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Financial Information System as a Strategic Moderator: Strengthening the Impact of Governance, Risk, and Financial Distress on SME Sustainability

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ABSTRACT

Introduction: Small and Medium Enterprises (SMEs) play a vital role in Indonesia's economy but remain financially vulnerable, particularly during economic shocks such as the COVID-19 pandemic. Financial Information Systems (FIS) has emerged as crucial elements in managing business risks and ensuring strategic financial planning. FIS, as a part of financial technology (FinTech), enables SMEs to access real-time financial data, automate transactions, and enhance transparency.

Objectives: This research investigates the impact of corporate governance, risk management, and financial distress on the financial sustainability of SMEs, with a particular focus on the moderating role of FIS.

Methods: This research adopts a quantitative explanatory design using data between 2020 and 2023. To enhance statistical power and model reliability—especially for moderated regression and PLS-SEM analysis—a total of 525 valid responses were collected from SMEs across various sectors, including trade, manufacturing, services, and agriculture.

Results: The results indicate that corporate governance and risk management positively and significantly influence financial sustainability, while financial distress exerts a negative impact. More importantly, FIS significantly moderates all three relationships: it strengthens the positive effects of governance and risk management, and it mitigates the negative influence of financial distress on sustainability.

Conclusions: These findings highlight the strategic value of FIS as a digital enabler that enhances transparency, decision-making, and internal control. This study contributes to the growing literature on digital transformation and SME resilience by demonstrating that FIS is not merely a technological tool, but a strategic moderator that can transform internal practices into sustainable outcomes. Practical implications suggest that SMEs, policymakers, and fintech developers should prioritize the integration of FIS into governance and risk frameworks to enhance long-term financial viability.

Keywords: Financial Information Systems, SME Sustainability, Corporate Governance, Risk Management, Financial Distress, Moderation Effect.

INTRODUCTION

The growing concern over the financial fragility of small and medium enterprises (SMEs), particularly during macroeconomic shocks such as the COVID-19 pandemic, has brought renewed attention to the role of digital financial systems in sustaining their operations. In Indonesia, where SMEs account for over 99% of all business entities and contribute more than 60% to the national GDP, the pandemic revealed fundamental weaknesses in financial resilience, with over 30% of SMEs reporting severe liquidity crises between 2020 and 2021 (Ministry of Cooperatives and SMEs, 2022). The unexpected economic slowdown highlighted the urgent need for tools and strategies that could mitigate financial distress, support internal controls, and improve long-term sustainability.

Financial Information Systems (FIS) — defined as digital platforms for accounting, reporting, and financial analysis — have emerged as crucial elements in managing business risks and ensuring strategic financial planning. FIS, as a part of financial technology (FinTech), enables SMEs to access real-time financial data, automate transactions, and enhance transparency. These functions can be particularly vital in mitigating bankruptcy risks and aligning financial management with sustainable growth. While most studies have investigated FinTech from a technological acceptance or innovation viewpoint (Najib et al., 2021; Li et al., 2023), the potential of FIS as a moderator in the relationship between governance, risk, and sustainability remains largely unexplored.

SMEs are typically characterized by informal governance structures and underdeveloped risk management mechanisms (Tian et al., 2023; Fasano & Cappa, 2022). This creates a vulnerability that cannot be addressed by technology adoption alone. However, the integration of FinTech solutions — especially financial information systems — offers a promising pathway to professionalize SME governance, enhance internal controls, and manage financial risks more proactively (Kurdi et al., 2019; Gyamera et al., 2023).

Despite this potential, previous research has paid limited attention to how FIS may interact with corporate governance and risk management to influence financial sustainability, particularly in emerging markets like Indonesia. As Thottoli et al. (2024) noted, FinTech's moderating or mediating roles in improving SME performance are insufficiently examined, with most literature focusing on access to finance or innovation outcomes. Their systematic literature review (SLR) of 96 articles between 2000 and 2023 revealed a notable gap in understanding the institutional or organizational conditions under which FinTech adoption becomes most effective.

While the adoption of FinTech tools such as mobile payments, e-wallets, and online financing platforms has shown clear benefits in terms of operational efficiency and customer access (Allen et al., 2021), the impacts on internal financial sustainability mechanisms — such as governance compliance and risk absorption — remain underdeveloped in the literature. Furthermore, traditional financial distress models, such as Altman's Z-score (Altman, 1968), suggest that warning signals often go unnoticed in SMEs due to fragmented or manual reporting systems. FIS can close this gap by offering real-time diagnostics and integrated decision support, but only if embedded within a structured governance and risk framework. Based on data from 525 SMEs collected between 2020 and 2023 — a critical period marked by financial volatility and digital acceleration — this research addresses the following questions: RQ1: Do Corporate Governance, Risk Management, and Financial Distress significantly affect the Financial Sustainability of SMEs? RQ2: Does the use of Financial Information Systems moderate the impact of these variables on SME sustainability?

OBJECTIVES

The purpose of this study is to: fill the gap by empirically testing the moderating effect of Financial Information Systems on the relationship between Corporate Governance, Risk Management, Financial Distress, and Financial Sustainability among SMEs in Indonesia. Data were collected from SMEs across various sectors, including trade, manufacturing, services, and agriculture.

LITERATURE REVIEW

Grand Theoretical Foundation: Resource-Based View and Stewardship Theory

This study is grounded in two key theoretical frameworks: the Resource-Based View (RBV) and Stewardship Theory. The RBV, developed by Barney (1991), suggests that a firm's sustainable competitive advantage is built upon its ability to develop and deploy valuable, rare, inimitable, and non-substitutable resources. In the context of SMEs, Financial Information Systems (FIS) are considered strategic intangible assets. When properly integrated with governance mechanisms and risk management practices, FIS enhances internal efficiency, decision-making, and long-term financial sustainability.

Complementing this, Stewardship Theory (Donaldson & Davis, 1991) emphasizes the alignment of management's interests with those of the owners. Unlike agency theory, it assumes managers act as stewards rather than opportunists. In SMEs—often characterized by family ownership and centralized control—transparent governance and proactive risk management promote responsible financial stewardship. Digital tools such as FIS reinforce stewardship behavior by improving control, accountability, and transparency through real-time financial insights.

Explanation of Key Variables

Financial Sustainability refers to a firm's ability to maintain long-term solvency, profitability, and operational continuity. Key indicators include consistent cash flows, reinvestment capacity, and earnings retention. It is an essential goal for SMEs facing fluctuating markets and limited financial buffers.

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Corporate Governance involves the systems and structures through which organizations are directed and controlled. In SMEs, governance often refers to practices such as role separation between owners and managers, transparency in financial reporting, and strategic oversight. Strong governance builds stakeholder trust and enhances decision quality.
Risk Management refers to a firm's ability to identify, assess, and mitigate internal and external risks. SMEs frequently lack formal risk frameworks, exposing them to supply chain, market, and financial volatility. Effective risk management improves preparedness and resilience.
Financial Distress indicates a state of declining financial health, often marked by poor liquidity, increasing debt, and negative earnings. If unaddressed, distress may lead to insolvency or bankruptcy. For SMEs, early detection is often limited due to poor internal systems and delayed reporting.
Financial Information Systems (FIS) are digital platforms that support accounting, budgeting, and financial control. FIS enable real-time reporting, automate compliance, and offer early warning signals for decision-makers. As a moderator, FIS is posited to strengthen or buffer the relationships between governance, risk, distress, and financial sustainability.

Review of Prior Research

While FinTech adoption in SMEs has been extensively studied, few works have explored how FIS functions as a moderator in the relationship between internal practices and financial sustainability — especially in emerging economies such as Indonesia.
Thottoli et al. (2024) conducted a systematic literature review of 96 articles and identified a significant gap in empirical studies exploring the moderating or mediating effects of FinTech tools such as FIS. The authors argued that most studies emphasize adoption and innovation outcomes, while fewer focus on how FinTech interacts with governance and risk practices to achieve sustainable results.
Gyamera et al. (2023) found that FIS plays a moderating role between accounting services and SME financial performance in Ghana. When SMEs had well-functioning FIS, the benefits of accounting services on profitability and sustainability were significantly higher.
Kurdi et al. (2019) highlighted that enterprise risk management positively affects firm performance, especially when integrated with high-quality information systems. FIS enables real-time monitoring, risk dashboards, and automated controls, which enhance the effectiveness of risk mitigation.
Fasano and Cappa (2022) examined corporate governance in European SMEs and found it improved credit access and strategic agility. The presence of digital systems, such as FIS, was found to enhance governance transparency and responsiveness.
Sabour and Al-Waeli (2023) focused on SMEs in Iraq, concluding that risk disclosure and reporting improved significantly when supported by digital tools. However, such benefits materialized only when proper governance structures were in place.
Nugraha et al. (2022) noted that many Indonesian SMEs adopt digital accounting software primarily for tax reporting purposes, lacking integration with strategic financial decision-making or risk control mechanisms.
Heo et al. (2021) discovered that the use of financial apps and systems among SME owners not only improved financial control but also reduced financial stress, particularly during economic downturns.
Ruivo et al. (2014) argued that ERP and FIS platforms contribute to firm sustainability, provided they are embedded in organizational processes and used beyond mere compliance.
Lontchi et al. (2023) concluded that financial literacy mediates the relationship between FinTech usage and performance in SMEs, but emphasized the need to study digital systems not only as adoption tools, but as performance enablers.
Karim et al. (2022) reported that while FinTech adoption improves SME access to finance, its effectiveness is contingent on internal system integration, including FIS, which remains underutilized.
Sanga and Aziakpono (2023), in a bibliometric analysis, found limited research on how governance and risk interact with FinTech tools, underscoring a significant empirical void.
Hadi et al. (2023) studied financial reporting quality in SMEs and found that FIS enhances report reliability, especially in high-risk audit environments, by minimizing manual error and delay.
Johnston et al. (2007) found that Internet-based financial systems, when integrated with organizational governance, improved profitability, efficiency, and regulatory compliance in SMEs.
Sharma et al. (2023) emphasized that most FinTech-SME research focuses on adoption and usage intention, not structural performance impacts such as sustainability or crisis recovery.

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Hamdana et al. (2022) explored the role of financial literacy and supply chain practices in SME sustainability, concluding that digital financial control tools are an unexplored complement to governance frameworks.
Li et al. (2023) showed that digital finance improved innovation in Chinese SMEs but cautioned that resilience and sustainability benefits only emerged when risk control mechanisms were also in place.
Taken together, these studies suggest that FIS holds significant potential to enhance SME resilience and sustainability, but its moderating role in strengthening governance, risk management, and mitigating financial distress remains under-researched, particularly in Southeast Asia.

HYPOTHESIS

According to Stewardship Theory (Donaldson & Davis, 1991), managers entrusted with decision-making responsibilities are inclined to act in the best interest of the firm when empowered with mechanisms that ensure transparency, accountability, and structured oversight. In SMEs, such mechanisms may include clear role separation, internal audits, and financial disclosure practices, all of which reinforce long-term planning and responsible resource allocation. Fasano and Cappa (2022) found that corporate governance practices positively affect SME access to finance, creditworthiness, and growth potential. Thottoli et al. (2024) also emphasized governance as a key enabler in SME innovation and sustainability. Similarly, Gyamera et al. (2023) observed that firms with well-structured governance perform better in financial planning and execution.
H1: Corporate Governance has a positive and significant effect on the Financial Sustainability of SMEs.

From the perspective of the Resource-Based View (RBV) (Barney, 1991), risk management capabilities are strategic resources that contribute to organizational resilience. Proactive risk identification, mitigation, and contingency planning allow SMEs to adapt swiftly to market uncertainties, stabilize operations, and maintain financial health over time. Kurdi et al. (2019) demonstrated that enterprise risk management significantly improves organizational performance, especially when supported by digital systems. Sabour and Al-Waeli (2023) showed that risk management practices enhance financial outcomes when paired with governance structures. Hamdana et al. (2022) also found that structured risk approaches strengthen SME continuity during crisis periods.
H2: Risk Management has a positive and significant effect on the Financial Sustainability of SMEs.

Financial distress reflects a decline in a firm's solvency and ability to meet obligations. Based on Altman's Z-score theory (Altman, 1968), persistent financial distress signals declining financial sustainability and increased risk of bankruptcy. From an RBV standpoint, firms lacking financial control systems are unable to shield themselves from external shocks. Nugraha et al. (2022) found that Indonesian SMEs experiencing liquidity problems during the COVID-19 pandemic had significantly lower chances of recovery. Li et al. (2023) confirmed that financial distress negatively correlates with innovation and survival outcomes in Chinese SMEs. Lontchi et al. (2023) further highlighted the detrimental effect of prolonged financial stress on business continuity.
H3: Financial Distress has a negative and significant effect on the Financial Sustainability of SMEs.

In RBV terms, Financial Information Systems (FIS) are intangible assets that enhance the execution of governance functions by providing accurate, timely, and transparent financial data. Stewardship Theory also suggests that well-informed stewards (i.e., managers) act more responsibly when they have access to robust reporting tools, thus improving governance outcomes.
Gyamera et al. (2023) demonstrated that the presence of FIS strengthens the relationship between accounting functions and SME financial performance. Johnston et al. (2007) found that governance effectiveness increases when digital financial tools support transparency and accountability.
H4a: Financial Information Systems positively moderate the relationship between Corporate Governance and Financial Sustainability of SMEs.

Under the RBV framework, risk management is most effective when supported by technological tools that enable continuous monitoring and data-driven mitigation strategies. FIS supports risk identification through dashboards, alerts, and simulations, thereby amplifying the impact of risk management practices on sustainability. Kurdi et al. (2019) and Ruivo et al. (2014) emphasized that digital systems strengthen the impact of risk management by improving internal coordination and foresight. Sanga and Aziakpono (2023) identified a research gap in integrating FinTech and risk management, suggesting the potential value of FIS in bridging this divide.
H4b: Financial Information Systems positively moderate the relationship between Risk Management and Financial Sustainability of SMEs.

When facing financial distress, firms benefit from tools that allow them to detect problems early and take corrective action. FIS provides real-time financial visibility, helping managers prioritize cash flow, restructure obligations, or secure external funding. This aligns with RBV's view that technological capacity can act as a buffer against external threats.

Heo et al. (2021) showed that digital finance tools reduce SME financial stress by facilitating better control and decision-making. Sabour and Al-Waeli (2023) found that digital reporting systems help firms withstand distress more effectively. Thottoli et al. (2024) recognized that FinTech tools can serve as moderators, though few studies have tested this in distress contexts.

H4c: Financial Information Systems weaken the negative relationship between Financial Distress and Financial Sustainability of SMEs.

METHODS

Research Design

This study adopts a quantitative explanatory research design aimed at empirically examining the causal relationships between Corporate Governance, Risk Management, and Financial Distress (as independent variables) and Financial Sustainability (as the dependent variable). Additionally, the study investigates the moderating role of Financial Information Systems (FIS) in these relationships. The research is structured to test the hypotheses formulated in the previous section using statistical analysis.

Population and Sample

The population of this study consists of Small and Medium Enterprises (SMEs) operating in Indonesia during the period of 2020–2023—a critical timeframe marked by economic uncertainty due to the COVID-19 pandemic and the rapid adoption of digital financial tools.

A purposive sampling technique was employed based on the following inclusion criteria: SMEs must have been operational for a minimum of three years; They must utilize a digital accounting or financial information system (such as bookkeeping software or ERP); They must be willing to share data regarding governance practices, risk management, and financial performance.

The minimum required sample size was calculated using Slovin's formula with a 5% margin of error, which resulted in a minimum threshold of 400 respondents. To enhance statistical power and model reliability—especially for moderated regression and PLS-SEM analysis—a total of 525 valid responses were collected from SMEs across various sectors, including trade, manufacturing, services, and agriculture. This sample size exceeds the recommended minimum for complex multivariate analysis and supports generalizability within the Indonesian SME context.

Data Collection Techniques

Primary data were collected using a structured questionnaire, distributed both online and offline. The questionnaire was divided into several key sections: Demographic and business profile of the respondent; Measures of Corporate Governance; Measures of Risk Management; Indicators of Financial Distress; Assessment of Financial Sustainability; Utilization and intensity of Financial Information Systems (FIS).

A 5-point Likert scale was used to measure responses, ranging from 1 = "Strongly Disagree" to 5 = "Strongly Agree".

Operational Definitions and Measurement Indicators

Variable	Key Indicators
Corporate Governance	Financial transparency, separation of ownership and control, strategic oversight
Risk Management	Risk identification, mitigation planning, contingency frameworks
Financial Distress	Liquidity issues, debt levels, operational losses
Financial Sustainability	Long-term cash flows, stable profits, reinvestment capacity
Financial Information Systems (FIS)	Use of financial software, automation, real-time financial reporting

RESULTS

Respondent Profile

Out of the 525 valid SME respondents:

- 52.4% operated in the trade and retail sector,

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- 21.9% in services,
- 16.7% in manufacturing,
- and the remaining 9% in agriculture and other sectors. Approximately 61% of the businesses were family-owned, and 73% had adopted digital financial tools during the pandemic period.

Validity and Reliability Testing
All constructs met the required thresholds for validity and reliability:
- Construct validity was confirmed via factor loadings > 0.60 and Average Variance Extracted (AVE) > 0.50,
- Reliability was established with Cronbach's Alpha and Composite Reliability values exceeding 0.70 for all variables.

This indicates that the measurement instruments used in the questionnaire are both valid and reliable.

Descriptive Statistics

Variable	Mean	Std. Dev.
Corporate Governance	3.87	0.56
Risk Management	3.72	0.61
Financial Distress	2.63	0.74
Financial Sustainability	3.91	0.58
Financial Information Systems (FIS)	3.77	0.65

The results of this study reveal significant insights into how governance practices, risk management, and financial distress affect financial sustainability in Indonesian SMEs, particularly when moderated by the use of Financial Information Systems (FIS).

DISCUSSION

Corporate Governance and Financial Sustainability

The study confirms that Corporate Governance has a positive and significant effect on Financial Sustainability ($\beta = 0.312$, $p < 0.001$). This finding is in line with Stewardship Theory, which posits that managers, particularly in owner-managed SMEs, are more likely to act in the best interest of the enterprise when governance structures are transparent and supportive. In practical terms, this suggests that SMEs that implement basic governance mechanisms—such as separation of ownership and managerial roles, regular financial reporting, and oversight procedures—are more capable of sustaining financial performance over time. This supports previous findings by Fasano & Cappa (2022) and Johnston et al. (2007), who linked governance structures to access to finance, investor trust, and organizational agility. In Indonesia, where informal management practices often dominate SME operations, this evidence reinforces the need for structured governance, even at a small scale. Moreover, governance quality becomes a foundation upon which digital systems (such as FIS) can effectively operate.

Risk Management and Financial Sustainability

The study finds that Risk Management has a positive and significant impact on Financial Sustainability ($\beta = 0.278$, $p < 0.001$). According to the Resource-Based View (RBV), this reinforces the argument that proactive risk management capabilities—such as the ability to assess, prepare for, and mitigate potential disruptions—are valuable and rare resources, particularly within the SME context. SMEs that had risk identification protocols, emergency cash reserves, or diversified income streams were more likely to remain operational during volatile periods. This echoes the findings of Kurdi et al. (2019) and Sabour & Al-Waeli (2023), where risk-aware organizations were more agile and financially stable under external pressures. In emerging markets, where systemic risks (currency fluctuations, political instability, supply chain volatility) are common, SMEs must adopt simple but effective risk practices. FIS tools can be instrumental in institutionalizing these practices by offering dashboards, alerts, and scenario simulations.

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Financial Distress and Financial Sustainability

As hypothesized, Financial Distress negatively affects Financial Sustainability ($\beta = -0.246$, $p < 0.001$). This finding aligns with Altman's (1968) Z-score model, which associates liquidity problems, rising debt, and net losses with a heightened risk of insolvency and business failure. In this study, many SMEs reported cash flow issues, delayed customer payments, and increased debt obligations during the pandemic period. These conditions significantly reduced their ability to invest in innovation, retain employees, or sustain operations. Importantly, this finding validates the urgent need for early warning systems within SMEs, which are often lacking due to manual bookkeeping or delayed reporting. Here, digital financial tools like FIS can play a critical preventive role.

The Moderating Role of Financial Information Systems (FIS)

The core contribution of this study lies in demonstrating the moderating role of Financial Information Systems in strengthening the relationships between internal practices and financial sustainability.

- FIS × Corporate Governance → Financial Sustainability ($\beta = 0.139$, $p = 0.008$) This indicates that when governance structures are supported by digital financial systems, the positive impact on sustainability is amplified. FIS enhances governance by providing real-time visibility, audit trails, and data consistency, which fosters accountability and informed oversight.
- FIS × Risk Management → Financial Sustainability ($\beta = 0.113$, $p = 0.027$) The integration of FIS strengthens risk management effectiveness by allowing faster detection and response to operational and financial threats. SMEs using FIS can automate risk alerts, monitor cash flows, and simulate contingency scenarios—making risk planning more proactive and less reactive.
- FIS × Financial Distress → Financial Sustainability ($\beta = 0.122$, $p = 0.019$) Interestingly, FIS also weakens the negative impact of financial distress on sustainability. This suggests that even when SMEs experience distress, those with robust financial systems are better equipped to identify issues early, prioritize payments, restructure debt, and make informed recovery decisions. This echoes Heo et al. (2021), who found that financial apps helped SMEs reduce financial stress through better control.

Taken together, these results underscore the role of digital capabilities as strategic enablers, not just operational tools. In line with RBV, FIS functions as a dynamic capability that enhances the value of internal resources like governance and risk management, and buffers the threats of external shocks such as financial distress.

CONCLUSION

This study examined the impact of Corporate Governance, Risk Management, and Financial Distress on the Financial Sustainability of SMEs in Indonesia, and tested the moderating role of Financial Information Systems (FIS) in these relationships. Using data from 525 SMEs collected between 2020 and 2023—a period marked by economic uncertainty and digital acceleration—the research produced the following key findings:

- Corporate Governance positively and significantly influences Financial Sustainability, suggesting that structured governance practices enhance financial control, transparency, and long-term viability.
- Risk Management also has a positive and significant effect on Financial Sustainability. SMEs that implement proactive risk identification and mitigation strategies are more resilient in facing operational and market uncertainties.
- Financial Distress negatively impacts Financial Sustainability, confirming that liquidity problems, rising debt, and losses threaten business continuity in SMEs.

  Financial Information Systems (FIS) significantly moderate all three relationships: FIS strengthens the impact of Corporate Governance and Risk Management on sustainability by enhancing transparency, efficiency, and control; FIS also weakens the negative influence of Financial Distress, enabling earlier detection and faster response to financial threats.

In conclusion, the integration of digital financial systems within SME governance and risk frameworks is essential not only for operational efficiency but also for strategic financial sustainability. FIS should be considered a critical enabler, especially in emerging markets where internal systems are often underdeveloped.

Based on the findings, several practical and policy-oriented recommendations can be made:

For SME Owners and Managers: Invest in affordable and user-friendly Financial Information Systems that go beyond bookkeeping to include forecasting, budgeting, and risk alerts; Combine FIS adoption with improvements in internal governance (e.g., role clarity, financial reporting routines) to maximize its impact; Develop basic risk management protocols, supported by digital tools, to respond to market shocks more proactively.

For Policymakers and Regulators: Expand government programs that subsidize digital financial tools and provide incentives for SME digitalization; Integrate digital governance modules into financial literacy and SME training programs, emphasizing the strategic role of FIS in sustainability; Support public-private partnerships to develop localized FIS platforms tailored to SME needs, particularly in rural or informal sectors.

For FinTech Developers and Solution Providers: Design SME-oriented FIS solutions that embed features for governance support (e.g., audit trails, reporting templates) and risk monitoring; Offer modular systems that allow SMEs to scale their use of digital tools based on growth stage and needs; Collaborate with SME associations and cooperatives to increase adoption through bundled services and peer learning.

For Future Researchers: Conduct longitudinal studies to assess how sustained FIS usage affects financial performance over time; Explore the mediating role of financial literacy or digital capabilities in enhancing the effectiveness of FIS; Expand the research to other emerging markets to build comparative insights across regions.

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