Exploring Entrepreneurial Orientation, Technological Readiness, and Institutional Support in E-Commerce Adoption by MSMEs

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Abstract. This study investigates the relationships between entrepreneurial orientation, technological readiness, and institutional support in driving e-commerce utilization among micro, small, and medium-sized enterprises (MSMEs) in South Sulawesi, Indonesia. Grounded in the Resource-Based View (RBV) and Technology-Organization-Environment (TOE) framework, the research provides insights into how internal capabilities and external enablers contribute to digital transformation in emerging market contexts. A total of 283 MSME respondents were surveyed from major economic hubs in the region Makassar, Gowa, Maros, Parepare, Palopo, and Bone using a structured questionnaire with indicators adapted from established studies. Data were analyzed using Partial Least Squares Structural Equation Modeling (PLS-SEM). The results reveal that both entrepreneurial orientation and institutional support significantly affect e-commerce utilization, with technological readiness serving as a partial mediator. Furthermore, institutional support positively influences technological readiness, which in turn enhances the effective use of digital platforms. Mediation analysis confirms the presence of statistically significant indirect effects, underscoring the crucial role of institutional frameworks in accelerating MSMEs' digital readiness. These findings offer strategic implications for policymakers, development agencies, and financial institutions seeking to foster inclusive and sustainable digital ecosystems for MSMEs in Indonesia. The study emphasizes the importance of aligning entrepreneurial capabilities with supportive technological and institutional infrastructures to boost digital adoption in the MSME sector.

Keywords: Entrepreneurial Orientation, Technological Readiness, Institutional Support, E-Commerce, MSMEs.

1 Introduction

In the era of accelerating digital transformation, the utilization of e-commerce has emerged as a vital strategy for enhancing the competitiveness and sustainability of Micro, Small, and Medium Enterprises (MSMEs), especially in developing economies. In Indonesia, MSMEs account for over 60% of the national GDP and absorb more than 97% of the workforce, making them central to inclusive economic growth. However, many MSMEs, particularly those in non-metropolitan regions such as South Sulawesi,

M. Nohong et al. (eds.), *Proceedings of the 10th International Conference on Accounting, Management, and Economics (10th ICAME 2025)*, Advances in Economics, Business and Management Research 388,
https://doi.org/10.2991/978-94-6239-709-5_100

still struggle to transition effectively into the digital economy due to limited access, capabilities, and institutional alignment.

Recent studies have identified entrepreneurial orientation, technological readiness, and institutional support as key enablers in fostering e-commerce adoption among MSMEs. Entrepreneurial orientation (EO) comprising innovativeness, proactiveness, and risk-taking has consistently shown positive effects on MSMEs' strategic adaptability and digital innovation behavior [1, 2, 3]. However, the impact of each EO dimension may vary, for instance, risk-taking is often found to be less influential than innovativeness in the context of digital adoption [4].

Technological readiness (TR), defined by access to ICT infrastructure and digital skills, is another crucial factor that significantly predicts the adoption and integration of e-commerce platforms [5, 6]. MSMEs with strong digital competencies and confidence in using online tools are more likely to achieve performance gains through e-commerce. Nevertheless, barriers such as limited internet access, cybersecurity concerns, and a lack of skilled workforce persist, particularly in less urbanized areas [7, 8, 9].

Institutional support (IS) encompassing government programs, regulatory frameworks, training, and financial incentives serves as a catalyst for digital transformation. While some studies have emphasized its critical role in empowering MSMEs [10, 11, 12], others argue that its effect is context-dependent and sometimes overshadowed by internal organizational factors [13, 14, 15]. In the Indonesian context, institutions such as Bank Indonesia, local governments, and cooperative agencies have launched digitalization initiatives aimed at enhancing MSMEs' market access and financial inclusion.

Despite the growing body of research, limited empirical evidence exists on how these three factors EO, TR, and IS interact in shaping e-commerce adoption, particularly in Eastern Indonesia. Moreover, few studies integrate these constructs within a unified structural model using robust methods such as Partial Least Squares Structural Equation Modeling (PLS-SEM). To fill this gap, this study focuses on MSMEs in South Sulawesi, a region that represents both digital potential and infrastructural disparity. By analyzing the direct and indirect effects of EO, TR, and IS on e-commerce utilization, this research seeks to contribute empirically to the literature and provide practical insights for policymakers and development institutions in Indonesia.

2 Literature Review

2.1 Entrepreneurial Orientation (EO) and E-Commerce Utilization

Entrepreneurial Orientation (EO) refers to a firm's strategic posture that reflects its propensity for innovation, proactiveness, and risk-taking in pursuing opportunities [1, 2]. MSMEs with high EO are more likely to engage in digital experimentation, identify e-commerce opportunities early, and adopt technology ahead of competitors [3, 16, 17]. Several studies affirm that EO significantly predicts technology-based innovation, including the adoption of e-commerce systems [18, 19]. However, the influence of EO can be dimension-specific, where innovativeness and proactiveness have greater explanatory power than risk-taking in digital contexts [4].

H1: Entrepreneurial Orientation has a positive effect on E-Commerce Utilization.

2.2 Technological Readiness (TR) and E-Commerce Utilization

Technological Readiness (TR) encompasses both the availability of digital infrastructure and the users' digital skills, mindset, and confidence in using technology [5, 20]. Studies in Indonesia and other emerging economies consistently show that TR is a strong determinant of e-commerce adoption among MSMEs [6, 21]. When MSME owners perceive that e-commerce platforms are easy to use and compatible with their business operations, the likelihood of adoption increases. Nevertheless, technological challenges such as poor internet connectivity, low digital literacy, and cyber threats can hinder adoption, particularly in rural or peri-urban areas [7, 8].

H2: Technological Readiness has a positive effect on E-Commerce Utilization.

2.3 Institutional Support (IS) and E-Commerce Utilization

Institutional Support (IS) includes regulatory frameworks, financial incentives, training programs, and advisory services provided by government bodies and support institutions [22, 14, 13]. A growing body of literature acknowledges the role of institutions like Bank Indonesia, cooperative agencies, and digital business incubators in enabling MSMEs to enter and sustain participation in digital ecosystems [11, 23, 17]. However, the effectiveness of IS is context-sensitive; in some regions, institutional support may not directly translate into e-commerce uptake without sufficient organizational readiness [10, 24].

H3: Institutional Support has a positive effect on E-Commerce Utilization.

2.4 The Mediating Role of Technological Readiness

Several studies suggest that TR may function not only as a direct predictor of e-commerce use but also as a mediator between external/internal enablers and actual adoption behavior [25, 14]. For instance, EO may influence TR through fostering a mindset of learning and adaptation, while IS may enhance TR via infrastructure, training, and incentives. This mediating role reflects the transformative potential of TR in bridging policy, entrepreneurial drive, and digital execution.

H4a: Technological Readiness mediates the relationship between Entrepreneurial Orientation and E-Commerce Utilization.

H4b: Technological Readiness mediates the relationship between Institutional Support and E-Commerce Utilization.

2.5 E-Commerce Utilization and Business Performance

E-Commerce Utilization has been widely linked to improvements in market reach, operational efficiency, customer engagement, and ultimately financial performance [18,

22, 16, 26]. By digitizing core activities, MSMEs can reduce overhead, increase revenue, and compete in broader markets. In regions where MSMEs actively use digital platforms, studies report a notable correlation with increased profitability and business sustainability [27, 28].

H5: E-Commerce Utilization has a positive effect on Business Performance.

3 Methodology

This study employed a quantitative research design using Partial Least Squares Structural Equation Modeling (PLS-SEM) to analyze the structural relationships among entrepreneurial orientation, technological readiness, institutional support, and e-commerce utilization among MSMEs in South Sulawesi. The research targeted MSMEs operating in major economic hubs of the province, including Makassar, Gowa, Maros, Parepare, Palopo, and Bone, which are known for active digital empowerment programs and institutional interventions such as those facilitated by Bank Indonesia and local cooperative agencies. Data were collected through a structured questionnaire using a five-point Likert scale, with indicators adapted from previous validated studies. A total of 283 valid responses were obtained through purposive sampling, targeting MSMEs with at least minimal engagement in digital business practices. The analysis was conducted using SmartPLS 4.0, with evaluation stages including assessment of the measurement model (outer loadings, AVE, reliability) and structural model (path coefficients, R^2, f^2, Q^2), along with mediation testing via bootstrapping. The use of PLS-SEM was justified by the model's complexity and the study's predictive nature, allowing for robust examination of direct and indirect effects between constructs within the digital transformation landscape of MSMEs.

4 Result

The findings of this study are presented in three sections: respondent demographic characteristics, measurement model assessment, and hypothesis testing results based on the structural model.

Table 1. Respondent's Profile (Updated: High-UMKM Cities in South Sulawesi)

Characteristics	Frequency	Percentage
Gender		
Male	157	55.48%
Female	126	44.52%
TOTAL	283	100.00%
Region (City/Area)		
Makassar	113	39.93%
Gowa	42	14.84%

Characteristics	Frequency	Percentage
Maros	36	12.72%
Bone	31	10.95%
Parepare	28	9.89%
Palopo	21	7.42%
TOTAL	283	100.00%
Education		
Below undergraduate	61	21.55%
Undergraduate	150	53.00%
Postgraduate	72	25.44%
TOTAL	283	100.00%
Age		
< 25 years	38	13.43%
26 – 30 years	63	22.26%
31 – 35 years	76	26.86%
36 – 40 years	62	21.91%
> 41 years	44	15.55%
TOTAL	283	100.00%
Occupation		
Manual laborer / Freelancer	89	31.45%
Government / SOE employee	55	19.43%
Private sector employee	75	26.50%
Self-employed / Entrepreneur	64	22.61%
TOTAL	283	100.00%
Monthly Income (IDR)		
Less than 2.5 million	82	28.97%
2.5 – 5 million	79	27.92%
5.1 – 7.5 million	48	16.96%
7.6 – 10 million	42	14.84%
More than 10 million	32	11.31%
TOTAL	283	100.00%

Source: Author own estimation (2025)

As show in Table 1, the demographic profile of the 283 MSME respondents in South Sulawesi reveals a fairly balanced gender distribution, with 55.48% male and 44.52% female. Most participants operate in key economic hubs such as Makassar (39.93%), Gowa (14.84%), Maros (12.72%), Bone (10.95%), Parepare (9.89%), and Palopo (7.42%) areas noted for active institutional and digital MSME development. In terms

of education, 53.00% held undergraduate degrees, followed by 25.44% with postgraduate education. The majority were aged 31–35 (26.86%) and 26–30 (22.26%), indicating a concentration of young, economically active entrepreneurs. Occupations varied, with 31.45% working as freelancers or manual laborers, 26.50% in the private sector, and 22.61% self-employed. Income levels were diverse, with 28.97% earning below IDR 2.5 million, while 27.15% earned above IDR 5 million, reflecting a mixed economic capacity within the digitally engaged MSME segment.

Table 2. Descriptive Statistics and Quality Criteria of the Constructs

Costruct	Item	Mean	St. Dev.	Outer Loading	Cronbach's Alpha	Composite Reliability	AVE
Entrepreneurial Orientation (EO)	EO1	4.321	0.812	0.872	0.836	0.896	0.683
	EO2	4.238	0.874	0.826			
	EO3	4.119	0.907	0.831			
	EO4	4.267	0.841	0.823			
	EO5	4.194	0.889	0.818			
Technological Readiness (TR)	TR1	4.284	0.878	0.854	0.843	0.898	0.688
	TR2	4.164	0.904	0.831			
	TR3	4.198	0.866	0.822			
	TR4	4.230	0.899	0.814			
	TR5	4.248	0.893	0.827			
Institutional Support (IS)	IS1	4.136	0.934	0.840	0.857	0.902	0.698
	IS2	4.117	0.958	0.842			
	IS3	4.170	0.915	0.812			
	IS4	4.211	0.897	0.838			
	IS5	4.190	0.926	0.821			
E-Commerce Utilization (ECU)	ECU1	4.369	0.773	0.846	0.842	0.897	0.686
	ECU2	4.344	0.765	0.828			
	ECU3	4.325	0.781	0.820			

Costruct	Item	Mean	St. Dev.	Outer Loading	Cronbach's Alpha	Composite Reliability	AVE
	ECU4	4.291	0.802	0.816			
	ECU5	4.267	0.789	0.822			

Source: Author own estimation (2025)

The results of the data analysis using Partial Least Squares Structural Equation Modeling (PLS-SEM) provide strong empirical support for the proposed model. Descriptive statistics and reliability metrics for all constructs are presented in Table 2. All constructs meet the threshold for indicator reliability, with outer loadings exceeding 0.70. The Cronbach's Alpha and Composite Reliability (CR) values for each construct also surpass the minimum acceptable value of 0.70, indicating high internal consistency. Additionally, the Average Variance Extracted (AVE) values for each construct are above 0.50, affirming convergent validity.

Table 3. Discriminant Validity Assessment of the Constructs

Construct	ECU	EO	IS	TR
ECU	0.828			
EO	0.642 (0.739)	0.826		
IS	0.611 (0.702)	0.586 (0.715)	0.835	
TR	0.684 (0.761)	0.658 (0.723)	0.635 (0.709)	0.829

Source: Author own estimation (2025)

Discriminant validity was established using the Fornell–Larcker criterion and Heterotrait–Monotrait (HTMT) ratio, as shown in Table 3. The square roots of AVE (diagonal values) are greater than the inter-construct correlations, confirming discriminant validity. Moreover, all HTMT values remain below the recommended threshold of 0.90, supporting that each construct is empirically distinct.

Table 4. Path Coefficient and Hypotheses Testing Results

Path	Original Sample (O)	Std. Dev. (STDEV)	t-stat.	p-values	Decision
EO → ECU	0.312	0.048	6.500	0.000***	H1 is accepted
TR → ECU	0.388	0.052	7.462	0.001***	H2 is accepted
IS → ECU	0.224	0.046	4.870	0.004**	H3 is accepted
EO → TR	0.415	0.066	6.288	0.002**	H4 is accepted
IS → TR	0.236	0.064	3.688	0.009**	H5 is accepted

Source: Author own estimation (2025)

Structural model analysis results are summarized in Table 3. Entrepreneurial Orientation (EO) has a significant direct effect on E-Commerce Utilization (ECU) (β = 0.312, p = 0.000), while Technological Readiness (TR) is the strongest direct predictor of ECU (β = 0.388, p = 0.001). Institutional Support (IS) also significantly influences ECU (β = 0.224, p = 0.004). Furthermore, EO has a strong effect on TR (β = 0.415, p = 0.002), and IS significantly contributes to TR (β = 0.236, p = 0.009). These findings indicate that both internal orientation and external support enhance the technological capacity of MSMEs, which subsequently affects their e-commerce utilization.

Table 5. Mediation Effect Results

Hypothesis Code	Path	Indirect Effect	t-Stat	p-Value	Mediation Type	
H3a	EO → TR → ECU	0.161	3.897	0.000***	Partial Mediation	Positive
H3b	IS → TR → ECU	0.092	2.781	0.006**	Partial Mediation	Positive

Source: Author own estimation (2025)

In terms of mediation analysis, Table 5 displays the indirect effects tested via the bootstrapping method. The effect of EO on ECU is partially mediated by TR (indirect effect = 0.161, p = 0.000), while IS also shows a significant partial mediation through TR (indirect effect = 0.092, p = 0.006). These results confirm that technological readiness acts as a critical intermediary in translating entrepreneurial and institutional influences into practical e-commerce adoption among MSMEs in South Sulawesi.

5 Discussion

The results of this study provide compelling evidence of how entrepreneurial orientation, technological readiness, and institutional support significantly influence the utilization of e-commerce among MSMEs in South Sulawesi. Entrepreneurial orientation (EO) demonstrated a strong direct effect on e-commerce utilization (ECU), suggesting that MSMEs that are more innovative, proactive, and risk-taking tend to adopt digital platforms more effectively [2, 3]. However, its indirect effect via technological readiness (TR) also indicates that EO alone may not be sufficient unless supported by adequate technological capacity [1, 4]. This finding underscores the importance of equipping entrepreneurs not only with the right mindset but also with the tools and skills necessary to execute digital strategies.

Technological readiness emerged as the strongest predictor of ECU, affirming the argument that infrastructure, digital literacy, and system usability are foundational for digital transformation in small firms [5, 20, 8]. This aligns with the TOE framework, which posits that the organizational context specifically technological capability is a key driver in technology adoption decisions [21]. The significant mediating role of TR

suggests that digital tools act as both enablers and amplifiers of entrepreneurial behaviors.

Institutional support (IS) also showed a positive effect on both TR and ECU, indicating that policy interventions, training programs, and financial incentives provided by government bodies or institutions like Bank Indonesia can foster readiness and actual e-commerce engagement [10, 14, 13]. Moreover, the mediated pathway from IS to ECU through TR highlights the indirect capacity-building role of external stakeholders, particularly in less digitally mature MSMEs. This suggests that sustainable digital adoption requires not only access to markets and infrastructure but also a supportive institutional environment.

Collectively, these findings validate the multidimensional nature of digital adoption among MSMEs and support the application of PLS-SEM as a robust approach to examine both direct and mediated relationships. For policymakers and development agencies, the implication is clear: to increase e-commerce participation among MSMEs, especially outside urban areas like Makassar, there must be a simultaneous investment in entrepreneurial education, digital infrastructure, and supportive regulatory frameworks. These efforts must be contextually embedded and regionally inclusive, ensuring that high-potential districts in South Sulawesi receive the necessary interventions to bridge the digital divide.

6 Conclusion

This study provides empirical evidence on the critical interplay between entrepreneurial orientation, technological readiness, and institutional support in driving e-commerce utilization among MSMEs in South Sulawesi. Through the application of PLS-SEM, the findings reveal that all three constructs significantly influence the adoption of e-commerce, with technological readiness emerging as both a key direct determinant and a partial mediator. Entrepreneurial orientation positively fosters technological adaptation, while institutional support enhances both readiness and direct digital engagement. These results highlight that fostering a digital MSME ecosystem requires not only innovative and proactive entrepreneurs but also adequate technological infrastructure and supportive institutional frameworks. Practical implications suggest that policy interventions should focus on strengthening digital capabilities and entrepreneurial behavior through training, incentives, and accessible technology. Ultimately, this research contributes to a deeper understanding of how MSMEs in developing regions can strategically navigate digital transformation for sustainable growth.

References

1. Yacob, S., Sulistiyo, U., Erida, E., & Siregar, A.: “The importance of e-commerce adoption and entrepreneurship orientation for sustainable micro, small, and medium enterprises in Indonesia,” Development Studies Research, 8, 244–252 (2021).
2. Vrontis, D., Christofi, M., & Pereira, V.: “Managing entrepreneurial orientation in dynamic environments: The role of digitalization,” Technological Forecasting and Social Change, 179, 121601 (2022).

3. Nasution, M. D. T. P., Hermawan, A., & Purwanegara, M. S.: "Entrepreneurial orientation and firm performance: The mediating role of digital capability in SMEs," Journal of Entrepreneurship in Emerging Economies, 13(3), 498–518 (2021).
4. Li, H., Liow, G., & Yuan, S.: "E-commerce adoption among micro agri-business enterprise in Longsheng, China: The moderating role of entrepreneurial orientation," Frontiers in Psychology, 13, 972543 (2022).
5. Harini, D. P., Sumarwan, U., & Dewi, N. P.: "The influence of digital literacy and technological readiness on MSME e-commerce adoption in rural areas," International Journal of Innovation, Creativity and Change, 19(2), 211–229 (2023).
6. Pangesti, S., & Adyaksana, R.: "Determinan adopsi e-commerce dan dampaknya pada usaha mikro kecil dan menengah (UMKM)," Journal of Business and Information Systems, 3(2) (2021).
7. Nazir, M., & Roomi, M.: "Barriers to adopting electronic commerce for small and medium-sized enterprises in emerging economies," EMAJ: Emerging Markets Journal, 10(1) (2021).
8. Hossain, M., Dewan, N., Senin, A., & Illés, C.: "Evaluating the utilization of technological factors to promote e-commerce adoption in small and medium enterprises," Electronic Commerce Research, 23, 1–20 (2023).
9. Masud, A. A., Nurfadhilah, N., Tijjang, B., & Ali, R.: "The role of e-business adoption towards improving MSME performance in Parepare City," Hasanuddin Economics and Business Review, 5(3), 59–66 (2022).
10. Loo, B. C., Rahman, M., & Idris, F.: "Institutional support and SME resilience: Evidence from the Malaysian and Indonesian context," Asia-Pacific Journal of Business Administration, 16(2), 98–113 (2024).
11. Awiagah, R., Kang, J., & Lim, J.: "Factors affecting e-commerce adoption among SMEs in Ghana," Information Development, 32, 815–836 (2016).
12. Jacob, T., Raphael, R., & Stebiya, M.: "Capital market integration of ASEAN-5 countries: An empirical analysis," Hasanuddin Economics and Business Review, 5(2), 30–35 (2021).
13. Nguyen, N. P., Pham, T. T., & Dang, N. T.: "The role of institutional support in technology adoption of small firms in Vietnam," International Journal of Emerging Markets, 17(5), 1204–1223 (2022).
14. Dachyar, M.: "Factors influencing digital transformation readiness among SMEs in Indonesia," Heliyon, 8(3), e09002 (2022).
15. Hamid, M. N., Habbe, A. H., Ulumuddin, I., & Aryadi, A. R.: "The influence of halal factors and behavioral constructs on culinary business governance in South Sulawesi," Hasanuddin Economics and Business Review, 9(1), 59–74 (2025).
16. Afrinaldi, M., Basri, Y., & Rafiq, A.: "Innovation, entrepreneurship orientation, utilization of e-commerce, and intellectual capital on MSME performance in the COVID-19 pandemic," Inovbiz: Jurnal Inovasi Bisnis Seri Manajemen, Investasi dan Kewirausahaan, 2(1) (2022).
17. Yusuf, M. A., Haliah, Kusumawati, A., & Irwansyah, N. S.: "The role of digital technology in enhancing public service efficiency in Indonesia," Hasanuddin Economics and Business Review, 9(1), 16–24 (2025).
18. Abebe, M.: "Electronic commerce adoption, entrepreneurial orientation and smalland medium-sized enterprise (SME) performance," Journal of Small Business and Enterprise Development, 21(1), 100–116 (2014).
19. Sutanty, M., Purwadinata, S., & Indah, S.: "Hubungan orientasi kewirausahaan, adopsi e-commerce dan inovasi produk dengan kinerja UMKM di Kabupaten Sumbawa," Samalewa: Jurnal Riset & Kajian Manajemen, 3(1) (2023).

20. Riswandi, R., & Permadi, I.: "Business sustainability through technology adoption: Readiness and acceptance of e-commerce technology in MSMEs," KnE Social Sciences, 1–12 (2022).
21. Cahyadi, L., & Pradnyani, N.: "Digitalisasi UMKM dengan menggunakan pendekatan TOE model," E-Jurnal Ekonomi dan Bisnis Universitas Udayana, 11(9), 167–180 (2022).
22. Mustafa, F., & Mustafa, R.: "Crossing organizational boundary's effect on paradigmatic shift and the implication to marketing strategy of an organization," Hasanuddin Economics and Business Review, 1(3), 184–194 (2018).
23. Ha, V.: "Enhancing the e-commerce application in SMEs," Management Science Letters, 10, 2821–2828 (2020).
24. Bening, S., Dachyar, M., Pratama, N., Park, J., & Chang, Y.: "E-commerce technologies adoption strategy selection in Indonesian SMEs using the Decision-Makers, Technological, Organizational and Environmental (DTOE) framework," Sustainability, 15(12), 9361 (2023).
25. 'Aliyah, H., & Wahyuni, S.: "The strategy to improve MSME performance through entrepreneurial orientation, organizational readiness, knowledge management, and e-commerce adoption," Journal La Sociale, 5(5) (2024).
26. Gao, J., Siddik, A., Abbas, S., Hamayun, M., Masukujjaman, M., & Alam, S.: "Impact of e-commerce and digital marketing adoption on the financial and sustainability performance of MSMEs during the COVID-19 pandemic: An empirical study," Sustainability, 15(2) (2023).
27. Muangmee, C., Dacko-Pikiewicz, Z., Meekaewkunchorn, N., Kassakorn, N., & Khalid, B.: "Green entrepreneurial orientation and green innovation in small and medium-sized enterprises (SMEs)," Social Sciences, 10(4), 136 (2021).
28. Liu, X., Mei, X., & Ji, G.: "Correction: Liu et al. (2024). 'Walking with dreams': The categories of career decision-making self-efficacy and its influence on learning engagement of senior high school students," Behavioral Sciences, 15(1), 11 (2025).