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Online Marketing Readiness of MSMEs in Indonesia: A Perspective of Technology Organizational Environmental Framework

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ABSTRACT

Micro, Small, and Medium-sized Enterprises (MSMEs) play a crucial role in the economic landscape of tourism areas, offering collective services that enhance tourist experiences and convenience at destinations. One key effort to promote tourism is enhancing the technological readiness of MSMEs. This study aims to evaluate the preparedness of MSMEs to adopt e-commerce technology. Data was gathered through interviews and questionnaires distributed randomly to 184 business operators. The research utilized the Technology Organizational Environmental (TOE) framework, encompassing ten indicators identified from various sources. Data analysis was conducted using Structural Equation Modeling (SEM) with four hypotheses. The findings reveal that both organizational readiness and external environmental support have a positive impact on technology adoption readiness. Furthermore, organizational readiness significantly mediates the relationship between environmental support and technological readiness. Therefore, it is essential to develop the organizational readiness of MSMEs to facilitate the adoption of e-commerce technology.

ABSTRAK

Usaha Mikro, Kecil, dan Menengah (UMKM) memainkan peran krusial dalam lanskap ekonomi daerah wisata, menawarkan layanan kolektif yang meningkatkan pengalaman dan kenyamanan wisatawan di destinasi wisata. Salah satu upaya utama untuk mempromosikan pariwisata adalah meningkatkan kesiapan teknologi UMKM. Studi ini bertujuan untuk mengevaluasi kesiapan UMKM dalam mengadopsi teknologi e-commerce. Data dikumpulkan melalui wawancara dan kuesioner yang didistribusikan secara acak kepada 184 pelaku usaha. Penelitian ini menggunakan kerangka Technology Organizational Environmental (TOE) yang mencakup sepuluh indikator yang diidentifikasi dari berbagai sumber. Analisis data dilakukan menggunakan Structural Equation Modeling (SEM) dengan empat hipotesis. Temuan penelitian mengungkapkan bahwa kesiapan organisasi dan dukungan lingkungan eksternal memiliki dampak positif terhadap kesiapan adopsi teknologi. Selain itu, kesiapan organisasi secara signifikan memediasi hubungan antara dukungan lingkungan dan kesiapan teknologi. Oleh karena itu, penting untuk mengembangkan kesiapan organisasi UMKM guna memfasilitasi adopsi teknologi e-commerce.

1. INTRODUCTION

The tourism industry comprises various economic entities that aim to create and provide all necessary products for individuals living in or visiting tourism destinations. These destinations require the organization of economic activities to meet the diverse needs of visitors. The participating economic entities focus their efforts on contributing to the tourism offerings, including product scope, product type, and work processes. Micro, Small, and Medium-sized Enterprises (MSMEs) play a crucial role in supporting tourism destinations by providing essential services such as food, beverages, souvenirs, and other amenities. The success and promotion of the tourism industry rely on the readiness of MSMEs to adapt to changes in business strategies. The development of MSMEs is closely linked to the growth of tourism products and destinations, collectively

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creating tailored offers for targeted consumers. According to Deyshappriya and Nawarathna (2020), SMEs involved in tourism tend to achieve higher profits and productivity.

On the other hand, information technology is believed to enhance collaboration and efficiency, add product value, and improve supply chain performance. As a commercial medium, it has encouraged many companies to adopt innovative marketing methods, a trend intensified by the COVID-19 pandemic. Arifin (2022) noted that MSMEs able to survive were those that transitioned to e-commerce marketing. The use of e-commerce technology directly impacts businesses by automating processes such as product distribution, expanding marketing reach (Adebayo, 2019), improving after-sales service, facilitating communication with consumers, and managing inventory. Despite these benefits, e-commerce adoption among MSMEs remains low. According to BPS e-commerce statistics from June 2021, only 29 percent of the 8.2 million businesses surveyed, including MSMEs, have utilized e-commerce (Sugihartati, 2023). E-commerce is still predominantly used by large business units (Religia et al., 2020). MSMEs face several challenges in adopting e-commerce, including concerns about the security of digital transactions and difficulties in the learning process (Arifin, 2022). Entrepreneurial competence does not appear to significantly moderate the relationship between e-commerce use and MSME performance (Hussain et al., 2022). MSMEs in mountain, beach, and lake tourism areas face significant obstacles, particularly regarding infrastructure and adapting to technology (Arlina et al., 2018).

This description highlights that the readiness to adopt e-commerce varies among communities and regions based on their unique characteristics. However, evaluating technology readiness at the organizational level of MSMEs can be achieved using information obtained at the individual level. Individual behavioral attributes can be influenced differently depending on the area's characteristics, community, situation, and MSME context, including the socio-cultural traits of the ecotourism community. This research aims to understand the readiness of MSMEs in the Pesawaran Regency ecotourism area to adopt e-commerce. This focus is essential as no previous studies have specifically addressed this area. Additionally, this study is crucial for supporting the planning and development of the tourism industry and MSMEs.

2. THEORETICAL FRAMEWORK AND HYPOTHESES

2.1. TOE Framework

Our study refers to the Technology Organizational Environmental (TOE) model proposed by Tornatzky and Fleischer (1990). The TOE framework is widely used by researchers to explain technology adoption readiness, as seen in the works of Tze and Caroline (2004), Baker (2011), Aboelmaged (2014), Awa et al. (2016), Religia et al. (2020), Citra Yayu and Bertha (2021), and Tran and Nguyen (2022). This theoretical framework in the field of information systems explains how the adoption and use of new technology can be influenced by various factors. The three main components of the TOE model are technology, organization, and environment. The technological context includes both internal and external technologies relevant to the company (Oliveira and Martins, 2011) and considers the characteristics of the technology itself, such as functionality, complexity, compatibility with existing systems, and ease of use (Tran and Nguyen, 2022; Awa et al., 2016). The organizational context refers to the internal environment of an organization where the technology is used, including factors like organizational size, structure, culture, and resources. The environmental context encompasses the external environment in which a company operates, including industry-specific factors, competitors, and relationships with the government (Tornatzky and Fleischer, 1990). It also includes market conditions and social and cultural norms.

The TOE framework is a valuable tool for understanding the complex interactions between technology, organizations, and the environment. It has a strong theoretical foundation and consistent empirical support, though the specific factors identified in the three contexts may vary across studies (Oliveira and Martins, 2011). Awa et al. (2017) confirmed that the TOE framework is suitable for organizational-level analysis. However, Li (2020) demonstrated that there is equivalence between the behavioral model and the TOE framework when individual perceptions are considered. This research utilizes the TOE framework to examine the key motivators and factors influencing the adoption of e-commerce technology. The focus is on three variables: technology readiness, organizational readiness, and environmental support, as outlined in the TOE framework (Figure 1).

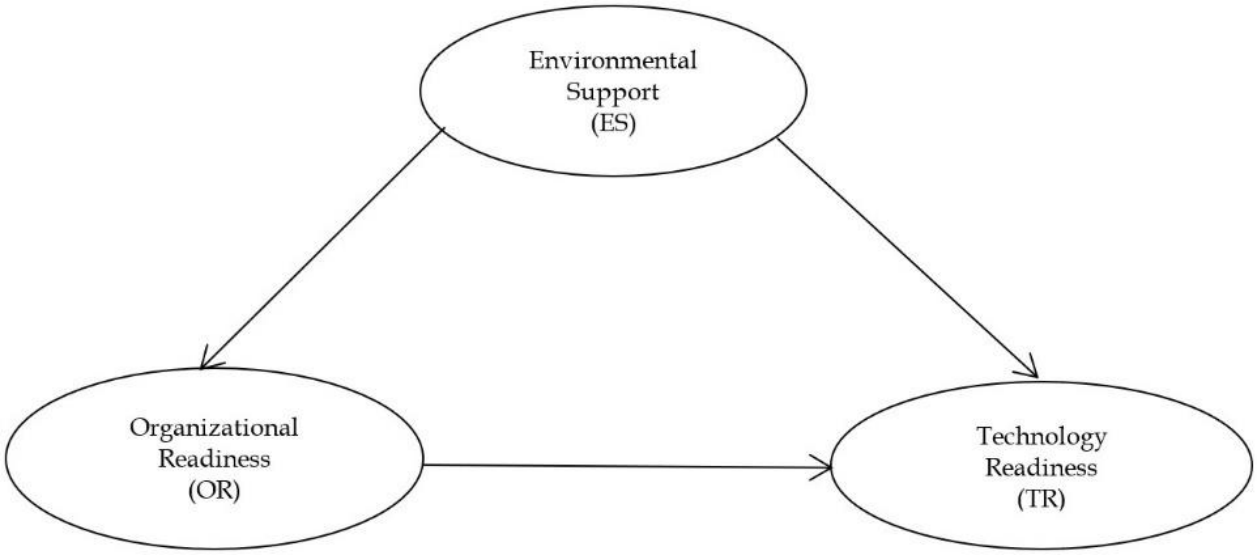

Figure 1. Research framework

2.2. Organizational Context, Environmental Support, and Technological Readiness

Technological readiness refers to the mindset that influences the tendency to use or reject new technologies to achieve goals. It encompasses both currently used technologies and those available in the market. MSMEs can adopt e-commerce technologies that enable them to grow and adapt. In the organizational context, a key motivator for adopting e-commerce technology is management's attitude, particularly the promise of relative benefits for the organization (Tran and Nguyen, 2022). While MSMEs are often driven by perceived direct benefits (Ajmal et al., 2017), perceived relative advantages, such as efficiency and cost savings, also play a significant role (Ghobakhloo and Arias, 2011; Zhang, 2015). Additionally, if the e-commerce application is straightforward, the likelihood of adoption increases. Tze and Caroline (2004) and Tonita and Ruyter (2004) agreed that ease of use is crucial in the early stages of user experience with new technology or systems. Therefore, the knowledge and expertise of MSME actors in information technology are essential for the organization's readiness to adopt e-commerce technology. The rapid advancements in information technology must be matched by corresponding changes in the expertise of MSME actors (Hussain et al., 2022). The ability to update employees' technological knowledge and skills regarding technological innovation affects organizational strategy (Religia et al., 2020). Moreover, intellectual capital and innovation significantly impact organizational performance (Abu Muna et al., 2021).

E-commerce offers swift access to information and quick responses to buyers, making accurate information crucial for maintaining customer satisfaction. Organizational readiness in inventory management is essential to maximizing the benefits of e-commerce technology (Arlina et al., 2018). Effective inventory management is critical for implementing e-commerce since errors can provide false information to consumers. Additionally, e-commerce enhances opportunities for business actors to personalize their offerings (Angga et al., 2022) and remain dynamic in their activities. Business personalization can be tailored to each customer based on data collected from e-commerce interactions. This personalization attracts attention, generates interest, enhances customer satisfaction, and helps build a personal brand. Therefore, we propose the following hypothesis:

H1. Organizational readiness affects technology adoption readiness.

MSMEs are inclined to adopt e-commerce technology when it aligns with their business characteristics. Misalignment with organizational strategies and processes can impede this adoption (Ghobakhloo & Arias, 2011; Awa et al., 2016). Perceived compatibility has a significant direct effect on technology adoption. Therefore, existing technologies must be innovatively integrated to create solutions applicable to MSMEs (Baker, 2011). In this context, Berranger et al. (2001) highlight the crucial role of change agents. These agents, when embedded in local communities, significantly impact MSMEs by providing knowledge and information about e-commerce, thus promoting its adoption. External change agents such as vendors, government agencies, and educational institutions play a vital role. They instill confidence in small businesses to adopt e-

commerce (Tze & Caroline, 2004; Citra & Bertha, 2021), and support from technology vendors further facilitates this adoption (Ghobakhloo & Arias, 2011). Another important factor in the environmental context is the influence of trading partners. The pressure exerted by these partners affects MSME e-commerce adoption, with the degree of pressure depending on the level of interdependence (Tze & Caroline, 2004). Additionally, Tran et al. (2022) high-light the positive role of perceived trends, considering them a crucial factor in the selection and implementation of innovation. Trends in business strategies adopted by dominant players in the value chain can pressure MSMEs in their strategic decision-making.

In addition to ease of use, benefits, and enjoyment, exogenous factors such as consumer traits, product characteristics, previous online shopping experiences, and trust also influence consumer behavior in online shopping (Tonita & Ruyter, 2004). Understanding consumer behavior is crucial for marketing success. Basic knowledge of consumer behavior is essential for effectively implementing e-commerce. Businesses can leverage e-commerce to analyze consumer behavior based on collected sales data and implement appropriate strategies, such as price discount policies, loyalty rewards, consumer interest analysis, and product recommendations (Arlina et al., 2018). This review leads to the following hypothesis:

H2. External environmental support affects technology adoption readiness.

The increasing number of internet users in Indonesia presents a significant opportunity for business organizations to adopt e-commerce technology. MSMEs operate in an environment where their trading partners, including suppliers, distributors, and competitors, are already using e-commerce technology. This pressure from trading partners significantly influences companies to adopt e-commerce (Religia et al., 2020). Competition also positively affects the initiation and adoption of technology (Zhu & Xu, 2006). The percentage of competitors adopting e-commerce in an industry is directly correlated with the motivation of MSMEs to do the same. MSMEs are also influenced by the e-business strategies of dominant players in the value chain (Tze & Caroline, 2004). Additionally, when business owners are educated about the uses and benefits of e-commerce applications, organizations are more likely to adopt the technology, gain confidence, and reduce risk (Citra & Bertha, 2021). Expertise and innovation can also emerge from the influence of external change agents (Awa, 2016). Therefore, we propose the following hypothesis:

H3. External environmental support affects organizational readiness.

Organizations strive to build a competitive advantage, expand their marketing reach, and succeed in the marketplace. The growing use of e-commerce technology by target consumers, particularly in the tourism sector, which offers easy transactions and reliable accommodation information, has driven MSMEs to adopt e-commerce. Additionally, the weak market position of small companies and the nature of the technology network itself contribute to this adoption (Arsalan Hussain et al., 2022). This indicates a need to adapt to competitors' technologies and align with supply chain partners. Consequently, we propose the following hypothesis:

H4. Organizational readiness mediates the effects of environmental support and technological readiness.

3. RESEARCH METHOD

The population for this research consists of MSMEs in the tourism area of Pesawaran Regency, Lampung Province. The sample size determination for applying the Structural Equation Model (SEM) follows Hair et al. (2019), which recommends a sample size 5-10 times the number of indicators. In this study, 184 respondents were randomly selected from the Pesawaran tourist area using the stratified random sampling method. First, 12 tourist attractions in Pesawaran were randomly selected: Mutun Beach, Tangkil Island, Pahawang Island, Tegal, Klara Beach, Ketapang, Ringgung, Bensam, Quin Artha, Putra Mutun, Randu Kembar, and Kendeng Hill. From each tourist spot, 16 to 20 MSME owners were randomly chosen as respondents. Data collection methods included questionnaires and interviews conducted during Focus Group Discussions (FGDs). Questionnaires were distributed directly at tourist attractions and during four FGD sessions. These sessions were attended by MSME owners from the Teluk Pandan sub-district and surrounding areas. Data collection was conducted in September 2022.

The measurement of variables in this study utilizes several indicators adopted from previous research and modified to align with the research objectives. The latent variable of technology readiness was measured using three indicators, organizational readiness with four indicators, and environmental support with three indicators. All variables were measured using a Likert scale ranging from "strongly disagree (1)" to "strongly agree (5)." The indicators for each variable are detailed in Table 1. The questionnaire items are based on the specified indicators. The technology readiness variable includes three items: (1) I find digital

Table 1. Operational definition of variables

Construct	Indicator	Reference
Technology Readiness	Perceived Relative Advantage	(Zhang, 2015), (Fatima Ajmal, et al., 2017)
	Perceived Compatibility	(Hart O. Awa, at al 2016), (Niken Larasati, 2017), (Baker, 2011), (Tran H.Nguyen et al, 2022).
	Perceived Complexity	(Citra Yayu P & Bertha M, 2021)
Organization readiness	Knowledge and Expertise in e-Commerce within the Company	(Religia et al., 2020) (Arsalan Hussain,et al., 2022)
	Management's Attitude towards e-Commerce	(Tze.LT, Caroline.C, 2004), (Tran H.Nguyen, at al, 2022).
	Inventory management	(Arlina, et al., 2018)
	Business personalization	(Angga Febrian; Dhiona Ayu Nani; Lia Febria Lina; Nurul Husna, 2022)
Environmental support	External Change Agent	(Berranger Pascale de; David Tucker; Laurie Jones, 2001), (Akbar,et al, 2022) (Citra Yayu P & Bertha M, 2021)
	Pressure from trading partners	(Zhu et al., 2006), (Akbar et al., 2022)
	Consumer behavior	(Ton˜ ita P & Ruyter, 2004), (Arlina, et al., 2018)

technology provides direct benefits for the progress of my business, (2) I feel that the use of digital technology is in line with my business marketing strategy, and (3) I fully understand that digital technology is not too complicated to use in my business. For the environmental support construct, the items are: (1) I find it easier to build relationships with business partners by using digital technology, (2) Knowledge assistance or applications provided by other parties have encouraged me to use digital technology, and (3) I feel that my business customers prefer to transact online. For the organizational context construct, the four questionnaire items are: (1) I realize that knowledge and experience of digital technology are very important in using this technology, (2) I have a great interest in using digital technology to advance my business, (3) I always check inventory before bidding online, and (4) I find it easier to build special relationships with consumers through online services.

The data analysis method used in this study is the Partial Least Square Structural Equation Model (PLS-SEM), often referred to as soft modeling. PLS-SEM allows for the modeling of structural equations with relatively small sample sizes and does not require multivariate normal assumptions. According to Villalva (2021), PLS is an alternative method based on variance structure through partial least squares analysis. It is particularly suitable when research involves latent variables and aims to explain and predict complex models. Researchers can use either reflective or formative indicators; this study uses reflective indicators. Data processing was conducted using Smart PLS software version 3.0. The estimation of the PLS model is based on two evaluations: the evaluation of the measurement model (outer model), which tests the validity and reliability of the data, and the evaluation of the structural model (inner model), which tests the causality between latent variables.

4. DATA ANALYSIS AND DISCUSSION

The demographic characteristics of the respondents are presented in Table 2. The majority of respondents are women (76.2%) involved in culinary businesses (70.2%) and have an average monthly income of less than three million rupiahs (59.8%).

The evaluation of the measurement model aims to ensure that the proposed variable metrics are effective and suitable for measuring the research variables. This evaluation involves testing the validity and reliability of the measurement instruments. To assess validity, we use both convergent and discriminant validity. Convergent validity is evaluated by checking if outer loading values exceed 0.7 and the Average Variance Extracted (AVE) is greater than 0.5 for reflective indicators (Hair et al., 2019). Discriminant validity measures how well variables correlate with themselves compared to other variables, using the Fornell-Larcker matrix. In this matrix, the diagonal values should be greater than the off-diagonal values. For reliability, we assess composite reliability and Cronbach's alpha. The criterion for Composite Reliability is greater

Table 2. Characteristics of respondents

Characteristics	Percentage (%)
Type of business	
Culinary	70.6
Crossing transportation	9.8
Souvenirs	15.2
Tour guide	5.4
Gender	
Male	24.3
Female	75.7
Income/ month	
< 3 million	59.8
3-5 million	22.8
> 5 million	17.4

Table 3. Validity and reliability test results

Construct	Indicator	Outer Loadings	Cronbach's Alpha	Composite Reliability	AVE	Status	R- Square
Technology Readiness (TR)	TA1	0.891	0.768	0.851	0.657	Valid	0.405
	TA2	0.743				Valid	
	TA3	0.79				Valid	
Organization readiness (OR)	OR1	0.753	0.739	0.795	0.593	Valid	0.711
	OR2	0.718				Valid	
	OR3	0724				Valid	
	OR4	0.726				Valid	
Environmental support (ES)	ES1	0.702	0.655	0.753	0.502	Valid	
	ES2	0.701				Valid	
	ES3	0.793				Valid	

Table 4. Heterotrait-monotrait (HTMT)

Variable	Technology readiness	Environment support	Organization readiness
Technology readiness	-		
Environmental support	0.738	-	
Organization readiness	0.782	0.801	-

Table 5. Hypothesis test results

Hypothesis	Direct & Indirect Effect	Coefficient	t-statistics	p-value	Decision
H1	OR →TR	0.328	2.372	0.018	Accepted
H2	ES→ TR	0.323	2.325	0.02	Accepted
H3	ES → OR	0.843	27.274	0.000	Accepted
H4	ES→OR→TR	0.276	2.403	0.017	Accepted

Note: ES= Environmental support; OR= Organizational readiness; TR= Technology readiness

than 0.70, and for Cronbach's alpha, a value above 0.7 is preferred, although a value above 0.6 is still acceptable (Hair et al., 2019). The results of the validity and reliability tests are presented in Table 3, which shows that all indicators are valid. The results of the discriminant validity test, using the heterotrait-monotrait (HTMT) ratio, are shown in Table 4. HTMT values close to 1 suggest a lack of discriminant validity. However, the values presented in Table 4 are below the conservative threshold of 0.85, indicating that each construct is distinct and different from the other constructs. This confirms that the measurement model is both valid and reliable for assessing the latent variables in this study.

The structural evaluation of the model for hypothesis testing is detailed in Table 5. The test of the effect of organizational readiness on technology readiness (hypothesis 1) produced significant results, with a p-value of 0.018, indicating a positive relationship with a magnitude of 0.328. This finding aligns with Aboelmaged (2014), who suggests that adoption strategies should focus on enhancing employees' technical knowledge and skills while maintaining potential benefits despite challenges associated with technology. Additionally, Tonita and Ruyter (2004) recommend that in the initial stages of introducing e-commerce technology, the technology should be user-friendly. Lack of awareness about

the benefits and insufficient knowledge can impede effective technology adoption. Therefore, the technological competence of MSME organizations is a crucial factor in their readiness for technology adoption.

Organizational readiness is also demonstrated through effective inventory management, which helps prevent misinformation and enhances customer satisfaction. Interviews reveal that MSMEs in Pesawaran have implemented inventory management practices and personalized their services. For instance, a respondent from the culinary sector mentioned that they frequently handle pre-orders and avoid accepting products for sale without prior knowledge of their quality and taste. Business owners prioritize customer satisfaction by consistently maintaining high quality, ensuring product availability, and catering to specific consumer preferences. They also respond to consumer behavior by offering discounts at certain times, believing that discounts do not compromise product quality (Makmur, 2022). The use of information technology facilitates these practices, further encouraging their interest in adopting e-commerce technology.

Testing hypothesis 2 reveals a positive influence of environmental support on technology readiness, with a p-value of 0.020 and a coefficient of 0.323. This finding aligns with Akbar et al. (2022), who found that government support significantly positively impacts e-commerce adoption in SMEs, with the government acting as a change agent. Interview results indicate that MSMEs in the Pesawaran tourism area have seen substantial benefits from technology adoption, evidenced by the fact that "the portion of online sales exceeds direct sales on-site." Additionally, delivery services integrated with social media networks have further encouraged SMEs to adopt e-commerce technology. Beyond delivery services, volunteers also support these businesses by facilitating their use of information technology.

The results of testing hypothesis 3 indicate a positive and significant effect of environmental support on organizational readiness, with a p-value of 0.000 and a coefficient of 0.843. Environmental support, such as the role of partners in the value chain and external change agents, significantly influences management's attitude towards adopting new technologies. Environmental support enhances intellectual capital and fosters creative work behavior, which in turn positively impacts the business performance of SMEs (Abu Muna et al., 2021). Consistent with Berranger et al. (2001), successful change agents build trust and demonstrate an understanding of business characteristics. The preference of consumers or tourists for online shopping motivates SMEs to improve their technological readiness by offering a variety of culinary options.

Environmental support for technology readiness can be partially mediated by organizational readiness (hypothesis 4), as indicated by a p-value of 0.017 and a coefficient of 0.273. Organizational readiness helps mediate the positive relationship between environmental support and the technological readiness of SMEs. A well-structured and agile MSME organization is more easily influenced by its environment. Environmental support can enhance organizational awareness and attitudes towards new technologies, particularly through the role of change agents who demonstrate the benefits of technology, guide its adoption, and align it with the business's characteristics. This fosters a positive attitude in organizational management towards developing technology readiness. Consistent with Najib et al. (2022), it is important to raise awareness among MSME owners to encourage e-commerce adoption among peers. Wagner (2003) also notes that managers interested in leveraging e-commerce are more likely to adopt it. Change agents can help reduce the perceived complexity and improve the perceived fit of technology, as Baker (2011) suggests, by supporting knowledge and innovation in MSMEs. When organizations perceive strong environmental support, they are better equipped to overcome barriers and are more motivated to explore and adopt new technologies. Interviews reveal that MSMEs may reject technology if they believe it does not fit their business needs. For example, a respondent from a souvenir business indicated that e-commerce technology seemed unsuitable, as prospective customers often only engaged in inquiries without making purchases, raising doubts about product authenticity.

5. CONCLUSION, IMPLICATION, SUGGESTION, AND LIMITATIONS

Our research makes several significant contributions to the literature on technology readiness. First, it demonstrates that environmental support directly impacts organizational readiness more strongly than it

does technology readiness. Key elements of environmental support—such as change agents, consumer behavior, and business partners—play a crucial role in enhancing organizational readiness for adopting e-commerce technology. This includes building knowledge, gaining experience, shaping management attitudes towards technological change, improving inventory management, and personalizing business operations. Second, organizational readiness mediates the effect of environmental support on technology readiness. MSME organizations that receive support from change agents feel better prepared to adopt new technologies. Change agents, as part of the external environment, help alleviate perceived dissonance and complexity while showcasing the direct and indirect benefits of technology adoption.

This research advances the literature on technology readiness for MSMEs in the tourism sector and addresses the gap between MSME organizational readiness and the impact of environmental support. The study finds that technology readiness in MSMEs is significantly influenced by both technological and organizational factors, including infrastructure, technological competence, and the anticipated benefits and challenges of technology adoption. From a managerial perspective, this implies that developing technology solutions for MSMEs should focus on enhancing organizational readiness. This involves improving technological infrastructure and increasing the technological competence of MSME stakeholders.

Our research has several limitations. First, the respondents are primarily from natural tourism areas, and the findings might differ in urban or artificial tourism settings. Second, the respondents' businesses are predominantly in the culinary sector, which limits the diversity of the data. A broader study including a wider range of businesses could yield more comprehensive insights. Future research could benefit from including a more varied sample of respondents on a larger scale, potentially covering both business-to-consumer and customer segments. This would provide a more complete understanding of technology readiness in MSMEs.

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