

E-COMMERCE ADOPTION AND THE ENHANCEMENT OF MSME COMPETITIVENESS IN INDONESIA

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ABSTRACT

Digital transformation has positioned e-commerce as a strategic instrument for micro, small, and medium-sized enterprises (MSMEs) to expand markets, improve efficiency, and sustain business continuity. This article synthesizes evidence on the role of e-commerce adoption in enhancing the competitiveness of Indonesian MSMEs. A narrative review was conducted on 17 Scopus-indexed full-text articles. The initial search identified 42 documents, which were narrowed to 31 articles, 28 studies with an Indonesian context, 22 open-access articles, and 17 downloadable articles included in the analysis. The literature was examined according to research design, business context, adoption drivers and barriers, and consequences for performance and competitiveness. The synthesis indicates that e-commerce adoption is generally associated with wider market reach, higher sales, operational efficiency, productivity, customer engagement, and sustainability performance. These benefits, however, are conditional upon technological readiness, management support, digital competence, entrepreneurial and market orientation, financial literacy, product innovation, and the integration of social media and live-streaming. External conditions—particularly infrastructure, platform regulation, certification, and fair competition—also shape whether digital access becomes a competitive advantage. E-commerce should therefore be understood as a strategic capability rather than merely a sales channel. Empowerment policies should move beyond counting MSMEs onboarded onto platforms and focus on the depth of technology integration, analytics, differentiation, and digital ecosystem governance.

Keywords: e-commerce adoption; competitiveness; business performance; MSMEs; digital transformation; Indonesia

ABSTRAK

Transformasi digital telah menempatkan e-commerce sebagai instrumen strategis bagi usaha mikro, kecil, dan menengah (UMKM) untuk memperluas pasar, meningkatkan efisiensi, dan menjaga keberlanjutan usaha. Artikel ini menyintesis bukti mengenai peran adopsi e-commerce dalam meningkatkan daya saing UMKM Indonesia. Tinjauan naratif dilakukan terhadap 17 artikel teks lengkap yang terindeks Scopus. Penelusuran awal menemukan 42 dokumen, kemudian disaring menjadi 31 artikel, 28 studi berkonteks Indonesia, 22 artikel akses terbuka, dan 17 artikel yang dapat diunduh serta dianalisis. Literatur ditelaah berdasarkan desain penelitian, konteks usaha, pendorong dan hambatan adopsi, serta konsekuensinya terhadap kinerja dan daya saing. Hasil sintesis menunjukkan bahwa adopsi e-commerce umumnya berkaitan dengan perluasan jangkauan pasar, peningkatan penjualan, efisiensi operasional, produktivitas, keterlibatan pelanggan, dan kinerja keberlanjutan. Manfaat tersebut bergantung pada kesiapan teknologi, dukungan manajemen, kompetensi digital, orientasi kewirausahaan dan pasar, literasi keuangan, inovasi produk, serta integrasi media sosial dan siaran langsung. Kondisi

eksternal, khususnya infrastruktur, regulasi platform, sertifikasi, dan persaingan yang adil, turut menentukan apakah akses digital dapat menjadi keunggulan bersaing. Oleh karena itu, e-commerce perlu dipahami sebagai kapabilitas strategis, bukan sekadar saluran penjualan.

Kata Kunci: adopsi e-commerce, daya saing, kinerja bisnis, UMKM, transformasi digital, Indonesia

A. Introduction

Changes in consumer behavior, the expansion of online marketplaces, and the growing use of social media have transformed how MSMEs create, deliver, and capture value. For Indonesian MSMEs, these changes are particularly important because limited capital, labor, distribution reach, and promotional capacity often constrain business expansion. E-commerce offers opportunities to alleviate some of these constraints through relatively low-cost promotion, transactions beyond geographical boundaries, faster customer communication, and the use of digital data.

Although access to digital platforms has become increasingly open, e-commerce adoption does not automatically lead to success. Rahayu and Day (2017) showed that Indonesian MSMEs in the early period of their study primarily relied on e-mail and simple websites. The benefits increased with the depth of adoption.

This finding suggests that merely having an account on a marketplace is insufficient; strategic value emerges when technology is integrated into marketing, transactions, procurement, customer service, and internal processes.

Indonesian research has subsequently moved from examining adoption levels to analyzing organizational, individual, entrepreneurial, and environmental factors. Several studies have linked e-commerce to sales, operational, financial, marketing, and sustainability performance. However, competitiveness is rarely measured directly. Many articles use business performance as the outcome variable and assume that improved performance strengthens competitive position. A critical synthesis is therefore needed to distinguish short-term operational benefits from more sustainable competitive advantage.

This article addresses three questions. First, what are the

characteristics of research on e-commerce adoption among Indonesian MSMEs across the 17 selected articles? Second, through what mechanisms does e-commerce contribute to MSME performance and competitiveness? Third, which internal and external conditions strengthen or constrain this contribution? The answers are expected to provide a conceptual basis for future research and practical recommendations for MSME owners, government agencies, and platform operators.

B. Method

This study employed a narrative review approach. This approach was selected because the reviewed articles varied in research design, unit of analysis, business sector, variables, and measurement methods, making them unsuitable for statistical integration through meta-analysis. A narrative review enables thematic synthesis and critical evaluation of recurring findings, contextual differences, and methodological limitations.

The literature search was conducted in the Scopus database using terms representing four main concepts: e-commerce, adoption or

use, MSMEs/SMEs, and competitiveness or performance, with Indonesia as the geographical context. The Boolean search included terms such as “e-commerce,” “electronic commerce,” “online marketplace,” “digital marketplace,” adopt*, implement*, MSME*, SME*, UMKM, competitiveness, competitive advantage, business performance, market performance, productivity, Indonesia, and Indonesian.

The selection process began with 42 documents. Limiting the results to journal articles produced 31 articles. Restricting the context to Indonesia yielded 28 articles, while the open-access filter produced 22 articles. Of these, 17 full-text articles could be downloaded and were included in the analysis. An article was considered relevant when it addressed at least one of the following: e-commerce adoption by MSMEs, the consequences of adoption for performance or competitiveness, capabilities supporting digitalization, digital marketing strategies, or the regulatory environment affecting MSME competition.

Data were extracted from each article based on publication year,

location or context, research design, sample size or data sources, principal variables, and relevant findings. The synthesis was organized into five themes: (1) adoption levels and benefits; (2) internal capabilities; (3) digital marketing integration; (4) performance and competitiveness outcomes; and (5) ecosystem conditions, regulation, and barriers. Because final inclusion depended on open-access availability and successful retrieval of full texts, this review acknowledges the potential for accessibility bias. In addition, several

publications by the same group of authors used closely related contexts, samples, and constructs and were therefore not treated as entirely independent evidence.

Tabel 1. Literature selection process

Selection stage	Number of documents
Initial Scopus search results	42
Limited to journal articles	31
Limited to the Indonesian context	28
Limited to open-access articles	22
Full texts downloaded and analyzed	17

C. Result and Discussion

Characteristics of the Literature

The 17 articles were published between 2017 and 2025. Most employed cross-sectional surveys and Structural Equation Modeling-Partial Least Squares (SEM-PLS). This pattern appeared in studies conducted in Jambi, Malang, Jakarta, Yogyakarta, Denpasar, and broader samples of online MSMEs. Although these designs are useful for mapping relationships among constructs, their ability to establish causality and capture changes in performance over time remains limited.

The research contexts were diverse and included food and beverages, traditional beverages, fashion, creative businesses, community-based tourism, culturally rooted products, and the halal industry. Nevertheless, the geographic distribution was concentrated in several regions, particularly Jambi and Java-Bali. MSMEs in remote areas and eastern Indonesia were underrepresented, although the Sumbawa study provided insight into regional constraints involving skills and infrastructure.

Substantively, the articles differed in their direct relevance.

Quantitative studies of adoption and performance provided the core evidence, whereas studies of business strategy, local culture, tourism, the halal industry, and competition law offered contextual

evidence concerning differentiation, regulation, and the wider ecosystem. This distinction is important to prevent contextual studies from being interpreted as direct tests of the effect of e-commerce on competitiveness.

Tabel 2. Summary of the 17 articles analyzed

No.	Source	Design/context	Focus	Main findings
1	Rahayu & Day (2017)	Survey; 292 Indonesian MSMEs	Adoption levels and post-adoption benefits	Adoption remained at an early stage; higher adoption levels were associated with broader market reach, increased sales, a stronger image, faster processes, and greater productivity.
2	Octavia et al. (2020)	Mixed-method study; 250 SMEs in Jambi; SEM-PLS	Entrepreneurial orientation, market orientation, e-commerce, and performance	All three factors significantly affected performance; technology was more effective when combined with market awareness and an entrepreneurial orientation.
3	Ausat & Peirisal (2021)	Survey; 191 food and beverage MSMEs in Malang; SEM-PLS	TOE framework with an additional individual context	Technological, organizational, and individual factors drove adoption; environmental factors were not significant; owner competence was a key determinant.
4	Yacob et al. (2021)	Purposive survey; 150 MSME owners in three areas of Jambi	E-commerce adoption, entrepreneurial orientation, and sustainable performance	Adoption positively affected sustainable performance, and entrepreneurial orientation strengthened the relationship.
5	Achmad (2023)	Qualitative descriptive study; observation, interviews, and documentation	MSME empowerment through digital innovation	Infrastructure, digital skills, marketing strategy, digital payments, and product quality were important conditions for success.
6	Harini et al. (2023)	Survey; 520 e-commerce users in Jakarta; PLS-SEM	Technological readiness, management support, competitive pressure, and performance	Technological readiness, management support, and competitive pressure encouraged adoption; adoption and entrepreneurial skills improved performance.
7	Pasaribu et al. (2023)	Qualitative case study; six respondents from a creative MSME in Bandung	BMC, SWOT, TOWS, and strategy renewal	Adding online/e-commerce channels was a priority strategy alongside improvements in quality, customer targeting, and loyalty.
8	Yacob et al. (2023)	Mixed-method study; 150 MSMEs in Jambi and stakeholder interviews	Social media, e-commerce, entrepreneurial orientation, and performance	Social media and e-commerce positively affected performance and entrepreneurial orientation, particularly during the pandemic.
9	Mandasari et al. (2024)	Census survey of 134 fashion SMEs in Denpasar; SmartPLS and interviews	Live-streaming as a moderator	Live-streaming strengthened the relationship between e-commerce adoption and performance through real-time interaction, product information, and customer engagement.
10	Setyowati et al. (2024)	Survey; 330 traditional beverage SMEs in Yogyakarta Special Region; PLS	IMAES adoption drivers and performance dimensions	Relative advantage, readiness, ease of use, compatibility, ICT capability, and innovativeness encouraged adoption; risk and complexity inhibited adoption; adoption improved operational, financial, and marketing performance.
11	Wahyundaru et al. (2024)	Survey; 478 MSME managers in Indonesia; PLS	E-commerce, financial literacy, and sustainability performance	E-commerce and financial literacy were positively associated with sustainability performance; financial management capability complemented digital selling capability.

No.	Source	Design/context	Focus	Main findings
12	Abbas & Ramadani (2025)	Legal research; statutory and comparative approaches	Taxation, social-commerce platforms, and competition	Weak tax compliance, inadequate oversight of foreign platforms, and predatory pricing may reduce the competitiveness of domestic MSMEs.
13	Diatmika & Rahayu (2025)	Qualitative study; semi-structured interviews and observation in Sumbawa	Local culture, innovation, and digital marketing	Integrating cultural identity with social media and e-commerce strengthened differentiation and market access; skills and infrastructure remained constraints.
14	Kurniawati & Kohar (2025)	Mixed-method study; 2022–2024 visitor data and interviews in South Malang AHP–ANP; 22 participants (7 large enterprises and 15 SMEs) in the halal F&B sector	Digital marketing in community-based tourism	An e-commerce website, Instagram, WhatsApp, and Facebook supported growth in visitor numbers, satisfaction, and sustainability-based destination advantage.
15	Lantu et al. (2025)		ASEAN competitiveness priorities	SMEs prioritized regulatory compliance and certification; technology adoption and digital marketing were more advanced among large enterprises.
16	Widjaja et al. (2025)	Cross-sectional survey; 560 online SMEs; SmartPLS and SPSS	Entrepreneurial orientation, e-commerce implementation, and performance	Entrepreneurial orientation drove e-commerce integration; adoption intention and perceived benefits alone were insufficient to ensure implementation.
17	Yacob et al. (2025)	Quantitative-descriptive and qualitative approaches; 150 MSME owners in Jambi	Entrepreneurial orientation, social media, e-commerce, and pandemic resilience	Business orientation, technology, and e-commerce supported continuity; government assistance strengthened resilience. The study was substantively close to an earlier publication.

Adoption Levels and Direct Benefits of E-Commerce

Rahayu and Day (2017) provide an important starting point for understanding the development of e-commerce adoption among Indonesian MSMEs. Their survey of 292 MSMEs found that most respondents remained at the level of e-mail, static websites, or interactive websites without deep transactional integration. Technology was used primarily for marketing, while integration into operations, finance, logistics, and after-sales service remained limited. Nevertheless, the most consistently perceived benefits

were wider market reach, increased sales, improved external

communication, a stronger company image, faster processing, and greater employee productivity.

The most important finding of that study was the graduated relationship between the depth of adoption and the benefits obtained. MSMEs with more advanced forms of adoption received greater benefits than those using only e-mail or simple websites. This pattern supports the argument that advantage does not arise from access to technology alone, but from the ability to integrate it into value-creation processes.

More recent evidence confirms these benefits across different sectors. Setyowati et al. (2024) found that e-commerce adoption positively affected overall business performance as well as the operational, financial, and marketing performance of traditional beverage SMEs. Harini et al. (2023) likewise reported a positive effect of adoption on MSME performance in Jakarta. At the sustainability level, Wahyundaru et al. (2024) found that e-commerce increased access to suppliers and customers and was associated with sustainability performance. Collectively, these findings identify market expansion and efficiency as the most consistent pathways from adoption to performance.

Internal Capabilities as a Prerequisite for Converting Technology into Competitiveness

The literature indicates that internal capabilities distinguish MSMEs that merely establish a digital presence from those that derive competitive advantage from digitalization. Using an extended Technology-Organization-Environment framework, Ausat and Peirisa (2021) found that

technological, organizational, and individual characteristics influenced adoption. Information technology experience, owner capabilities, and innovativeness were particularly important because decision making in MSMEs is commonly concentrated in the owner or manager.

Harini et al. (2023) further showed that technological readiness, top-management support, and competitive pressure influenced adoption, while entrepreneurial skills and e-commerce adoption directly supported performance. These findings suggest that technical resources must be complemented by managerial commitment and the ability to manage opportunities. Infrastructure without owner support results in shallow use, whereas owner enthusiasm without system readiness may generate inefficiency.

Entrepreneurial orientation emerged as a recurring theme. Octavia et al. (2020) found that entrepreneurial orientation, market orientation, and e-commerce adoption significantly affected SME performance. Yacob et al. (2021) showed that entrepreneurial orientation strengthened the relationship between e-commerce

adoption and sustainable performance. Widjaja et al. (2025) further found that e-commerce implementation was driven more strongly by entrepreneurial orientation than by adoption intention or perceived benefits alone. These findings illustrate the small-business paradox: MSMEs recognize the value of technology, yet resource limitations often make implementation reactive and poorly integrated.

Financial literacy is a complementary capability. Wahyundaru et al. (2024) emphasized that expanded market access through e-commerce must be accompanied by the ability to manage cash flow, platform fees, working capital, pricing, and investment. Higher digital sales do not necessarily produce a healthier business when owners cannot separate personal and business finances, calculate margins after promotional and logistics costs, or assess the feasibility of digital campaigns.

Social Media Integration, Live-Streaming, and Differentiation

E-commerce is increasingly inseparable from social media. Yacob et al. (2023) found that social media

and e-commerce adoption positively affected MSME performance and entrepreneurial orientation. Social media supports awareness, relationships, and communication, whereas e-commerce facilitates transactions. Their integration creates a more complete customer journey from product discovery to purchase.

The growth of live-streaming further strengthens this mechanism. Mandasari et al. (2024) showed that live-streaming commerce moderated the effect of e-commerce adoption on the performance of fashion SMEs in Denpasar. Real-time interaction allows sellers to demonstrate product details, answer questions, reduce uncertainty, and stimulate purchases. However, live-streaming requires communication skills, creative content, appropriate equipment and space, and a consistent schedule. Technology features therefore generate value only when supported by suitable human resources.

Technology must also be linked to differentiation. Diatmika and Rahayu (2025) showed that MSMEs in Sumbawa strengthened their competitive position by combining cultural identity, local products, and digital marketing. E-commerce

expanded market access, while the uniqueness of woven textiles, herbal products, culinary goods, and handicrafts provided value that was difficult to imitate. Kurniawati and Kohar (2025) found a similar pattern in community-based tourism: digital promotion was effective because it was supported by ecotourism experiences, conservation practices, and visitor satisfaction. In this context, e-commerce acts as a lever for value already created through distinctive products and experiences.

Pasaribu et al. (2023) provided a business-strategy perspective. In their case study of a creative MSME in Bandung, adding online channels and e-commerce was identified as a priority strategy, but it was positioned alongside improvements in product quality, customer targeting, service, and loyalty programs. This finding confirms that digital channels should be embedded in the business model rather than treated as a separate supplementary activity.

Drivers and Barriers to Adoption

Setyowati et al. (2024) offered the most detailed mapping of motivational factors. Buyer and competitor behavior, relative

advantage, organizational readiness, perceived ease of use, benefit observability, compatibility, ICT capability, and innovativeness positively influenced adoption. By contrast, perceived risk and complexity had negative effects. These findings indicate that digitalization programs should reduce learning burdens and uncertainty rather than merely provide access to platforms.

Achmad (2023) grouped the prerequisites for successful adoption into digital infrastructure, knowledge and skills, marketing and branding strategies, and product and service quality. Recommended forms of empowerment included platform development, digital payments, and a stronger social media presence. This perspective is consistent with empirical evidence that organizational readiness and individual capabilities are critical factors.

Environmental factors, however, did not produce entirely consistent results. Ausat and Peirisal (2021) found that environmental factors had no significant effect in the Malang sample, whereas Harini et al. (2023) found that competitive pressure encouraged adoption in Jakarta. The

difference may reflect sectoral conditions, ecosystem maturity, location, and measurement choices. A uniform policy model may therefore be ineffective; interventions should be adapted to local conditions and the maturity of participating businesses.

Regulatory Ecosystem, Certification, and Platform Competition

MSME competitiveness is not determined solely by internal capabilities. Abbas and Ramadani (2025) argued that weak tax compliance, insufficient oversight of foreign social-commerce platforms, and predatory pricing can create structural inequality. Under these conditions, digitalization can expand market access while simultaneously exposing MSMEs to uneven competition. Regulations that promote fair competition, transaction transparency, and oversight of platform conduct are therefore integral to MSME empowerment.

In the halal food and beverage industry, Lantu et al. (2025) found that SMEs viewed regulatory compliance and certification as their main competitiveness priorities. Large enterprises focused more strongly on

market expansion and had more advanced technological capabilities, whereas SMEs faced cost, complexity, and competency constraints. Simplified certification, technical assistance, and the integration of product-traceability technology could help close this gap.

Yacob et al. (2025) also emphasized the role of government assistance in maintaining MSME continuity during the pressures of the pandemic. However, this publication is closely related to Yacob et al. (2023) in terms of authorship, location, sample size, and constructs. The two articles should therefore be interpreted as related publications rather than as independent replications. Similar caution is needed when comparing them with Yacob et al. (2021), which also used a sample of 150 MSME owners from three areas of Jambi.

Dicusstion

The synthesis indicates that e-commerce contributes to competitiveness through three layers. The first is access: MSMEs gain wider market reach, communication channels, and transactional opportunities. The second is efficiency and learning: marketing, ordering,

payment, and customer-interaction processes become faster and generate market information. The third is strategic differentiation: MSMEs combine technology with branding, local culture, quality, service, and customer experiences that are difficult to imitate.

Most studies provide evidence for the first and second layers through performance indicators. Improvements in sales, efficiency, productivity, satisfaction, and market reach were consistently reported. Evidence for the third layer remains more limited and generally comes from case studies or contextual research. This explains why the term competitiveness should be used cautiously. Improved performance is an important prerequisite, but it does not necessarily indicate a lasting advantage when competitors can access the same platforms and features.

From a resource-based view perspective, an e-commerce platform is not a rare source of advantage because it is easily accessible to many firms. Advantage is more likely to emerge from a combination of resources: customer knowledge, response speed, content capabilities,

reputation, service quality, supplier relationships, transaction data, product innovation, and financial discipline. This combination is more difficult to imitate than a marketplace presence alone.

The findings concerning entrepreneurial orientation clarify this mechanism. Innovative, proactive, and risk-managing business owners are more likely to experiment with new features, adapt their offerings, and integrate digital data. However, willingness to take risks must be accompanied by cost evaluation and financial literacy. Without these capabilities, paid promotion, discounts, and shipping subsidies may increase transaction volume while reducing margins.

At the ecosystem level, the government should treat digitalization as an agenda for productivity and competition rather than merely onboarding. Program success should not be assessed only by the number of accounts created or initial transactions. Evaluation should include process integration, repeat-customer growth, margins, data quality, inventory-management capability, cybersecurity resilience,

and MSME independence from subsidized promotions.

Platforms also have a governance role. Fee transparency, algorithmic rules, access to business data, protection from illegal products or predatory pricing, and dispute-resolution mechanisms influence the quality of competition. In industries with specific requirements, such as halal products, the integration of certification, traceability, and digital catalogs can reduce compliance costs and open access to regional markets.

Implication

1. First, MSMEs should develop a phased digital-integration roadmap. The initial stage may focus on catalogs, communication, and transactions. The next stage should include inventory synchronization, payments, logistics, customer-relationship management, and data analytics. Each stage should have benefit-based indicators rather than activity indicators alone.

2. Second, content development and live-streaming should be linked to differentiation strategies. Content should communicate product value, quality evidence, brand stories, production processes, or local identity rather than relying exclusively on

discounts. Interaction data can then be used to improve products and identify customer segments.

3. Third, financial literacy and unit-economics analysis should be mandatory components of digital training. Business owners need to calculate commissions, advertising costs, returns, discounts, packaging, and logistics so that transaction growth does not conceal declining profitability.

4. Fourth, government agencies and supporting institutions should provide tiered programs based on digital maturity. Beginning MSMEs need operational fundamentals, whereas experienced digital businesses need analytics, automation, export capabilities, data security, and brand development. Infrastructure support remains essential in areas with limited connectivity.

5. Fifth, competition and certification policies should be simplified without weakening consumer protection. Oversight of foreign platforms, predatory pricing, tax compliance, and the interoperability of data and certification are components of an

environment in which MSMEs can compete fairly.

Research Gap

1. First, most studies relied on cross-sectional surveys and self-reported perceptions. Longitudinal research, transaction data, quasi-experimental designs, or before-and-after comparisons are needed to strengthen causal conclusions.

2. Second, definitions and measures of adoption were inconsistent. Some studies measured intention or platform use, whereas others assessed process integration. Future research should distinguish adoption, usage intensity, integration, and digital capability.

3. Third, competitiveness was frequently represented by performance. More direct measures are needed, including market share, customer retention, pricing power, differentiation, relative productivity, innovation speed, and successful entry into new markets.

4. Fourth, differences by sector, business size, firm age, owner gender, location, and platform type have not been systematically compared. Cross-regional research could identify whether benefits and barriers differ

between urban and rural areas, Java-Bali and regions outside Java, and micro and medium-sized enterprises.

5. Fifth, platform governance remains underexamined empirically. The effects of commissions, search algorithms, dependence on promotions, data ownership, and return policies on MSME margins and bargaining power require further attention.

6. Sixth, transparency regarding the use of overlapping datasets should be strengthened. Articles with similar authors, locations, sample sizes, and constructs should explain their relationship to prevent double counting in evidence syntheses.

Limitations of the Review

This review included only articles that were available through open access and could be successfully downloaded. Five of the 22 open-access articles were unavailable in full text at the time of analysis and were therefore excluded. This decision may reduce the completeness of the evidence and introduce accessibility bias.

No standardized instrument was used to assess the quality of each research design. The studies were evaluated narratively based on

relevance, methods, samples, and consistency of findings. Consequently, the evidence was not statistically weighted.

Several articles addressed e-commerce adoption only indirectly, including studies of business-model strategy, tourism marketing, local culture, halal-industry competitiveness, and competition law. These articles were used to explain context and mechanisms rather than as direct evidence of causal relationships.

Possible overlap among datasets used in several publications by the same group of authors also limited the number of independent sources of evidence. The review therefore emphasizes thematic consistency rather than simply counting the number of articles supporting a relationship.

D. Conclusion

E-commerce adoption plays a positive role in improving performance and supporting the competitiveness of Indonesian MSMEs. The most consistent benefits are market expansion, increased sales, process efficiency, productivity, customer communication, and business

sustainability. These benefits are conditional, however, and become stronger as adoption progresses from basic use to integration across business processes.

Technological readiness, management support, digital competence, entrepreneurial and market orientation, financial literacy, and innovation capability are the principal internal factors. Social media and live-streaming strengthen customer engagement, while local culture, quality, branding, and experience provide sources of differentiation. Externally, infrastructure, certification, platform regulation, and fair competition determine whether digital opportunities can be translated into sustainable advantage.

E-commerce should therefore not be viewed as a stand-alone solution or merely as a sales channel. It is part of a strategic capability that must be integrated with the MSME business model and resource base. Empowerment programs should assess depth of use, decision quality, profitability, and bargaining power within the digital ecosystem. Future research should employ longitudinal designs, more direct measures of

competitiveness, objective data, and transparent reporting of datasets to explain more robustly the relationship between digitalization and competitive advantage.

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