

Research Paper

## Integrating Digital Transformation, Internal Control, and Socio-Spiritual Values for Sustainable Competitive Performance of MSMEs

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### ABSTRACT

Despite extensive research on internal control, digital transformation, and socio-spiritual values, their integrated impact on the sustainable competitive performance of MSMEs remains underexplored, particularly in developing economies. This study aims to analyze the combined effects of internal control components, digital transformation, and socio-spiritual values on MSME performance in Indonesia. A quantitative approach was employed using a cross-sectional survey of 416 MSME actors in Central Java province, selected through purposive sampling. Data were analyzed using Structural Equation Modeling with Partial Least Squares (SEM-PLS). The findings reveal that all internal control elements, digital transformation, and socio-spiritual values have a positive and significant effect on sustainable competitive performance, with digital transformation emerging as the most influential factor, followed by monitoring activities and socio-spiritual values. These results point out the importance of integrating technological capability, effective governance, and value-based practices in strengthening MSME sustainability. The study extends the Resource-Based View and internal control framework by incorporating socio-spiritual values as strategic resources and offers practical guidance for developing adaptive and sustainable MSME strategies.

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## Introduction

Micro, Small, and Medium-Sized Enterprises (MSMEs) play a central role in economic development, particularly in developing countries such as Indonesia, where they account for more than 99% of all business entities and contribute significantly to national GDP (Suharyanto et al., 2024). Beyond their economic contribution, MSMEs also support social stability, equitable income distribution, and employment generation. Despite this importance, many MSMEs continue to face persistent structural constraints that limit their ability to sustain long-term competitive performance (Junaidi et al., 2025). These constraints include weak internal control practices, limited managerial capability, and low adoption of digital technologies, which reduce their ability to respond effectively to dynamic and increasingly complex business environments (Shevchenko et al., 2025).

The acceleration of digital transformation and intensifying global competition further expose these limitations (Prasetyo, 2025). Empirical evidence indicates that MSMEs often struggle to align internal processes with technological change, resulting in inefficiencies, increased operational risks, and suboptimal performance outcomes (Loo et al., 2023; Raj et al., 2024). At the same time, inadequate internal control systems weaken accountability and transparency, which can reduce stakeholder confidence and restrict access to financial and institutional support (Boufounou et al., 2024). Strengthening both governance mechanisms and digital capabilities is therefore not only desirable but necessary for MSMEs seeking to remain competitive and sustainable.

From a theoretical perspective, the Committee of Sponsoring Organizations of the Treadway Commission (COSO) framework provides a structured approach to internal control through five key components: control environment, risk assessment, control activities, information and communication, and monitoring. Prior studies consistently show that effective internal control improves operational efficiency, reduces risk exposure, and supports better decision-making (Bužinskienė & Padgureckienė, 2025; Otoo et al., 2023). However, most empirical work has focused on large organizations with formal governance systems, offering limited insight into MSMEs that operate under resource constraints and rely heavily on informal practices (Sharma et al., 2026). This mismatch suggests that existing models of internal control require adaptation to better reflect MSME conditions.

At the same time, digital transformation has been widely recognized as a driver of organizational performance. Digital technologies enable faster information processing, improve communication, and enhance responsiveness to market changes (Modupe et al., 2024; Rahmatdi, 2024). Nevertheless, much of the existing literature focuses on digital adoption in marketing or sales functions, with limited attention to how digital technologies support internal control systems. Furthermore, although information systems are acknowledged as essential for organizational operations, their role in strengthening internal governance and aligning with organizational values remains insufficiently examined, particularly in MSMEs (Imtihan et al., 2025).

In addition to technical and technological factors, recent studies emphasize the role of socio-spiritual values in shaping organizational behavior and performance (Nabil et al., 2025; Wardana et al., 2025; Zarate-Torres et al., 2025). In contexts such as Indonesia, values related to ethics, trust, and social responsibility, including practices like zakat, waqf, and charitable giving, play a meaningful role in guiding business conduct and stakeholder relationships (Sasongko, 2025). These values contribute to long-term trust, legitimacy, and stakeholder loyalty (Edith et al., 2024). However, despite their relevance, socio-spiritual

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values are rarely incorporated into empirical models of internal control and performance, resulting in an incomplete understanding of their strategic role in sustaining business performance (Haryani et al., 2025).

Existing research remains fragmented, as internal control, digital transformation, and socio-spiritual values are often examined independently rather than as interrelated drivers of MSME performance (Lahmar, 2024; Sangodkar & Bhandari, 2025). This separation limits a comprehensive understanding of how governance mechanisms, technological capabilities, and value-based practices interact in shaping sustainable competitive performance. In addition, prior studies rarely position socio-spiritual values as strategic resources, despite their relevance in culturally embedded business contexts such as Indonesia. This gap indicates the need for an integrated framework that captures both tangible and intangible dimensions of MSME competitiveness.

Based on this gap, this study aims to examine the combined effects of COSO-based internal control, digital transformation, and socio-spiritual values on the sustainable competitive performance of MSMEs in Indonesia. The uniqueness of this study lies in integrating these dimensions within the Resource-Based View (RBV) and Stakeholder Theory, while positioning socio-spiritual values as strategic intangible resources. The findings are expected to contribute to the literature by offering a more comprehensive model of MSME performance and to provide practical insights for developing adaptive, ethical, and sustainable business strategies.

### *Theoretical Foundation and Hypotheses Development*

Internal control plays a central role in ensuring operational stability and the achievement of organizational objectives. A key component of internal control is control activities, which consist of policies and procedures designed to reduce risk and ensure that management directives are properly implemented (COSO, 2013). These activities include authorization, verification, reconciliation, and segregation of duties. Although often simplified in MSMEs due to resource constraints, such practices remain essential for minimizing errors and preventing fraud (Rahmialawati & Melati, 2025). In addition, the control environment serves as the foundation of the internal control system, as it reflects the attitudes, awareness, and commitment of business owners and managers toward maintaining effective control practices (Hamed, 2023). In many MSMEs, where formal governance structures are limited, the strength of the control environment often determines whether control mechanisms function effectively or remain symbolic.

In the digital era, digital transformation has become a key factor reshaping how businesses operate and manage internal controls (Wang et al., 2023). Digital transformation involves not only the adoption of new technologies but also fundamental changes in business models and operational processes (Alojail & Khan, 2023). For MSMEs, this transformation can improve operational efficiency, expand market access, and enhance control capabilities (Wu et al., 2024). However, these benefits depend on how well digital tools are integrated into existing processes rather than merely adopted. Information systems play a critical role in this process by providing accurate, timely, and relevant information that supports decision-making and strengthens control implementation (Akula et al., 2025). Without proper integration, digital adoption may increase complexity without delivering meaningful performance gains.

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Monitoring activities are essential to ensure that internal controls operate as intended. Monitoring can be conducted continuously or periodically to identify weaknesses and support corrective actions (Ryu et al., 2024; Singgalen, 2024). Alongside this, risk assessment involves identifying and analyzing potential risks that may hinder the achievement of business objectives, forming the basis for appropriate control responses (Saradha Balaji et al., 2024). Beyond these technical elements, socio-spiritual values also influence business behavior, particularly in contexts where ethical and religious considerations are embedded in economic activities. Practices such as zakat, waqf, and charitable giving can strengthen ethical conduct and social responsibility among MSMEs. These values may also shape long-term orientation and stakeholder relationships, which are often overlooked in conventional control frameworks. Taken together, effective internal control, digital transformation, and socio-spiritual practices are expected to enhance sustainable competitive performance, defined as the ability of MSMEs to maintain competitiveness while addressing economic, social, and environmental dimensions (Alojail & Khan, 2023).

#### *Control Activities (CE) and Sustainable Competitive Performance (SCP)*

Control activities can be understood as strategic organizational capabilities within the Resource-Based View (RBV), as they contribute to value creation and are not easily replicated across firms (Barney, 2000; Malhotra et al., 2025). In MSMEs, where formal governance structures are often limited, control practices such as authorization, reconciliation, and segregation of duties play a key role in reducing operational inefficiencies, minimizing fraud risk, and ensuring the reliability of financial information. These mechanisms support managerial discipline and enable more consistent decision-making, which improves resource utilization. In addition, effective control activities enhance organizational credibility and foster trust among stakeholders, including suppliers, customers, and financial institutions, which is essential for accessing external resources (Jaroensombut et al., 2025). Prior studies indicate that even simple control procedures can improve productivity and organizational reputation in MSMEs (Biswas, 2024). Therefore, control activities are expected to strengthen sustainable competitive performance by improving efficiency, reducing risk, and supporting long-term adaptability (Sahoo et al., 2023).

H1: Control activities have a positive effect on sustainable competitive performance.

#### *Control Environment (CE) and Sustainable Competitive Performance (SCP)*

According to Stakeholder Theory, an organization's ability to align internal values and practices with stakeholder expectations determines its legitimacy and long-term survival (Freeman, 1984). In this context, the control environment forms the foundation of an effective internal control system, reflected in management integrity, ethical standards, and organizational culture. A strong control environment promotes transparency, accountability, and discipline, which are essential for establishing credible business practices (Manginte, 2024). This is particularly relevant for MSMEs, where governance structures are often informal and depend heavily on owner-manager behavior in shaping employee attitudes and operational consistency (Indrayani et al., 2025). A well-developed control environment can reduce opportunistic behavior and inefficiencies while strengthening stakeholder confidence, including that of suppliers, customers, and external

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partners (Stroumpoulis et al., 2024). Increased trust contributes to stronger business relationships, improved reputation, and better access to resources. Moreover, an ethical and value-driven environment supports long-term decision-making by balancing economic objectives with social considerations (Ong et al., 2025). Therefore, the control environment is expected to enhance sustainable competitive performance.

H2: Control environment has a positive effect on sustainable competitive performance.

#### *Digital Transformation (DT) and Sustainable Competitive Performance (SCP)*

Digital transformation enables MSMEs to leverage emerging technologies to improve decision-making, strengthen competitiveness, and enhance operational efficiency (Hariyanti & Kristanti, 2024). Within the Resource-Based View (RBV), digital capabilities are considered strategic resources that are valuable and difficult to replicate, allowing firms to sustain competitive advantage (Barney, 2000; Hsiao, 2024). Digital transformation goes beyond technology adoption, as it involves restructuring business processes, organizational routines, and value creation mechanisms (Díaz-Arancibia et al., 2024). In MSMEs, it supports real-time data processing, improves information accuracy, and enhances coordination across functions, which in turn strengthens internal control systems by increasing transparency and reducing information asymmetry (Dan, 2024). These improvements enable firms to manage risks more effectively, allocate resources efficiently, and respond more quickly to market changes (Gupta & Kumar Singh, 2023). In addition, digital transformation expands market access and improves customer engagement, contributing to both financial and non-financial performance (Buglea et al., 2025). Empirical evidence also shows that digitalization enhances firm value and internal control effectiveness (Wang et al., 2023). Therefore, digital transformation is expected to significantly improve sustainable competitive performance.

H3: Digital transformation has a positive effect on sustainable competitive performance.

#### *Information System (IS) and Sustainable Competitive Performance (SCP)*

An effective information system provides accurate, timely, and relevant data to support organizational control and managerial decision-making. Within the Resource-Based View (RBV), high-quality information is considered a strategic resource that enhances organizational capability by reducing uncertainty and enabling more responsive decisions (Barney, 2000; Moshood et al., 2025a). In this perspective, information systems are not merely operational tools but key enablers of sustained competitive advantage (Silas et al., 2025). For MSMEs, where resource constraints and informal practices are common, reliable information systems improve coordination and communication among business actors. They also support internal control by reducing information asymmetry, increasing transparency, and enabling more effective monitoring of business activities (Kimathi, 2025). These capabilities help firms minimize inefficiencies, optimize resource allocation, and respond more quickly to environmental changes (Triwahyono et al., 2023). In addition, improved operational efficiency, customer responsiveness, and strategic flexibility contribute to both financial and non-financial performance outcomes. Therefore, an effective information system is expected to enhance sustainable competitive performance.

H4: Information system has a positive effect on sustainable competitive performance.

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*Monitoring Activities (MA) and Sustainable Competitive Performance (SCP)*

Monitoring activities are a critical component of internal control systems, as they ensure that established procedures are consistently followed and remain effective over time (Hamed, 2023). Continuous monitoring allows organizations to identify control weaknesses, detect irregularities, and implement corrective actions, thereby creating a feedback loop that supports ongoing process improvement (Scavarda et al., 2025). From a Stakeholder Theory perspective, effective monitoring strengthens organizational accountability by ensuring that operations comply with regulatory requirements and stakeholder expectations (Freeman & Reed, 1983). This is particularly important in MSMEs, where formal evaluation mechanisms are often limited and monitoring largely depends on owner or manager involvement (Gerald et al., 2024).

Monitoring activities also contribute to performance consistency by reducing operational risks, minimizing variances, and improving the accuracy of financial and non-financial information (Ombai, 2024). This continuous evaluation enables MSMEs to sustain efficiency and adapt more effectively to changing market conditions (Hendrawan et al., 2024). Empirical studies further show that regular monitoring enhances performance stability and overall business outcomes in small enterprises (Rahmawati et al., 2025). In addition, ongoing review processes facilitate timely control improvements and reinforce accountability to stakeholders (Memari et al., 2025). Therefore, monitoring activities are expected to strengthen sustainable competitive performance by supporting long-term efficiency, flexibility, and stakeholder trust.

H5: Monitoring activities have a positive effect on sustainable competitive performance.

*Risk Assessment (RA) and Sustainable Competitive Performance (SCP)*

Risk assessment is a core component of internal control that enables firms to systematically identify, evaluate, and manage potential risks and opportunities that may affect the achievement of organizational objectives (Ferreira et al., 2025). Within the Resource-Based View (RBV), risk management capability is considered a strategic competence, as it allows firms to anticipate uncertainties, allocate resources efficiently, and sustain competitive advantage in dynamic environments (Barney, 2000; Jegan Joseph Jerome et al., 2024). This capability is particularly important for MSMEs, which are often more vulnerable to external shocks and market volatility due to limited resources. By proactively identifying risks such as demand fluctuations, supply chain disruptions, and financial instability, MSMEs can implement appropriate mitigation strategies and reduce the likelihood of operational failure (Turgay, 2023). Risk assessment also supports more adaptive decision-making and strategic planning, enabling firms to respond effectively to environmental changes. In addition, it strengthens internal control systems by providing a structured basis for designing and implementing control activities. These capabilities enhance both short-term stability and long-term sustainability by improving the firm's ability to balance risk and opportunity (Wasiu et al., 2025). As a result, stronger risk assessment practices are expected to improve sustainable competitive performance (Sari et al., 2025).

H6: Risk assessment has a positive effect on sustainable competitive performance.

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*Social Spiritual (SP) and Sustainable Competitive Performance (SCP)*

Socio-spiritual values represent an intangible form of capital that shapes ethical behavior, strengthens integrity, and provides direction for organizational actions (Panakaje et al., 2025). In the context of MSMEs, practices such as zakat, waqf, and almsgiving function not only as religious obligations but also as guiding principles that influence decision-making, stakeholder engagement, and business conduct. These values encourage ethical practices, reinforce social responsibility, and promote a long-term orientation, all of which are important for building trust and credibility in the market. From the perspective of Stakeholder Theory, firms that demonstrate strong ethical and social commitments are more likely to gain acceptance and support from key stakeholders, including customers, communities, and business partners (Freeman & Reed, 1983). This legitimacy contributes to stronger relationships, improved reputation, and increased customer loyalty (Edith et al., 2024). In culturally embedded contexts such as Indonesia, socio-spiritual practices can also function as distinctive resources that differentiate firms and strengthen their competitive position. Therefore, socio-spiritual values are expected to enhance sustainable competitive performance by fostering ethical consistency, stakeholder trust, and long-term social and financial outcomes (Nabil et al., 2025).

H7: Social-spiritual values have a positive effect on sustainable competitive performance.

## Method

### *Research Design and Participants*

This study adopts a quantitative research design using a cross-sectional survey approach to examine the causal relationships between internal control, digital transformation, information systems, socio-spiritual values, and sustainable competitive performance in MSMEs. This design is appropriate as it enables the systematic collection of standardized data from a relatively large number of respondents, allowing for robust statistical analysis within the MSME context. The study was conducted in Central Java, Indonesia, focusing on active MSME actors. A purposive sampling technique was employed with the following criteria: (1) business owners or managers who have operated their businesses for at least one year, (2) enterprises classified as micro, small, or medium, and (3) willingness to participate in the survey. A total of 416 respondents met these criteria and were included in the final analysis.

### *Variable Measurement*

All variables were measured using indicators adapted from prior studies and aligned with established theoretical frameworks. Internal control was operationalized based on the COSO framework, consisting of five dimensions: control activities, control environment, information systems, monitoring activities, and risk assessment. As presented in Table 1, each dimension reflects specific aspects of governance, such as risk mitigation procedures, managerial integrity, communication effectiveness, monitoring practices, and risk identification processes. Digital transformation was measured through indicators capturing the adoption, integration, and utilization of digital technologies in business operations. Information systems focused on the effectiveness of communication and information flow in supporting decision-making. Socio-spiritual values were measured through indicators

reflecting engagement in Islamic social financial practices, including zakat, waqf, and charitable giving. Sustainable competitive performance was assessed using multidimensional indicators covering financial outcomes, operational efficiency, and stakeholder relationships.

Table 1. Variable Indicators

Variable	Measurement	Source
Control Activities	Measured using a 5-point Likert scale, reflecting the 2 implementations of risk mitigation procedures and operational control practices within MSMEs.	Hudáková et al. (2023), Wahyudi et al. (2026), and Ying & Allaqtta (2025)
Control Environment	Measured using a 5-point Likert scale, reflecting managerial integrity, organizational values, and the work environment in shaping internal control practices within MSMEs.	Abouelghit & Gan (2024) and Silifat Shehu (2025)
Digital Transformation	Measured using a 5-point Likert scale, reflecting the adoption, integration, and utilization of digital technologies in MSMEs.	Julianda Jahid Muttaqin et al. (2025), and Prasetyo (2025)
Information System	Measured using a 5-point Likert scale, reflecting the effectiveness of information and communication systems in supporting work processes and decision-making within MSMEs.	Imtihan et al. (2025) and Rakkang & Achsanuddin (2025)
Monitoring Activities	Measured using a 5-point Likert scale, reflecting the extent of continuous monitoring, evaluation, and compliance checking in MSME operations.	Aikaterini et al. (2025), Parab & Deshmukh (2026), and Ye (2026)
Risk Assessment	Measured using a 5-point Likert scale, reflecting the effectiveness of risk identification, assessment, and its integration into managerial decision-making processes.	Hye (2025), Jans et al. (2023), and Sithi et al. (2025)
Social Spiritual	Measured using a 5-point Likert scale, reflecting of 5 items capturing socio-spiritual practices, including zakat, waqf, and charitable giving, as well as their perceived social impact.	Antičević et al. (2024) and Vural (2025)
Sustainable Competitive Performance	Measured using a 5-point Likert scale, reflecting the multidimensional performance of MSMEs, including financial outcomes, operational efficiency, and stakeholder relationships.	Adi et al. (2026), Rizal & Prihatiningsih (2026), and Selviana et al. (2025)

Source: Author data (2025)

### *Instrument and Data Collection*

The research instrument consisted of a structured, closed-ended questionnaire developed from validated indicators in prior literature. All items were measured using a five-point Likert scale ranging from “strongly disagree” to “strongly agree.” Before distribution, the instrument was reviewed to ensure clarity and relevance to the MSME context. Data collection was conducted in the first semester of 2025 through both online and offline methods. First, potential respondents were identified based on the sampling criteria. Second, questionnaires were distributed directly and through digital platforms to reach a

wider range of participants. Third, respondents were given sufficient time to complete the questionnaire voluntarily. Finally, the collected responses were screened to ensure completeness and consistency, resulting in 416 valid responses for analysis.

### *Data Analysis*

Data analysis was conducted using Structural Equation Modeling (SEM) with a Partial Least Squares (PLS) approach, supported by SmartPLS software. The analysis began with the evaluation of the measurement model to assess validity and reliability. Convergent validity was examined using factor loadings and Average Variance Extracted (AVE), while reliability was assessed through Cronbach's Alpha and Composite Reliability (CR). Discriminant validity was evaluated using the Fornell-Larcker criterion and the Heterotrait-Monotrait Ratio (HTMT). After confirming that the measurement model met the required thresholds, the structural model was analyzed to test the proposed hypotheses. Path coefficients, t-statistics, and p-values were used to determine the significance of relationships between variables, with a significance level set at 5%. This approach allows for simultaneous assessment of complex relationships among multiple constructs.

## **Results**

### *Respondent Profile*

Table 2 demonstrates the respondents' profile in this study, involving 416 participants with a relatively balanced gender distribution, consisting of 48.7% men and 51.3% women. This balance indicates that MSME activities in the observed context reflect inclusive participation across genders. Most respondents fall within the productive age range of 25–40 years (52.8%), followed by those under 25 years (36.9%), while only a small proportion are above 40 years (10.1%). This composition suggests a predominantly young and economically active group, which is likely to be more adaptive to technological developments and open to innovation. In terms of education, a substantial majority (90.2%) possess diploma or master's degrees, indicating a relatively high level of formal education among MSME actors. This suggests a stronger capacity for understanding managerial practices, adopting digital tools, and engaging in structured decision-making processes.

From a business perspective, Table 2 also shows that most respondents have moderate experience, with 81.5% operating their businesses for 3–10 years, while only 0.7% have more than 10 years of experience. This indicates that the sample is largely composed of enterprises in a growth and consolidation stage rather than fully mature businesses. Regarding business classification, respondents are predominantly small (44.4%) and medium enterprises (46.8%), with micro-enterprises accounting for only 8.6%. This distribution suggests that the findings are more representative of businesses with relatively better organizational structures and access to resources. The dominance of small and medium enterprises also implies a higher likelihood of adopting formal practices, including internal control systems and digital technologies. Overall, the profile presented in Table 2 reflects respondents who are sufficiently experienced, educated, and capable of engaging with complex managerial and strategic practices related to sustainable competitive performance.

Table 2. Respondent Profile

Category		Frequency	Percentage (%)
Gender	Man	203	48.7
	Woman	213	51.3
Age	Less than 25 years	154	36.9
	25 – 40 years	220	52.8
	More from 40 years	42	10.1
Education level	Elementary School	9	2.2
	School Upper Secondary	31	7.4
	Diploma and Master	376	90.2
Longevity	More from 10 years	3	0.7
	3 – 10 years	340	81.5
	Less than 3 year	73	17.5
Classification	Micro	36	8.6
	Small	185	44.4
	Medium	195	46.8

Source: Author data (2025)

### Measurement Model Analysis

Referring to [Table 3](#), the results of the measurement model evaluation indicate that all constructs in this study meet the required standards for validity and reliability. Convergent validity is supported by factor loadings exceeding the recommended threshold of 0.70, demonstrating that each indicator adequately represents its respective construct. Furthermore, the Average Variance Extracted (AVE) values for all constructs are above 0.50, indicating that the constructs explain a substantial proportion of the variance in their indicators relative to measurement error. Reliability is also confirmed, as both Composite Reliability (CR) and Cronbach's Alpha values exceed 0.70 across all variables, reflecting strong internal consistency (Nunnally & Bernstein, 1994). These results suggest that the measurement instruments are both stable and consistent in capturing the underlying constructs. Overall, the findings presented in [Table 3](#) provide robust empirical support for the adequacy of the measurement model, allowing the analysis to proceed to the structural model with confidence.

Table 3. Convergent Validity and Reliability

Construct	Item	Factor Loading	Cronbach's alpha	Rho_A	CR	AVE
CA	We have practices or procedures that help ensure that significant risks are prevented or mitigated.	0.922	0.835	0.838	0.924	0.859
	Control activities in our business are carried out in a simple manner and in accordance with small business best practices,	0.931				

Construct	Item	Factor Loading	Cronbach's alpha	Rho_A	CR	AVE
CE	such as manual recording or direct checking by the owner.					
	The attitude of the business owner or manager towards honesty and business responsibility greatly influences the way control is carried out.	0.906	0.891	0.892	0.932	0.822
	The values and policies implemented by our business serve as guidelines in maintaining an honest and orderly work environment.	0.901				
DT	The work environment we build also influences all control activities in our business.	0.911				
	Our business is starting to change the way we work by using digital technologies such as social media, financial recording applications, and online data storage services (cloud).	0.921	0.897	0.899	0.936	0.829
	Our business has begun to integrate several digital technologies (such as WhatsApp Business, Instagram, marketplaces, and sales applications) to support business development.	0.903				
IS	Our business operations are gradually becoming more reliant on digital technologies, such as digital transaction recording, online promotions, and customer communication through social media.	0.908				
	The communication systems we use (both verbal, written, and digital) help owners and employees do their jobs better.	0.891	0.932	0.933	0.952	0.831
	The available information forms the basis for conveying work procedures or business policies.	0.938				
	Communication within our business helps employees understand the owner's commitment to running the business.	0.875				

Construct	Item	Factor Loading	Cronbach's alpha	Rho_A	CR	AVE
	Important information is conveyed to all parties involved so that they can carry out their duties properly.	0.941				
MA	We regularly double-check our financial statements or business records to ensure there are no errors or fraud.	0.922	0.891	0.893	0.933	0.822
	Monitoring in our business includes regular reviews by owners and simple evaluations of business activities.	0.902				
	Monitoring also helps ensure that all employees follow applicable business policies and rules.	0.895				
RA	Our business seeks to recognize and analyze risks that may affect the course of the business, such as losses, late payments, or out of stock.	0.915	0.898	0.898	0.936	0.830
	We assess the likelihood of risk and its impact on the business, based on experience and simple considerations.	0.906				
	We identify risk as the basis for future business decision-making and management.	0.914				
SCP	Our efforts reduce the use of hazardous or environmentally unfriendly materials in the production process	0.915	0.933	0.933	0.949	0.789
	Our business is able to save costs because we care more about the environment, for example by reducing fines or waste management costs.	0.906				
	Our business productivity has increased, such as operational cost efficiency, tool utilization, and labor savings.	0.914				
	Our business profits have increased in recent years, both in terms of sales, capital, and investments.	0.915				
	Our business relationships with customers and suppliers have	0.906				

Construct	Item	Factor Loading	Cronbach's alpha	Rho_A	CR	AVE
	improved, characterized by increased customer satisfaction.					
SP	I prefer to use Islamic social financial instruments (such as zakat, waqf, alms, and alms-based alms) because it is beneficial for the community.	0.875	0.943	0.943	0.957	0.816
	I pay zakat every year if my business is eligible to issue zakat.	0.923				
	I routinely give alms in a simple form to help the welfare of the surrounding community.	0.895				
	I believe that waqf is charity, and I intend to do waqf for the benefit of the community.	0.928				
	I feel that the zakat, waqf, and alms that I issue can have a positive impact on the community.	0.893				

Source: Data processed by PLS (2025)

Notes: CA = Control Activities; CE = Control Environment; DT = Digital Transformation; IS = Information System; MA = Monitoring Activities; RA = Risk Assessment; SCP = Sustainable Competitive Performance; SP = Social Spiritual Value

The Fornell–Larcker analysis is conducted to assess discriminant validity by examining whether each construct is empirically distinct from other constructs in the model. Specifically, this criterion requires that the square root of the Average Variance Extracted (AVE) for each construct exceeds its correlations with other constructs. As presented in Table 4, all constructs meet this requirement, indicating that each variable shares more variance with its own indicators than with other constructs in the model. This result confirms that the measurement model does not suffer from significant overlap among constructs, thereby supporting their conceptual independence.

Table 4. Fornell-Larcker Criterion

	CA	CE	DT	IS	MA	RA	SP	SCP
CA	0.927							
CE	.0919	0.936						
DT	0.919	0.931	0.937					
IS	0.918	0.930	0.914	0.941				
MA	0.916	0.916	0.912	0.940	0.956			
RA	0.913	0.912	0.911	0.909	0.921	0.961		
SP	0.912	0.910	0.907	0.904	0.914	0.931	0.988	
SCP	0.909	0.908	0.904	0.903	0.910	0.921	0.952	0.993

Source: Data processed by PLS (2025)

The Heterotrait–Monotrait Ratio (HTMT) analysis was conducted to further assess discriminant validity by examining the degree of similarity between constructs. According to Henseler et al. (2015), HTMT values below 0.90 indicate that constructs are sufficiently distinct and that the model can be reliably used to interpret relationships among variables. As presented in Table 5, all HTMT values fall below this threshold, with the highest value of 0.899 observed between Digital Transformation and Information System. Although relatively high, this value remains within the acceptable range, suggesting that the constructs are closely related yet still empirically distinguishable. These results confirm that each construct captures a unique concept without significant overlap. Consequently, the measurement model demonstrates adequate discriminant validity, supporting the robustness of the constructs and allowing the analysis to proceed to the structural model with confidence.

Table 5. Heterotrait-Monotrait Ratio (HTMT)

	CA	CE	DT	IS	MA	RA	SP	SCP
CA								
CE	0.823							
DT	0.827	0.842						
IS	0.894	0.820	0.899					
MA	0.849	0.827	0.876	0.803				
RA	0.892	0.819	0.815	0.893	0.829			
SP	0.835	0.829	0.844	0.800	0.856	0.817		
SCP	0.814	0.811	0.897	0.873	0.859	0.800	0.895	

Source: Data processed by PLS (2025)

### Structural Model Analysis

Referring to Table 6, the results of the structural model evaluation show that all proposed hypotheses (H1–H7) are positive and statistically significant, indicating strong empirical support for the proposed model. Digital transformation emerges as a key driver of sustainable competitive performance, demonstrating a significant effect ( $\beta = 0.048$ ;  $p < 0.001$ ). This finding confirms the role of technological capability in enhancing organizational flexibility, operational efficiency, and responsiveness to market changes. In addition, monitoring activities ( $\beta = 0.068$ ;  $p < 0.01$ ) and socio-spiritual values ( $\beta = 0.056$ ;  $p < 0.05$ ) also exhibit notable contributions. These results suggest that continuous evaluation processes and value-based practices are essential for maintaining performance consistency and stakeholder trust. The combined influence of these variables indicates that both technical and non-technical factors play an important role in shaping MSME competitiveness.

Furthermore, several internal control components also significantly influence sustainable competitive performance. The control environment ( $\beta = 0.041$ ;  $p < 0.05$ ), information systems ( $\beta = 0.031$ ;  $p < 0.001$ ), and risk assessment ( $\beta = 0.031$ ;  $p < 0.001$ ) demonstrate meaningful effects, emphasizing the importance of governance quality, effective information processing, and proactive risk management in supporting organizational outcomes. Although control activities show a relatively smaller coefficient ( $\beta = 0.023$ ;  $p < 0.001$ ), their significance indicates that even basic procedural controls contribute

to operational stability in MSMEs. Collectively, these findings illustrate that sustainable competitive performance is not driven by a single factor but by the interaction of governance mechanisms, digital capabilities, and socio-spiritual values. This integrated perspective reinforces the need for MSMEs to balance structural, technological, and ethical dimensions in achieving long-term sustainability.

Table 6. Hypotheses Testing Results

Hypotheses	B	T statistic	P value	Result
H1 Control Activities → Sustainable Competitive Performance	0.023	5.126	0.000	supported
H2 Control Environment → Sustainable Competitive Performance	0.041	2.182	0.030	supported
H3 Digital Transformation → Sustainable Competitive Performance	0.048	4.870	0.000	supported
H4 Information System → Sustainable Competitive Performance	0.031	3.942	0.000	supported
H5 Monitoring Activities → Sustainable Competitive Performance	0.068	3.022	0.003	supported
H6 Risk Assessment → Sustainable Competitive Performance	0.031	3.656	0.000	supported
H7 Social Spiritual → Sustainable Competitive Performance	0.056	2.409	0.016	supported

Source: Data processed by PLS (2025)

## Discussion

This study provides strong empirical evidence that internal control mechanisms, digital transformation, and socio-spiritual values collectively shape sustainable competitive performance (SCP) in MSMEs. Rather than operating independently, these elements interact to form a multidimensional capability that supports not only operational efficiency but also long-term adaptability and organizational legitimacy (Antičević et al., 2024; Arraya, 2025). The findings confirm that SCP is better understood through an integrated framework that combines governance structures, technological capabilities, and value-based practices. From a theoretical perspective, the results reinforce the relevance of the Resource-Based View (RBV), as internal control and digital transformation function as strategic resources that contribute to firm performance (Buglea et al., 2025). However, the study extends RBV by demonstrating that the effectiveness of these resources depends on how they are utilized and combined within organizational processes. This indicates that competitive advantage in MSMEs is not solely resource-driven but also shaped by the alignment and interaction among different capabilities.

Digital transformation emerges as a dominant factor influencing SCP, indicating its role as a key enabler of organizational flexibility, efficiency, and responsiveness. This finding suggests that technological capability does not merely support operations but actively strengthens the effectiveness of internal control systems. By enabling real-time data processing and improving information transparency, digital transformation enhances monitoring, coordination, and decision-making processes (Li et al., 2024; Wang et al., 2023). In this sense, digitalization acts as a catalyst that amplifies the impact of governance

mechanisms. Furthermore, the results indicate that digital transformation facilitates organizational adaptation in uncertain environments, allowing MSMEs to respond more effectively to market changes (Atobishi et al., 2024). This interpretation is consistent with prior studies that position digital transformation as a central element in organizational resilience and performance, particularly in dynamic business contexts (Aljehani et al., 2026; Das, 2024; Zhao & Liu, 2024). Thus, its contribution extends beyond efficiency gains to broader strategic outcomes.

At the same time, the findings reveal that not all internal control components contribute equally to SCP. The relatively smaller effect of control activities suggests that formal procedures alone are insufficient to sustain performance in MSMEs. Instead, monitoring activities show a stronger influence, emphasizing the importance of continuous evaluation and feedback in maintaining effective control systems (Hudáková et al., 2023). This indicates that flexibility and responsiveness in control practices may be more critical than rigid procedural compliance, particularly in resource-constrained environments. Such a perspective aligns with the argument that COSO implementation in MSMEs should be adaptive rather than standardized (Agarwal et al., 2025). It also supports the broader view that dynamic capabilities play a more important role than static controls in uncertain business environments. Therefore, the effectiveness of internal control systems depends not only on their structure but also on their ongoing application and adjustment.

In addition, information systems and risk assessment are found to play significant roles in enhancing SCP, reinforcing the importance of decision quality and uncertainty management. Information systems improve organizational coordination and enable timely decision-making, while risk assessment supports proactive strategies to address potential disruptions (Moshood et al., 2025b). These findings are consistent with earlier studies that emphasize the role of information technology and risk management in organizational performance (Lutfi et al., 2022; Trieu et al., 2024). However, this study extends prior research by demonstrating that their impact is more substantial when integrated with digital transformation and internal control mechanisms. This suggests that these elements should not be viewed as isolated tools but as interconnected components within a broader governance and technology system. Their combined effect enhances the ability of MSMEs to manage complexity and maintain performance stability over time.

One of the most significant contributions of this study is the confirmation of socio-spiritual values as a strategic determinant of SCP. From the perspective of Stakeholder Theory, these values enhance organizational legitimacy by aligning business practices with societal and ethical expectations, thereby fostering trust and long-term relationships (Freeman & Reed, 1983). More importantly, the findings provide empirical support for the notion that socio-spiritual values function as unique intangible resources that contribute to competitive advantage, consistent with Spiritual Capital Theory. This perspective moves beyond viewing spirituality as merely cultural or contextual and positions it as a core element of business strategy (Lahmar, 2024). In MSMEs, where relationships and trust are critical, socio-spiritual practices can strengthen reputation and stakeholder engagement. This finding complements earlier research that has acknowledged the role of spirituality in business but has rarely integrated it into performance models (Osunmakinde et al., 2025).

To sum up, the findings suggest that sustainable competitive performance is best understood through the interaction of internal capabilities and external legitimacy. RBV explains how firms develop and leverage internal resources, while Stakeholder Theory and

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Spiritual Capital Theory clarify how these resources gain acceptance and sustain value through ethical and relational dimensions. This integrated perspective addresses gaps in prior studies that examine these factors in isolation. Theoretically, the study contributes by extending RBV to include socio-spiritual values as strategic resources and by demonstrating the interconnected role of governance and digital capabilities. Practically, the findings provide guidance for MSME practitioners to balance technological adoption, effective internal control, and value-based practices in their strategies. For policymakers, the results suggest the need to support MSMEs not only through digitalization programs but also through initiatives that strengthen governance and ethical business practices to achieve long-term sustainability.

## Conclusion

This study demonstrates that all examined variables, internal control components, digital transformation, and socio-spiritual values, have a positive and significant effect on sustainable competitive performance (SCP) in MSMEs. Among these factors, digital transformation and monitoring activities emerge as the most influential, underscoring the critical role of technological capability and continuous evaluation in strengthening organizational adaptability and efficiency. Internal control elements, including control environment, information systems, and risk assessment, also contribute meaningfully by supporting governance quality and informed decision-making. In addition, socio-spiritual values reinforce ethical behavior and stakeholder trust, which are essential for long-term sustainability. These findings suggest that SCP is shaped by the combined influence of structural governance, technological advancement, and value-based practices. Accordingly, MSMEs need to adopt an integrated approach that aligns digital innovation, effective control mechanisms, and ethical principles to remain competitive in a dynamic business environment.

Despite these contributions, this study has several limitations. The use of a cross-sectional design restricts the ability to capture dynamic changes over time and limits causal interpretation. In addition, the sample is geographically concentrated in Central Java and focuses primarily on small and medium enterprises, which may constrain the generalizability of the findings to other regions or sectors. Future research is recommended to adopt longitudinal designs to better examine the evolution of these relationships over time. Expanding the study to different geographical contexts and industry sectors would also improve external validity. Furthermore, future studies may incorporate mediating or moderating variables, such as organizational culture or market dynamics, to provide deeper insights into the mechanisms influencing SCP and to develop more adaptive and context-sensitive business strategies.

## Authors' Declaration

The authors made substantial contributions to the conception and design of this study. The authors take responsibility for the data analysis, interpretation, and discussion of the results. The authors have read and approved the final manuscript.

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## References

- Abouelghit, M. G. M., & Gan, S. D. (2024). Empirical research on the effects of mandatory auditing for SMEs on their internal control quality and management's perceptions: Evidence from Egypt. *Cogent Business and Management*, 11(1). <https://doi.org/10.1080/23311975.2024.2412738>
- Adi, R. K., Rahayu, E. S., Kusnandar, & Marwanti, S. (2026). Determinants of Agribusiness MSME Cluster Performance in Central Java, Indonesia. *Sustainability*, 18(6), 2716. <https://doi.org/10.3390/su18062716>
- Agarwal, R., Kallapur, S., & Dwivedi, S. (2025). Leveraging digital technologies to control fraud in a resource-constrained institutional environment: a longitudinal case study. *Journal of Accounting and Organizational Change*. <https://doi.org/10.1108/JAOC-06-2024-0209>
- Aikaterini, B., Eleftherios, A., Ioannis, L., Maria, K., & Spyridon, K. (2025). A thorough literature review on the determinants of corporate tax-avoidance and tax-evasion. *Journal of Accounting and Taxation*, 17(4), 148–170. <https://doi.org/10.5897/jat2025.0650>
- Akula, D. K., Mohammed, Y. S., Syed, A., Haque, G. M. M., & Arafat, Y. (2025). The role of information systems in enhancing strategic decision making: A review and future directions. *The American Journal of Management and Economics Innovations*, 7(08), 80–105. <https://doi.org/10.37547/tajmei/Volume07Issue08-07>
- Aljehani, S. B., Abdo, K. W. A., Hidayat-ur-Rehman, I., Badran, D. M. I., & Abdelhady, M. A. (2026). Digital transformation in SMEs: Governance performance mediated by AI-enabled analytics and process integration. *Systems*, 14(3), 324. <https://doi.org/10.3390/systems14030324>
- Alojail, M., & Khan, S. B. (2023). Impact of digital transformation toward sustainable development. *Sustainability (Switzerland)*, 15(20), 14697. <https://doi.org/10.3390/su152014697>
- Antičević, V., Ćurković, A., & Lušić Kalcina, L. (2024). Validation of two questionnaires assessing nurses' perspectives on addressing psychological, social, and spiritual challenges in palliative care patients. *Nursing Reports*, 14(3), 2415–2429. <https://doi.org/10.3390/nursrep14030179>

- 
- Arraya, M. (2025). Distinctive capabilities system in MSME's business model adaptation: evidence of the moderating and mediating effect of adaptive capability. *Central European Management Journal*, 33(2), 183–198. <https://doi.org/10.1108/CEMJ-11-2023-0438>
- Atobishi, T., Moh'd Abu Bakir, S., & Nosratabadi, S. (2024). How do digital capabilities affect organizational performance in the public sector? The mediating role of the organizational agility. *Administrative Sciences*, 14(2), 37. <https://doi.org/10.3390/admsci14020037>
- Barney, J. B. (2000). Firm resources and sustained competitive advantage. *Advances in Strategic Management*, 17, 203–227. [https://doi.org/10.1016/S0742-3322\(00\)17018-4](https://doi.org/10.1016/S0742-3322(00)17018-4)
- Biswas, A. (2024). From passion to profit: unveiling the strengths of proactive mindset, perseverance, excellence and education in the entrepreneurial success of MSMEs. *International Journal of Productivity and Performance Management*, 73(8), 2530–2557. <https://doi.org/10.1108/IJPPM-05-2023-0269>
- Boufounou, P., Eriotis, N., Kounadeas, T., Argyropoulos, P., & Pouloupoulos, J. (2024). Enhancing internal control mechanisms in local government organizations: A Crucial step towards mitigating corruption and ensuring economic development. *Economies*, 12(4), 78. <https://doi.org/10.3390/economies12040078>
- Buglea, A., Cişmaşu, I. D., Gligor, D. A. G., & Jurcuţ, C. N. (2025). Exploring the impact of digital transformation on non-financial performance in central and Eastern European Countries. *Electronics (Switzerland)*, 14(6), 1226. <https://doi.org/10.3390/electronics14061226>
- Bužinskienė, R., & Padgureckienė, A. (2025). The role of internal control integration in enhancing organizational performance. *Management Theory and Studies for Rural Business and Infrastructure Development*, 47(1), 25–48. <https://doi.org/10.15544/mts.2025.03>
- Dan, Z. (2024). Analysis of the impact of internal control on accounting information quality: a perspective from adverse internal control opinions. (2024). *Academic Journal of Business & Management*, 6(12). <https://doi.org/10.25236/ajbm.2024.061213>
- Das, D. K. (2024). Exploring the symbiotic relationship between digital transformation, infrastructure, service delivery, and governance for smart sustainable cities. *Smart Cities*, 7(2), 806–835. <https://doi.org/10.3390/smartcities7020034>
- Díaz-Arancibia, J., Hochstetter-Diez, J., Bustamante-Mora, A., Sepúlveda-Cuevas, S., Albayay, I., & Arango-López, J. (2024). Navigating digital transformation and technology adoption: a literature review from small and medium-sized enterprises in developing countries. *Sustainability*, 16(14). <https://doi.org/10.3390/su16145946>
- Edith, E. A., Toluwalase, V. I., Courage, I., & Tochukwu, I. I. (2024). Exploring the relationship between sustainable business practices and increased brand loyalty. *International Journal of Management & Entrepreneurship Research*, 6(8), 2463–2475. <https://doi.org/10.51594/ijmer.v6i8.1365>
- Ferreira, L. V. A., Alves, C. A. de M., Peotta de Melo, L., & Nunes, R. R. (2025). Internal Audit strategies for assessing cybersecurity controls in the Brazilian financial institutions. *Applied Sciences*, 15(10), 5715. <https://doi.org/10.3390/app15105715>
- Freeman, R. E., & Reed, D. L. (1983). Stockholders and stakeholders: A new perspective on corporate governance. *California Management Review*, 25(3). <https://doi.org/10.2307/41165018>
-

- 
- Gerald, N., Oluwapelumi, O., & Eli, K. A. (2024). Quality control in financial operations: Best practices for risk mitigation and compliance. *World Journal of Advanced Research and Reviews*, 24(1), 735–749. <https://doi.org/10.30574/wjarr.2024.24.1.3100>
- Gupta, A., & Kumar Singh, R. (2023). Managing resilience of micro, small and medium enterprises (MSMEs) during COVID-19: analysis of barriers. *Benchmarking*, 30(6), 2062–2084. <https://doi.org/10.1108/BIJ-11-2021-0700>
- Hamed, R. (2023). The role of internal control systems in ensuring financial performance sustainability. *Sustainability (Switzerland)*, 15(13), 10206. <https://doi.org/10.3390/su151310206>
- Hariyanti, S. & Kristanti, D. (2024). Digital Transformation in MSMEs: an Overview of Challenges and Opportunities in Adopting Digital Technology. *Jurnal Manajemen Bisnis, Akuntansi Dan Keuangan*, 3(1), 37–46. <https://doi.org/10.55927/jambak.v3i1.8766>
- Haryani, S., Alimuddin, A., & Darwis, D. (2025). Islamic ethics as the antithesis of manipulation culture: A critical study on the failure of trust (*amanah*) in financial reporting practices. *Amkop Management Accounting Review (AMAR)*, 5(2), 1513–1539. <https://doi.org/10.37531/amar.v5i2.3396>
- Hendrawan, S. A., Afdhal Chatra, Nurul Iman, Soemarno Hidayatullah, & Degdo Suprayitno. (2024). Digital transformation in MSMEs: Challenges and opportunities in technology management. *Jurnal Informasi Dan Teknologi*, 6(2), 141–149. <https://doi.org/10.60083/jidt.v6i2.551>
- Hsiao, M.-H. (2024). Resource integration and firm performance through organizational capabilities for digital transformation. *Digital Transformation and Society*. <https://doi.org/10.1108/dts-07-2023-0050>
- Hudáková, M., Kardoš, P., Dvorský, J., Afful, C. R., & Kloudova, J. (2023). Management of Operational Risk in the Context of Financial Performance of SMEs. *Systems*, 11(8), 408. <https://doi.org/10.3390/systems11080408>
- Hye, A. (2025). Market analytics in the U.S. livestock and poultry industry: Using business intelligence for strategic decision-making. *International Journal of Business and Economics Insights*, 05(03), 170–204. <https://doi.org/10.63125/xwxydb43>
- Imtihan, K., Mardi, M., Tantoni, A., Bagye, W., & Zulkarnaen, M. F. (2025). Enhancing user satisfaction and loyalty in MSMEs: The role of accounting information systems. *Journal of Information Systems and Informatics*, 7(1), 714–729. <https://doi.org/10.51519/journalisi.v7i1.1044>
- Indrayani, T. I., Fermayani, R., Egim, A. S., Chen, L., & Andra, Y. (2025). Do human resource management practices improve employee performance? The mediation role of job satisfaction in Indonesian MSMEs. *Jurnal Manajemen Bisnis*, 16(2), 418–441. <https://doi.org/10.18196/mb.v16i2.26310>
- Jans, C., Bogossian, F., Andersen, P., & Levett-Jones, T. (2023). Examining the impact of virtual reality on clinical decision making – An integrative review. *Nurse Education Today* (Vol. 125). Churchill Livingstone. <https://doi.org/10.1016/j.nedt.2023.105767>
- Jaroensombut, L., Yiengthaisong, A., & Sakolnakorn, T. P. N. (2025). Corporate social responsibility management for sustainable development: A systematic literature review. *International Journal of Advanced and Applied Sciences*, 12(1), 172–183. <https://doi.org/10.21833/ijaas.2025.01.017>
- Jegan Joseph Jerome, J., Sonwaney, V., Bryde, D., & Graham, G. (2024). Achieving competitive advantage through technology-driven proactive supply chain risk
-

- management: an empirical study. *Annals of Operations Research*, 332(1–3), 149–190. <https://doi.org/10.1007/s10479-023-05604-y>
- Julianda, J. M., Afidah, N. A., Osly, U., & Ryna, P. (2025). The influence of digital technology utilization and adoption on the operational efficiency of MSMEs in the era of digital transformation. *Journal of Strategic Marketing and Innovation*, 1(1). <https://doi.org/10.64243/JOSMI.01.1.10>
- Junaidi, J., Parela, Epi, & Ariswandy, D. (2025). Improvement of Managerial Capacity of MSMEs in Facing Global Competition. *Devotion: Journal Corner of Community Service*, 3(3), 15–25. <https://doi.org/10.54012/devotion.v3i3.428>
- Kimathi, S. K. (2025). Internal Accounting controls and financial statements accuracy of Public Sector firms in Kenya. *East African Finance Journal*, 4(2), 18–33. <https://doi.org/10.59413/eafj/v4.i2.2>
- Lahmar, F. (2024). Redefining leadership: The role of spirituality and motherhood in muslim women's educational leadership. *Religions*, 15(12). <https://doi.org/10.3390/rel15121565>
- Li, X., Zhao, F., & Zhao, Z. (2024). Corporate digital transformation, internal control and total factor productivity. *PLoS ONE*, 19(3 March). <https://doi.org/10.1371/journal.pone.0298633>
- Loo, M. K., Ramachandran, S., & Raja Yusof, R. N. (2023). Unleashing the potential: Enhancing technology adoption and innovation for micro, small and medium-sized enterprises (MSMEs). *Cogent Economics and Finance*, 11(2). <https://doi.org/10.1080/23322039.2023.2267748>
- Lutfi, A., Alkelani, S. N., Al-Khasawneh, M. A., Alshira'h, A. F., Alshirah, M. H., Almaiah, M. A., Alrawad, M., Alsyouf, A., Saad, M., & Ibrahim, N. (2022). Influence of Digital Accounting System Usage on SMEs Performance: The Moderating Effect of COVID-19. *Sustainability (Switzerland)*, 14(22), 15048. <https://doi.org/10.3390/su142215048>
- Malhotra, G., Dandotiya, G., Shaiwalini, S., Khan, A., & Homechaudhuri, S. (2025). Benchmarking for organisational competitiveness: a resource-based view perspective. *Benchmarking*, 32(3), 943–964. <https://doi.org/10.1108/BIJ-09-2023-0668>
- Manginte, S. Y. (2024). Fortifying Transparency: Enhancing Corporate Governance through Robust Internal Control Mechanisms. *Advances in Management & Financial Reporting*, 2(2), 72–84. <https://doi.org/10.60079/amfr.v2i2.173>
- Memari, A., Ogunmakinde, O. E., & Skulmoski, G. (2025). Strategies for improving supply chain efficiency in public-private partnership infrastructure projects. In *Management Decision*. Emerald Publishing. <https://doi.org/10.1108/MD-05-2024-0975>
- Moshood, T. D., Rotimi, J. O. B., & Shahzad, W. (2025a). Enhancing construction organizations' performance through strategic decision-making: unveiling the mediating role of quality of information. *International Journal of Organizational Analysis*, 33(9), 2956–2991. <https://doi.org/10.1108/IJOA-01-2024-4228>
- Moshood, T. D., Rotimi, J. O. B., & Shahzad, W. (2025b). Impact of information quality on strategic decision-making in construction organization: unravelling complexity and contingencies. In *Management Research Review* (Vol. 48, Number 4, pp. 578–603). Emerald Publishing. <https://doi.org/10.1108/MRR-06-2024-0422>
- Nabil, A., Syahir, A., Syukri, M., Abidin, Z., & Zarrina Sa'ari, C. (2025). Harmonizing Artificial Intelligence in Islamic Psychospiritual Approaches to Enhance Bio-Psycho-Socio-Spiritual Well-Being. *Journal of Advanced Research in Social and Behavioural Sciences*, 39(1), 190–204. <https://doi.org/10.37934/jarsbs.39.1.190204>

- 
- Modupe, O. T., Otitoola, A. A., Oladapo, O. J., Abiona, O. O., Oyeniran, O. C., Adewusi, A. O., ... & Obijuru, A. (2024). Reviewing the transformational impact of edge computing on real-time data processing and analytics. *Computer Science & IT Research Journal*, 5(3), 693-702. <https://doi.org/10.51594/csitrj.v5i3.929>
- Ombai, P., Kiflemariam, A., & Odollo, L. (2024). Financial and Non-Financial Information on Strategy Management Process; A Systematic Literature Review. *Journal of Strategic Management*, 8(1), 33-64. <https://doi.org/10.53819/81018102t2343>
- Ong, J. H., Khatibi, A., Mohd Talib, Z., & George, R. A. (2025). Ethical leadership in environmental, social and governance (ESG) adoption for Malaysian micro, small and medium enterprises (MSMEs). *International Journal of Ethics and Systems*, 41(3), 657–684. <https://doi.org/10.1108/IJOES-08-2024-0266>
- Osunmakinde, A., Kolade, O., Owoseni, A., & Mwila, N. (2025). Effectuated spirituality: how spiritual beliefs influence social entrepreneurship in a low-income country context. *Journal of Entrepreneurship in Emerging Economies*, 17(5), 1262–1287. <https://doi.org/10.1108/JEEE-09-2024-0409>
- Otoo, F. N. K., Kaur, M., & Rather, N. A. (2023). Evaluating the impact of internal control systems on organizational effectiveness. *LBS Journal of Management & Research*, 21(1), 135–154. <https://doi.org/10.1108/lbsjmr-11-2022-0078>
- Panakaje, N., Zuha, A., Parvin, S. M. R., Sheikh, N., Shaid, M., Irfana, S., & V, M. (2025). Exploring the role of islamic ethical training and business integrity in shaping ethical decision-making and business performance: a mediated–moderated analysis. *Journal of Islamic Accounting and Business Research*, 1–33. <https://doi.org/10.1108/JIABR-02-2025-0099>
- Parab, S. D., & Deshmukh, A. (2026). Integrated barrier-cost-KPI framework for IoT readiness in Indian sheet metal MSMEs. *Journal of Mines, Metals and Fuels*, 74(2), 221–235. <https://doi.org/10.18311/jmmf/2026/54215>
- Prasetyo, D. (2025). The effectiveness of digital technology implementation in enhancing the competitiveness of MSMEs in the creative industry of Tangerang City. *Jurnal Sketsa Bisnis*, 12(01), 64–84. <https://doi.org/10.35891/jsb>
- Rahmatdi, R. (2024). Digitalizing corporate whistleblowing systems: the role of country peers in the adoption of substantive CSR initiatives. *Sustainability Accounting, Management and Policy Journal*, 17(1), 179-203. <https://doi.org/10.1108/SAMPJ-03-2024-0303>
- Rahmawati, M., Dwi Arini, R., Rini Pratiwi, S., & Agusriyanti Ina, R. (2025). Business success evaluation model for MSMEs: Performance and strategy. *Journal of Applied Economics in Developing Countries*, 10(1), 40–54. <https://doi.org/10.20961/jaedc.v10i1.100167>
- Rahmialawati, R., & Melati, I. (2025). Enhancing internal control at an indonesian cooperative. *Jurnal Riset Akuntansi dan Keuangan*, 13(2), 401–416. <https://doi.org/10.17509/jrak.v13i2.83494>
- Raj, A., Shukla, D., Quadir, A., & Sharma, P. (2024). What drives the adoption of digital technology in the micro, small, and medium enterprises sector in a developing economy? *Journal of Business and Industrial Marketing*, 39(9), 1984–2002. <https://doi.org/10.1108/JBIM-09-2023-0512>
- Rakkang, Y., & Achsanuddin, A. N. (2025). Enhancing MSME financial performance through strategic capabilities: The mediating role of managerial decision-making.
-

- 
- Citizen : Jurnal Ilmiah Multidisiplin Indonesia*, 5(4), 1009–1023.  
<https://doi.org/10.53866/jimi.v5i4.930>
- Rizal, M. D., & Prihatiningsih, M. (2026). The effect of circular economy practices on financial performance of creative MSMEs in Surakarta. *Research Horizon*, 6(1), 435–446.  
<https://doi.org/10.54518/rh.6.1.2026.1041>
- Ryu, D., Lee, S., Yang, S., Jeong, J., Lee, Y., & Shin, D. (2024). Enhancing cybersecurity in energy IT infrastructure through a layered defense approach to major malware threats. *Applied Sciences (Switzerland)*, 14(22). <https://doi.org/10.3390/app142210342>
- Sahoo, S., Kumar, A., & Upadhyay, A. (2023). How do green knowledge management and green technology innovation impact corporate environmental performance? Understanding the role of green knowledge acquisition. *Business Strategy and the Environment*, 32(1), 551–569. <https://doi.org/10.1002/bse.3160>
- Sangodkar, N. P., & Bhandari, R. B. (2025). Development and validation of viable model and measure of yogic leadership: A novel and holistic paradigm. *Human Behavior and Emerging Technologies*, 2025(1), 5105841. <https://doi.org/10.1155/hbe2/5105841>
- Saradha Balaji, Lolakpuri, S, & Sujatha, K. (2024). A study on risk management in corporate business. *Involvement International Journal of Business*, 1(3), 197–209.  
<https://doi.org/10.62569/ijb.v1i3.26>
- Sari, P. N., Rosari, R., Sitalaksmi, S., & Nastiti, T. (2025). Beyond physical capital: The untold story of MSMEs' survival when larger firms failed. *Global Business and Finance Review*, 30(11), 33–45. <https://doi.org/10.17549/gbfr.2025.30.11.33>
- Sasongko, N., Triyono, & Kartika Toyibi. (2025). Does Intellectual Capital Can Moderated Sharia Compliance Performance on Financial Performance? *Jurnal Reviu Akuntansi dan Keuangan*, 15(3), 715-730. <https://doi.org/10.22219/jrak.v15i3.40260>
- Scavarda, L. F., Ceryno, P., Azevedo, T., & Goyannes Gusmão Caiado, R. (2025). A business process management lifecycle framework for continuous improvement towards operational excellence: Lessons learned from a longitudinal study in a Brazilian organisation. *International Journal of Lean Six Sigma*, 16(2), 296–327.  
<https://doi.org/10.1108/IJLSS-12-2023-0218>
- Selviana, V., Stikom, A., & Kupang, A. B. (2025). The role of core competencies in enhancing operational efficiency in micro, small, and medium enterprises (MSMEs) in Indonesia. *The Eastasouth Management and Business*, 4(01), 185–194.  
<https://doi.org/10.58812/esmb.v4i01>
- Sharma, T., Potter, Y., Pongmala, K., Wang, H., Miller, A., Song, D., & Wang, Y. (2026). Future of algorithmic organization: Large scale analysis of decentralized autonomous organizations (DAOs). *ACM Transactions on the Web*. <https://doi.org/10.1145/3796547>
- Shevchenko, L., Osiyevskyy, O., Umantsiv, Y., & Marchenko, O. (2025). A firm in strategic reality: leveraging constraints as opportunities. *Strategy and Leadership*, 53(6), 638–657.  
<https://doi.org/10.1108/SL-11-2024-0125>
- Silas, I. D., Joshua, S. S., Abdulazeez, A. S., & Bada, D. J. (2025). Management information systems and competitive advantage of energy firms in Nigeria. *European Journal of Business and Innovation Research*, 13(6), 71–86.  
<https://doi.org/10.37745/ejbir.2013/vol13n67186>
- Silifat Shehu, T. (2025). Internal Control System and Fraud Mitigation: A Case of Selected SMEs in Nigeria. *Asian Journal of Advanced Research and Reports*, 19(4), 301-315.  
<https://doi.org/10.9734/ajarr/2025/v19i4985>
-

- Singgalen, Y. A. (2024). Coastal and marine tourism monitoring system design using rapid application development (RAD). *Journal of Information System Research (JOSH)*, 5(2), 468–479. <https://doi.org/10.47065/josh.v5i2.4720>
- Sithi, S. S., Ara, M. A., Dhrubo, A. T., Rony, A. H., & Shabur, M. A. (2025). Sustainable supplier selection in the textile industry using triple bottom line and SWARA-TOPSIS approaches. *Discover Sustainability*, 6(1), 344. <https://doi.org/10.1007/s43621-025-01206-9>
- Stroumpoulis, A., Kopanaki, E., & Chountalas, P. T. (2024). Enhancing sustainable supply chain management through digital transformation: A comparative case study analysis. *Sustainability (Switzerland)*, 16(16), 6778. <https://doi.org/10.3390/su16166778>
- Suharyanto, T., Febriani Putri Irwan, V., & Faridotul, F. (n.d.). Optimizing the role of MSMEs in regional economic growth: Challenges and opportunities. *Journal of Economic Education and Entrepreneurship Studies*, 5(3), 2024. <https://journal.unm.ac.id/index.php/JE3S/index>
- Trieu, H. D. X., Nguyen, P. V., Tran, K. T., Vrontis, D., & Ahmed, Z. (2024). Organisational resilience, ambidexterity and performance: the roles of information technology competencies, digital transformation policies and paradoxical leadership. *International Journal of Organizational Analysis*, 32(7), 1302–1321. <https://doi.org/10.1108/IJOA-05-2023-3750>
- Triwahyono, B., Rahayu, T., & Kraugusteeliana, K. (2023). Analysing the role of technological innovation in improving the operational efficiency of MSMEs. *Jurnal Minfo Polgan*, 12(1), 1417–1426. <https://doi.org/10.33395/jmp.v12i1.12791>
- Turgay, S. & Aydin, A. (2023). Risk mitigation for SMEs: A step-by-step guide to implementing an effective framework. *Financial Engineering and Risk Management*, 6(8), 71-80. <https://doi.org/10.23977/ferm.2023.060808>
- Vural, M. E. (2025). An experimental study of the psychosocial and spiritual effects of ramadan. *Cumhuriyet İlahiyat Dergisi*, 29(3), 109–135. <https://doi.org/10.18505/cuid.1742517>
- Wahyudi, S. M., Tanjung, P. R. S., Chairunesia, W., Handayani, R., & Iskandar, D. (2026). The impact of risk management, business creativity, and business collaboration on business growth through financial management quality: A study on MSMEs. *KEUNIS*, 14(1), 72–82. <https://doi.org/10.32497/keunis.v14i1.6792>
- Wang, C., Wang, D., Deng, X., & Wang, S. (2023). Research on the impact of enterprise digital transformation on internal control. *Sustainability (Switzerland)*, 15(10). <https://doi.org/10.3390/su15108392>
- Wardana, C. K., Abas, N. I., A'zizah, L. O. F., & Puspawati, D. (2025). Does religiosity matter? A comparative study of online purchase intention of sharia fashion products among muslim women. *Pertanika Journal of Social Sciences and Humanities*, 33(2), 641–663. <https://doi.org/10.47836/pjssh.33.2.07>
- Wasiu, E., Onyinye, J. E., & Ibidapo, A., O. (2025). Financial risk management strategies and their influence on organizational stability. *Finance & Accounting Research Journal*, 7(6), 229–251. <https://doi.org/10.51594/farj.v7i6.1961>
- Wu, Y., Li, H., Luo, R., & Yu, Y. (2024). How digital transformation helps enterprises achieve high-quality development? Empirical evidence from Chinese listed companies. *European Journal of Innovation Management*, 27(8), 2753–2779. <https://doi.org/10.1108/EJIM-11-2022-0610>

- 
- Ye, W. (2026). Strengthening cybersecurity in small and medium-sized enterprises: balancing technology, costs, compliance, and employee awareness. *SAGE Open*, 16(1). <https://doi.org/10.1177/21582440251414951>
- Ying, M., & Allaqta, M. A. M. (2025). The impact of safety culture, risk mitigation, and sustainability on business performance: The mediating role of employee engagement in Palestinian Small and Medium-sized enterprises. *Sustainability (Switzerland)*, 17(10), 4361. <https://doi.org/10.3390/su17104361>
- Zarate-Torres, R. A., Rey-Sarmiento, C. F., & Martinez, J. A. (2025). The influence of spiritual behavior in sustainable performance: A confirmatory factor analysis. *Sustainability (Switzerland)*, 17(21), 9515. <https://doi.org/10.3390/su17219515>
- Zhao, J., & Liu, X. Y. (2024). ICT, supply chain digital integration capability, and firm financial performance: The antagonistic effects of perceived government support and cognitive constraints on digital transformation. *SAGE Open*, 14(2). <https://doi.org/10.1177/21582440241241887>