as a significant positive factor in technology adoption, as SMEs strive to ensure their financial and technical skills before adopting such platforms (Abed, 2020). Lim et al. (2018) state that the lack of financial and technical resources has been identified as a barrier to the growth of SMEs, leading to a tendency to be ill-prepared for adopting innovations.

   It can be concluded that both management support and organizational readiness for technological innovations can facilitate the e-commerce adoption process. Based on various studies examining the influence of internal organizational factors on e-commerce adoption, the following hypothesis can be formulated:

   H2: There is an influence of organizational factors on e-commerce adoption.

3. Influence of Environmental Factors on E-Commerce adoption

The environmental context, which comprises elements such as industry structure, the availability of technology service providers, and organizational environment, affects technology adoption by SMEs (Abed, 2020). Business environmental factors influence the opportunities and challenges companies face in adopting technology, including pressures from competitors and government regulations (Kalaitzi & Tsolakis, 2022). Research by Maroufkhani et al. (2022) indicates that competition from rivals encourages the use of technology among SMEs, supported by the implementation of favorable regulations and governmental pressure that enhance top management's inclination to support e-commerce implementation. Additionally, Lim et al. (2018) note that organizations may choose to leverage e-commerce platforms as they can simplify communication and reduce workload.

It is evident that government support and an organization's desire to outpace its competitors can drive the adoption of technological innovations such as e-commerce. Based on various studies examining the influence of environmental factors on e-commerce adoption, the following hypothesis can be formulated:

H3: There is an influence of environmental factors on e-commerce adoption.

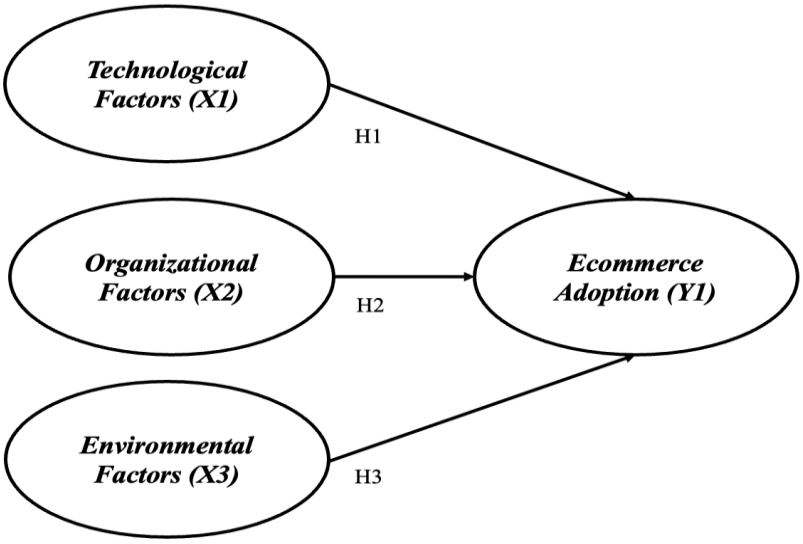

Figure 1. Frame of References

METHOD

This study employs a quantitative analysis method. The research population consists of SMEs located in Tangerang Regency, with the exact number being indeterminate (infinite population). The sampling technique utilized in this research is non-probability sampling, specifically purposive sampling. The sample criteria are as follows: residents of Tangerang Regency, SMEs within the fashion industry, and those using the Shopee e-commerce platform for sales. The

sample size is determined using the formula provided by Hair (2010), which recommends a minimum sample size of five times the number of indicators to be analyzed. Consequently, the sample for this study is calculated as 21 indicators multiplied by 10, resulting in a total of 210 respondents.

Based on this formula, the sample for this research consists of 210 respondents. The approach adopted in this study is a survey methodology, utilizing a questionnaire to collect samples and data from the population (Andika & Susanti, 2018). The analytical methodology employed is Partial Least Squares (PLS) Structural Equation Modeling.

Table 1. Respondents Characteristics

Criteria	Characteristic	Total	Percentage
Seller Status on the Shopee platform	Regular Seller	30	14,29%
	Star Seller	46	21,91%
	Star Plus Seller	121	57,62%
	Shopee Mall	14	6,67%
	Total	**210**	**100%**
Seller's Age on the Shopee Platform	Less than 1 year	36	17,14%
	1-3 years	67	31,91%
	3-5 years	54	25,71%
	More than 5 years	53	25,24%
	Total	**210**	**100%**
Responsibilities on the Platform	Owner	59	28,1%
	Manager	33	15,7%
	Staff / Employee	118	56,2%
	Total	**210**	**100%**
Fashion Category	Children's Clothing	29	13,81%
	Women's Clothing	115	54,76%
	Men's Clothing	47	22,38%
	Muslim's Clothing	17	8,1%
	Other fashion category	3	1,43%
	Total	**210**	**100%**
Features of the Sales Development Program Utilized	Shopee Campaign	135	64,29%
	Seller Education Program	127	60,48%
	Business Growth Class	109	51,91%
	Shopee Export Program	26	12,38%
	Seller Target	170	80,95%

The characteristics of respondents concerning sellers on the Shopee platform reveal that the majority are classified as Star Plus Sellers, comprising 57.62%, followed by Star Sellers at 21.91%, regular sellers at 14.29%, and Shopee Mall sellers at 6.67%. Additionally, 31.91% of respondents have been on the Shopee platform for 1 to 3 years, followed by 25.71% for 3 to 5 years, 25.24% for over 5 years, and 17.14% having been active for less than 1 year. More than half of the respondents, specifically 56.2%, are operational staff of the stores, while 28.1% are store owners, and 15.7% hold the position of store manager. In terms of product categories, women's clothing is the most represented, accounting for 54.76%, followed by men's clothing at 22.38%, children's clothing at 13.81%, Muslim clothing at 8.1%, and other clothing categories at only 1.43% of the total respondents.

Regarding the use of seller development program features available on the Shopee platform, respondents were able to provide multiple answers from the five existing features. Overall, the seller programs utilized are predominantly led by the Seller Mission, which encompasses nearly 80.95% of all sellers. This is followed by Shopee Campaigns and Seller Education Programs at 64.29% and 60.48%, respectively, and store development tips at 51.91%. A small fraction of respondents, specifically 12.38%, utilize Shopee's export program.

RESULT AND DISCUSSION

Outer Model Analysis

Table 2. Outer Model Value

Variable	Indicator	Outer Loading	Cronbach's Alpha	Average Variance Extracted (AVE)
***Technology Factors* (X1)**	X1.1	0,804	0,912	0,693
	X1.2	0,815		
	X1.3	0,760		
	X1.4	0,899		
	X1.5	0,863		
	X1.6	0,849		
***Organizational Factors* (X2)**	X2.1	0,815	0,926	0,773
	X2.2	0,850		
	X2.3	0,913		
	X2.5	0,896		
	X2.6	0,916		
***Environmental Factors* (X3)**	X3.1	0,911	0,934	0,791
	X3.2	0,835		
	X3.3	0,919		
	X3.5	0,900		
	X3.6	0,878		
***Ecommerce Adoption* (Y)**	Y1.1	0,922	0,880	0,807
	Y1.2	0,893		

	Y1.3	0,880

The values of outer loading concerning the removal of research items X2.4 and X3.4 showed no changes in the outer loading values, thus all items are accepted, as the overall outer loading falls within the range of > 0.50 to 0.70. A variable can be considered valid in terms of variance when the AVE value is greater than 0.5. The table indicates that each latent variable has the following AVE values: X1 at 0.693, X2 at 0.773, X3 at 0.791, and Y1 at 0.807. Since the AVE values for all variables exceed 0.5, all latent variables are suitable for analysis using SEM-PLS at the cross loading interpretation stage. The testing of discriminant validity in SmartPLS via cross loading requires that the correlation values of each variable be higher than those of other variables. This has been represented in the table above, with the loading values for each item highlighted accordingly. Additionally, the researcher can conduct a simple review of the accumulated cross loading using the Fornell-Larcker criterion. The results suggest that the exogenous variables can exert various influences on both intervening and endogenous variables, as indicated by the higher coefficient values.

Table 3. Fornell Larcker Criteion

	X1	**X2**	**X3**	**Y1**
X1	0,833			
X2	0,350	0,879		
X3	0,329	0,329	0,889	
Y1	0,408	0,443	0,477	0,898

The criteria of the Fornell-Larcker criterion in Smart-PLS 4 state that the latent variable must not exceed the values of the cross-loadings below it. In this regard, the table above demonstrates that the accumulated cross-loading values comprehensively align with the theory and meet the standard benchmarks for SEM-PLS.

The VIF values, which serve as a criterion for collinearity in multicollinearity testing, should be ≤ 5.0. Two items, specifically X2.4 and X3.4, were removed due to their VIF values not meeting the required threshold. Following this adjustment, all latent variables now satisfy the criteria for multicollinearity exceptionally well. This is evidenced by the VIF values being within the range of ≤ 5.0 for each item and indicator.

Inner Model Analyst

Table 4. Goodness of Fit

	Saturated model	**Estimated model**	**(Estimated Model)**	**Interpretation**
SRMR	0,050	0,050	≤ 0.10	*Good Fit*
d_ULS	0,478	0,478	≥ 0.05	*Good Fit*
d_G	0,315	0,315	≥ 0.05	*Good Fit*
Chi-square	401,643	401,643	Preferably low	*Fit*
NFI	0,876	0,876	≥ 0.80	*Good Fit*

R Square : 0,356

R Square Adjusted : 0,346

The coefficient of determination, as a measure of the strength or weakness of the relationship between variables in this study, is indicated by R Square values. An R Square of ≥ 0.75 suggests a strong model contribution, while a value of 0.50 ≤ R Square indicates a moderate contribution, and 0.25 ≤ R Square ≤ 0.50 indicates a weak model. Based on the coefficients found in the R Square table, the combined influence of X1, X2, and X3 on the realization of Y1 is 34.6%. The impact of each hypothesis on achieving Y1 is classified as weak, as all coefficient values are ≤ 0.50. This is considered acceptable since the remaining 65.4% is influenced by other variables that have not been studied, which also contribute to forming the variable Y1.

Based on the table above, it can be observed that the overall index demonstrates a high degree of fit, with the exception of the NFI, which represents partial model fit at a moderate or marginal level. Consequently, the model is deemed suitable for predictive analysis through the Q square method.

Table 5. Q Square

Variable	SSO	SSE	Q^2 (=1-SSE/SSO)
X1	338,632	338,632	
X2	266,127	266,127	
X3	288,747	288,747	
Y1	152,828	126,043	0,175

The results obtained from the Q^2 test concerning the predictive relevance of constructs X1, X2, and X3 in relation to Y1 indicate a predictive relationship, with a cumulative value of $\sum 0.175 > 0$. In conclusion, these variables can accurately measure the endogenous variable over the long term.

Hypothesis Test

Table 7. The Direct Effect

	Conclusion of T Statistics (T>1.96)	T statistics (|O/STDEV|)	P values	Conclusion of P Values (<0.5)
X1 -> Y1	Influence present	2,270	0,020	Significant
X2 -> Y1	Influence present	3,542	0,000	Significant
X3 -> Y1	Influence present	3,532	0,000	Significant

a. Direct Influence of Technological Factors on Adoption to E-commerce. The analysis conducted using SmartPLS 4 indicates that technological factors have a significant influence on the adoption of e-commerce, as evidenced by a p-value of 0.020 and a t-value of 2.334. Since the p-value is less than 0.05 and the t-value exceeds 1.96, we can conclude that the null hypothesis (H0) is rejected and the alternative hypothesis (H1) is not rejected, indicating a significant direct effect.
b. Direct Influence of Organizational Factors on Adoption to E-commerce. Similarly, the results obtained from SmartPLS 4 show that organizational

factors significantly influence the adoption of e-commerce, with a p-value of 0.000 and a t-value of 3.637. Given that the p-value is less than 0.05 and the t-value exceeds 1.96, we can reject the null hypothesis (H0) and accept the alternative hypothesis (H1), confirming a significant direct effect.

c. Direct Influence of Environmental Factors on Adoption to E-commerce.

The analysis also reveals that environmental factors significantly impact the adoption of e-commerce, with a p-value of 0.000 and a t-value of 3.707. Again, since the p-value is less than 0.05 and the t-value exceeds 1.96, we reject the null hypothesis (H0) and accept the alternative hypothesis (H1), indicating a significant direct effect.

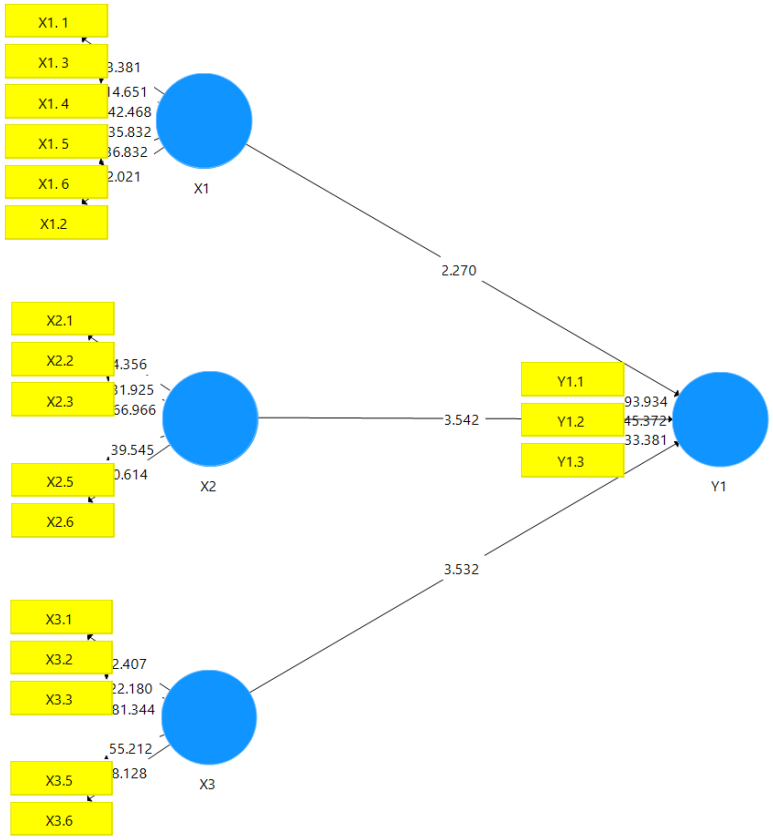

Figure 2. Path Coefficients Analysis Result

Discussion

Influence of Technology Factors on E-Commerce Adoption

The findings of this study indicate a significant influence of technological factors on the adoption of e-commerce. This research emphasizes that elements such as the benefits of using e-commerce and compatibility with the organization play a crucial role in shaping an organization's attitude toward e-commerce adoption (Bening et al., 2023). These findings are supported by previous studies conducted by Lekmat (2018) and Koe & Afiqah Sakir (2020), which reveal that small and medium-sized enterprises (SMEs) view e-commerce as an opportunity to enhance their efficiency and business performance, including financial, operational, and

non-financial aspects. Improvements in operational performance can serve as a foundation for achieving overall organizational performance (Sutrisno, 2019).

This study aligns with the perspective of SMEs that compatibility is a critical factor in adopting e-commerce (Hussein et al., 2020), as the successful implementation of e-commerce within an organization can be hindered if the existing infrastructure is not aligned with e-commerce technology (Daoud & Ibrahim, 2019).

The influence of technological factors is corroborated by the respondents in this study, who are predominantly sellers classified as star plus sellers with over one year of experience. Achieving star plus seller status requires effort from sellers to maximize their stores and attain this category. This suggests that organizations that persist and excel in e-commerce leverage technological factors and perceive e-commerce as compatible with their needs and capabilities.

The benefits of using e-commerce can be observed in sellers' ability to optimize sales processes, enhance operational efficiency, and reach a broader audience online. E-commerce provides access to a global market without geographical limitations, enabling sellers to connect with potential consumers anytime and anywhere. By integrating appropriate technology, such as data analytics to understand consumer behavior or efficient inventory management systems, sellers can enhance the online shopping experience and accelerate delivery processes.

The compatibility of e-commerce with the needs and capabilities of the organization is also crucial. Sellers who can adapt e-commerce platforms to their business strategies—whether in inventory management, competitive pricing, or effective marketing strategies—tend to be more successful. They are likely to adopt technologies suitable for their business scale, ensure adequate IT infrastructure, and optimize the use of platform features to enhance product visibility and sales.

Thus, leveraging the benefits of e-commerce and ensuring compatibility with organizational needs are key factors for success in an increasingly digital business environment. Sellers who effectively integrate technology into their business strategies and fully utilize the potential of e-commerce platforms to achieve their business objectives are more likely to survive and grow in this competitive market.

Impact of Organizational Factors on E-commerce Adoption

This study reveals that internal organizational factors, such as organizational readiness and managerial support, significantly influence an organization's attitude toward e-commerce adoption. Research conducted by Abed (2020) and Qalati et al. (2022) confirms that owners' or managers' perceptions of their organization’s resources and capabilities affect their decision to support e-commerce adoption. Specifically, when owners or managers of SMEs feel that their organization lacks adequate resources, they are less likely to endorse the e-commerce adoption process (Maroufkhani et al., 2022). This finding indicates that the success of e-commerce adoption is closely linked to owners' or managers' perceptions of resource availability and organizational capability.

Furthermore, the study indicates that e-commerce adoption is more successful when employees and the organization are actively encouraged to enhance company performance and seize existing business opportunities (Eze et

al., 2019). Consequently, support and commitment from the entire organization, including employees, are critical in the e-commerce adoption process. Data on respondent characteristics shows that more than half (56%) of the respondents are operational staff directly and actively involved in implementing e-commerce within the organization. This reflects a high level of direct engagement among operational staff, underscoring the importance of operational support in effective e-commerce adoption.

In an expanding digital industry, the role of operational staff is crucial in driving daily organizational operations, particularly in adopting e-commerce technology. The data indicates that more than half of the respondents are operational staff actively involved in e-commerce. They are not only responsible for routine tasks related to e-commerce but also play a vital role in contributing strategically to decision-making at the operational level. In a horizontal organizational structure, their involvement broadens the span of control, allowing the information and perspectives they provide to directly impact business strategy and technology development. The operational support they provide not only enhances internal process efficiency but also strengthens the organization's adaptation to technological changes and evolving market dynamics. Overall, the role of operational staff is not merely to execute tasks but also to serve as a pillar in maintaining performance and innovation in an increasingly digitized business environment.

Impact of Environmental Factors on E-commerce Adoption

The findings of this study reveal a significant impact of environmental factors on e-commerce adoption, as evidenced by the research model. The study highlights that external factors, such as competitive pressure and support from e-commerce platforms, have a substantial effect on SMEs' attitudes toward adopting e-commerce. This finding is reinforced by research conducted by Hendricks & Mwapwele (2023), which identifies external environmental factors as primary determinants in SMEs' decisions to adopt e-commerce. SMEs tend to be more susceptible to external environmental influences (Maroufkhani et al., 2022). Eze et al. (2019) note that SME owners are often proactive in seeking information about new information and communication technologies used by their competitors and how these solutions have been integrated into their organizational structures to gain a competitive edge.

The influence of external factors in this study is also reflected in the respondent characteristics, which show that a majority are sellers of women's clothing (54.6%), indicating a substantial market potential for women's clothing on the Shopee platform. The women's clothing industry is currently highly competitive in the online sales market. This study examines how external environmental factors affect organizations' actions to maintain their market positions. Understanding and responding to external environments become crucial for SMEs in effectively adopting and leveraging e-commerce.

Support from e-commerce platform vendors, such as Shopee, is evident in the various learning tools available to sellers to maximize their sales potential. As illustrated in the research findings, sellers have utilized several learning tools provided by the e-commerce platform to continually adopt e-commerce effectively. The main features of seller development programs

have high usage rates, with the exception of the Shopee export program. Based on additional data regarding seller categories within the Shopee platform, it appears that Shopee Mall, as the highest category, maximizes every store development tool provided by Shopee. This is followed by star plus sellers, who are the most numerous respondents, making full use of all development features available. This highlights the importance of utilizing development features as a key initiative provided by vendors to adopt e-commerce effectively and become competitive sellers in their industry.

The success of SMEs in leveraging e-commerce platforms like Shopee is significantly influenced by their understanding of the external environmental factors that impact their business strategies. Intense competition in the e-commerce market requires SMEs to innovate product offerings, establish competitive pricing, and continually enhance customer experiences to differentiate themselves from competitors. Additionally, support provided by vendors like Shopee in the form of training, education, and promotion is crucial in helping SMEs understand and optimize their use of the platform. A swift and accurate response to market dynamics, including changing consumer trends and e-commerce regulations, is essential for adjusting marketing and operational strategies. By integrating a deep understanding of these external factors, SMEs can enhance their competitiveness, optimize returns on e-commerce investments, and achieve sustainable growth in the current digital era.

CONCLUSION

Based on the results and analysis of the impact of technological, organizational, and environmental factors on e-commerce adoption by SMEs in Tangerang Regency, it can be concluded that success in adopting e-commerce is heavily influenced by various external factors that exert pressure on organizations, such as market competition and support from e-commerce platforms during the adoption process. Internal factors, particularly technological readiness, play a vital role in shaping SMEs' attitudes and decisions regarding e-commerce adoption. The utilization of e-commerce benefits and compatibility with organizational needs are key determinants of successful e-commerce implementation. Organizational factors, such as readiness and managerial support, are critical foundations in this adoption process. Therefore, managers must consider both internal and external factors when planning effective e-commerce adoption strategies, ensuring that such adoption maximizes benefits for the entire organization.

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