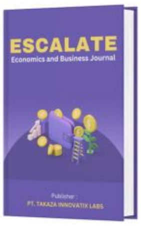
Escalate: Economics and Business Journal
https://journal.takaza.id/index.php/escalate

Vol. 4, no. 02, 2026, pp. 47-54
E-ISSN: 3025-4213

E-mail:escalate@takaza.id



Implementation of Management Information Systems in MSMEs Using E-Commerce Platforms

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Article History:
Received: 26-06-2026
Revised: 07-07-2026
Accepted: 07-07-2026

Keywords: Management Information System; MSMEs; E-Commerce; Digitization; Operational Efficiency

Abstract: *The rapid growth of e-commerce in Indonesia, with the digital economy reaching a Gross Merchandise Value (GMV) of USD 90 billion in 2024, encourages Micro, Small, and Medium Enterprises (MSMEs) to adopt digital platforms as business channels. However, empirical evidence on whether e-commerce adoption alone improves MSME performance remains inconsistent, and the complementary role of Management Information Systems (MIS)—particularly Accounting Information Systems (AIS)—in strengthening this relationship is often overlooked. This article examines the contribution of MIS implementation to MSME performance through a narrative literature review of 15 empirically verified studies from national and international peer-reviewed journals (2019–2024). Results show that e-commerce's effect on MSME performance is positive but statistically insignificant when implemented alone, whereas the simultaneous use of MIS together with e-commerce produces a consistent positive and significant effect on performance (p<0.05). Key implementation challenges include underutilized financial information systems, low cybersecurity awareness among employees, and technology adoption driven more by external trading-partner pressure than internal strategic initiatives. The article concludes that MIS adoption success depends on the interaction of technology (perceived usefulness), organizational readiness (top management support and integration capability), and environmental factors (trading partner pressure and ecosystem maturity) as conceptualized in the Technology-Organization-Environment (TOE) framework. This study recommends that MSMEs prioritize integrated digital transformation strategies rather than standalone e-commerce adoption, and that policymakers design targeted support programs addressing both technological infrastructure and human capital development.*

How to Cite:

Escalate :
. *3*(03). pp. 131-137https://doi.org/10.61536/escalate.v3i03.523

https://doi.org/10.61536/escalate.v3i03.523

INTRODUCTION

Micro, Small, and Medium Enterprises (MSMEs) are a fundamental pillar of the Indonesian economy. Amidst the ongoing massive digital transformation, MSMEs are required to adapt to an increasingly digitalized business ecosystem, one of which is through the use of e-commerce platforms. According to the e-Conomy SEA 2024 report compiled by Google, Temasek, and Bain & Company, Indonesia's digital economy will reach a Gross Merchandise Value (GMV) of USD 90 billion by 2024, a 13% increase compared to 2023 and the largest in Southeast Asia. The e-commerce sector is the main contributor, growing 11% to a GMV of USD 65 billion (Google, Temasek, & Bain & Company, 2024).

Despite the increasing adoption of e-commerce, empirical evidence regarding its impact on MSME performance is inconsistent. Triandra et al. (2019), in a study of local product MSMEs in Sumbawa Regency, found that e-commerce had a positive but insignificant effect on MSME performance, although its presence remains a marketing alternative that expands customer reach. Conversely, Adiningrat et al. (2023) found that e-commerce and work productivity effectively support MSME activities in Makassar City, but the financial information system in the same MSMEs has not been optimally implemented, resulting in performance not being maximized.

More consistent findings emerge when e-commerce is analyzed in conjunction with Accounting Information Systems (AIS). Fitrah and Yuliati (2023), in a study of 85 MSMEs in Malang City, found that e-commerce and accounting information systems simultaneously had a positive and significant effect on MSME performance effectiveness. This pattern indicates that Management Information Systems (MIS), in the form of accounting and financial information systems, act as crucial complementary variables, without which the use of e-commerce alone is insufficient to generate significant performance improvements.

From a broader technology adoption perspective, Abed (2020) found, using the Technology-Organization-Environment (TOE) framework, that trading partner pressure, top management support, and perceived usefulness were the most significant factors influencing SMEs' intention to adopt social commerce. This framework is relevant for understanding the dynamics of MIS adoption among e-commerce-based MSMEs in Indonesia, as the drivers and barriers to technology adoption are inherently cross-geographical.

Based on these diverse findings, this article aims to comprehensively examine how MIS implementation contributes to the performance of e-commerce-based MSMEs, identify the challenges of its implementation, and formulate factors supporting its success based on published empirical evidence. The three questions answered are: (1) How does MIS contribute to the performance of e-commerce-based MSMEs, and why is the influence of e-commerce alone often insignificant? (2) What are the main challenges of MIS implementation in MSMEs? (3) What factors determine the success of MIS implementation in e-commerce-based MSMEs?

REFERENCE REVIEW

Basic Concepts of Management Information Systems

A Management Information System (MIS) is a system that integrates the collection, processing, storage, and distribution of information to support managerial functions within an organization. One of the most widely studied forms of MIS in the context of MSMEs is the

Accounting Information System (AIS). Kusumawardhani et al. (2024) emphasized that accounting systems have undergone significant developments, including automation, big data, and data analytics, which directly impact the quality of accounting information and the effectiveness of management decision-making in MSMEs in developing countries like Indonesia.

The study also found that employee cybersecurity awareness significantly influences the adoption of digital accounting systems, and digital accounting system adoption, in turn, significantly impacts organizational performance. These findings underscore that the success of MIS implementation depends not only on the technology itself but also on the readiness of the human resources operating it.

The Relationship Between E-Commerce, MIS, and MSME Performance: Mixed Findings

Empirical literature shows inconsistent results regarding the effect of e-commerce on MSME performance when examined separately from MIS. Triandra et al. (2019) found a positive but statistically insignificant effect in Sumbawa Regency. Conversely, when e-commerce was studied alongside the Accounting Information System, Fitrah and Yuliati (2023) found a positive and significant simultaneous effect on MSME performance effectiveness in Malang City.

Adiningrat et al. (2023) reinforce this pattern by showing that while e-commerce and work productivity effectively support MSME activities, an under-implemented financial information system is a limiting factor in maximizing performance. In other words, while e-commerce serves as a market access channel, MIS is needed as an information management infrastructure that transforms that market access into measurable and sustainable business performance.

Technology Adoption Factors: The Technology-Organization-Environment (TOE) Framework

Abed (2020) conducted an empirical investigation of 181 Saudi Arabian SMEs on social commerce adoption using the Technology-Organization-Environment (TOE) framework. The results showed that trading partner pressure in the environmental context had the most significant influence, followed by top management support in the organizational context, and perceived usefulness in the technological context.

This TOE framework is relevant to be applied in analyzing the adoption of MIS in e-commerce-based MSMEs, because the three dimensions, technology, organization, and environment, consistently emerge as determinants of the success of information system adoption in small and medium-sized businesses in various geographical contexts.

Digitalization of Accounting Systems as a Form of MIS Implementation

Kusumawardhani et al. (2024) based on a questionnaire survey of MSMEs in Indonesia using the Partial Least Squares Structural Equation Modeling (PLS-SEM) approach found that digitalization of accounting systems has a positive effect on the accuracy and timeliness of accounting information, as well as on cost reduction with a significant coefficient at the $p<0.001$ level. This study integrates Human-Organization-Technology Theory and Diffusion of Innovations Theory to explain the determinants of MSME performance through information system digitalization.

This finding is reinforced by a large-scale study by Fachruzzaman et al. (2021) of 522 MSME owners in Bengkulu Province, which used the Partial Least Squares (PLS) approach to examine the effect of Accounting Information Systems on MSME financial performance. This

https://doi.org/10.61536/escalate.vxxxx.xxx

study found that positive perceptions of accounting information use were influenced by the availability of accounting resources and the implementation of basic accounting, which in turn contributed to improved overall MSME financial performance.

Adopting Cloud Accounting as a Technology-Based SIM

In addition to digitized conventional accounting systems, the adoption of cloud accounting is becoming an increasingly relevant form of MIS for MSMEs. Sastararuji et al. (2021) developed an integrated conceptual framework combining Technology-Organization-Environment (TOE), Diffusion of Innovation (DOI), and Institutional Theory to explain the determinants of cloud accounting adoption in MSMEs. The framework identifies five key determinants: technology, organization, environment, vendor, and business owner, which collectively influence adoption decisions.

This framework complements Abed's (2020) findings by adding the dimensions of vendors and business owners as additional factors that are specifically relevant to the context of cloud-based accounting system adoption, which is one of the most widely adopted forms of MIS by modern MSMEs due to its relatively low initial investment costs.

METHOD

This study uses a literature review method with a narrative-analytical approach. Literature collection was conducted through a search of Google Scholar, ScienceDirect, DOAJ, and indexed journal repositories using the keywords: 'management information system', 'management information system', 'accounting information system', 'SMEs', 'e-commerce', 'SME performance', and 'technology organization environment'.

The inclusion criteria applied include: (1) articles published between 2019 and 2025; (2) discussing the impact or implementation of information systems on MSMEs and/or e-commerce; (3) having a verifiable bibliographic identity (DOI or official publication link in an academic database); (4) published in peer-reviewed journals with a clear indexing track record. Exclusion criteria include articles without a clear methodology and publications from publishers identified as having non-transparent practices (predatory publishing).

Each source used in this study was verified for its existence and authenticity through cross-references with academic databases before being cited. Data from selected sources was extracted and analyzed thematically to identify patterns of benefits, challenges, and success factors related to MIS implementation in e-commerce-based MSMEs.

RESULTS AND ANALYSIS

The Contribution of MIS to MSME Performance: A Synthesis of Empirical Findings

The literature review shows that e-commerce's contribution to MSME performance is inconsistent when used alone, but becomes stronger and more significant when combined with MIS implementation. Key findings from the sources reviewed are summarized in Table 1.

Table 1. Empirical Findings on the Relationship between E-Commerce, MIS, and MSME Performance

Studies	Key Findings	Context
Triandra et al. (2019)	E-commerce has a positive but not significant effect on the performance of MSMEs (without SIM)	MSMEs, Sumbawa
Adiningrat et al. (2023)	E-commerce & work productivity support MSME activities, but the	MSMEs, Makassar

Studies	Key Findings	Context
	financial information system is not yet optimal so performance is not optimal.	
Fitrah & Yuliati (2023)	E-commerce and Accounting Information Systems simultaneously have a positive and significant effect on the effectiveness of MSME performance.	85 MSMEs, Malang
Kusumawardhani et al. (2024)	Digitalization of accounting systems improves information accuracy & reduces costs (p<0.001)	MSMEs, Indonesia
Abed (2020)	Trading partner pressure & top management support are the main determinants of system adoption.	181 SMEs, Saudi Arabia

Source: Results of literature review synthesis, 2025

The pattern emerging from Table 1 is quite consistent: studies that only measure the influence of e-commerce alone (Triandra et al., 2019) tend to find statistically weak effects, while studies that include MIS (accounting/financial information systems) as a variable tested (Fitrah & Yuliati, 2023; Adiningrat et al., 2023) find that MIS plays an important role—both as a factor that strengthens the influence of e-commerce, and as a limiting factor when it has not been optimally implemented.

Fitrah and Yuliati (2023) specifically found that e-commerce and accounting information system variables simultaneously had a significant positive effect on the effectiveness of MSME performance in Malang City, using primary data from 85 respondents processed with SPSS 25. This finding provides strong evidence that the combination of digital sales channels (e-commerce) with financial information management systems (AIS) produces a stronger effect than e-commerce alone.

Meanwhile, Kusumawardhani et al. (2024) provide additional evidence from a mechanistic perspective: digitalization of accounting systems improves the accuracy and timeliness of information, which in turn significantly reduces operational costs ($p<0.001$). These results further explain why MIS can act as a reinforcing variable in the relationship between e-commerce and MSME performance, namely by improving the quality of information for decision-making.

Challenges of Implementing SIM in E-Commerce-Based MSMEs

Based on the literature synthesis, the challenges of implementing MIS in MSMEs can be grouped into three main categories, as summarized in Table 2.

Table 2. Challenges of SIM Implementation Based on Empirical Evidence

Challenge Categories	Explanation	Source
Suboptimal System Implementation	Financial information systems are available but have not been utilized	Adiningrat et al. (2023)

Challenge Categories	Explanation	Source
	optimally by MSMEs in their daily operations.	
Cybersecurity Awareness Gap	Low employee cybersecurity awareness affects the adoption rate of digital accounting systems.	Kusumawardhani et al. (2024)
Dependence on External Pressure	Technology adoption is driven more by trading partner/market pressure than by internal organizational initiatives.	Abed (2020)
Weak Single E-Commerce Effect	Without SIM, the influence of e-commerce on MSME performance tends to be statistically insignificant.	Triandra et al. (2019)

Source: Adapted from literature review, 2025

The first challenge identified was the gap between system availability and utilization. Adiningrat et al. (2023) found that some MSMEs had computerized financial bookkeeping, but others still maintained manual bookkeeping due to a lack of knowledge and managerial skills. This suggests that barriers to MIS implementation are not always technical but also human capital-related.

The second challenge relates to information security. Kusumawardhani et al. (2024) found that employee cybersecurity awareness significantly influences the adoption of digital accounting systems in MSMEs. Without a sufficient understanding of data security risks, MSMEs tend to hesitate to fully transition to digital systems integrated with external e-commerce platforms.

The third challenge is the reliance on external pressure as a driver of adoption. Abed (2020) found that pressure from trading partners in the environmental context had the most significant influence on adoption intentions, indicating that many MSMEs adopt information systems as a reactive response, rather than an internal strategic initiative.

The fourth challenge, which is the most fundamental finding in this study, is the weak impact of e-commerce when it stands alone without a SIM. Triandra et al. (2019) showed that the mere existence of e-commerce, without adequate business information management, only produces a positive but insignificant impact on MSME performance—an important warning for MSMEs who believe that a presence on digital platforms is sufficient to boost business performance.

Supporting Factors for Successful SIM Implementation

Referring to the Technology-Organization-Environment (TOE) framework used by Abed (2020) and findings from Fitrah and Yuliati (2023) and Kusumawardhani et al. (2024), this article formulates three dimensions of supporting factors for the successful implementation of MIS in e-commerce-based MSMEs.

Technology Dimension. The perceived usefulness of a system for business operations is a significant driver of adoption (Abed, 2020). MSMEs need to choose an accounting/financial information system that is relevant to their business scale, rather than one designed for large corporations.

Organizational Dimensions. Top management support was consistently found to be a significant factor in Abed's (2020) study. In the context of MSMEs, this equates to the business

https://doi.org/10.61536/escalate.v3.03

owner's commitment to simultaneously integrating e-commerce with accounting information systems, as proven effective in Fitrah and Yuliati's (2023) study, as well as increasing employee cybersecurity awareness (Kusumawardhani et al., 2024).

Environmental Dimensions. Pressure from trading partners and the business ecosystem can be a significant catalyst for MIS adoption, as demonstrated by the dominant influence of the environmental context in Abed's (2020) study. At the same time, MSMEs need to recognize that simply following digitalization trends without building a strong MIS foundation risks weak performance, as found by Triandra et al. (2019).

Additional Dimensions: Vendors and Business Owners. Specifically for cloud-based MIS, Sastararuji et al. (2021) added that the quality of vendor support and business owner characteristics (including digital literacy and openness to new technologies) are also important determinants that complement the conventional TOE framework in the context of cloud-based information system adoption in MSMEs.

CONCLUSION

This article has examined the contributions, challenges, and success factors of implementing Management Information Systems (MIS) in MSMEs operating through e-commerce platforms, based on a synthesis of verified empirical literature. Three main conclusions can be drawn from this study.

First, the impact of e-commerce on MSME performance is inconsistent when examined without considering MIS, as demonstrated by Triandra et al.'s (2019) findings, which found a positive but insignificant impact. Conversely, when e-commerce is accompanied by the implementation of an Accounting Information System, the impact on MSME performance becomes positive and significant (Fitrah & Yuliati, 2023), confirming the role of MIS as a crucial complementary variable.

Second, the challenges of MIS implementation are multidimensional, including system utilization gaps, low cybersecurity awareness, reliance on external pressures as a driver for adoption, and the weak effect of stand-alone e-commerce without MIS.

Third, the success of MIS implementation is determined by the interaction of three dimensions: technology (perceived usefulness of the system), organization (top management support and integration of accounting information systems with e-commerce), and environment (pressure from trading partners and the business ecosystem), as conceptualized in the Technology-Organization-Environment framework.

This study's limitations lie in its literature-based nature, which does not yield new primary data, and its geographic context, which is still limited to several regions in Indonesia and one international study. Further research is recommended using a direct survey approach among MSMEs that have implemented MIS integrated with e-commerce platforms in various regions of Indonesia to obtain stronger generalizations.

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