Embedding Sustainability in Responsible GenAI Readiness: An Integrative Strategic-Ethical Framework for Emerging Economies MSMEs

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Abstract. Generative artificial intelligence (GenAI) offers micro, small, and medium-sized enterprises (MSMEs) in emerging economies new opportunities to improve productivity, innovation, and customer value, yet these opportunities are difficult to sustain when firms operate with limited managerial slack, weak data infrastructure, and immature governance routines. This study develops an integrative framework that embeds sustainability, understood as durable competitive advantage, into responsible GenAI readiness. Using a structured literature synthesis of 54 peer-reviewed articles and 13 normative sources, including UNESCO and ASEAN guidance, the study consolidates recurring findings into three interdependent domains: organizational readiness, ethical governance, and sustainability-bridging mechanisms. Organizational readiness captures leadership commitment, scalable digital and data infrastructure, workforce capability, and a learning-oriented culture. Ethical governance anchors transparency, fairness, accountability, privacy, human oversight, and impact assessment as core conditions for responsible adoption. Bridging mechanisms, including ethics-by-design routines, cross-functional oversight, adaptive risk templates, bias scorecards, and performance dashboards, translate ethical principles into operational routines and connect GenAI initiatives with strategic performance indicators. The framework extends conventional technology-adoption perspectives by treating ethics not as a compliance add-on but as a constitutive element of readiness and long-term value creation. It offers MSME managers a compact diagnostic lens for sequencing GenAI adoption and provides policymakers with a capacity-sensitive basis for sandboxing, disclosure, and governance support in emerging-economy contexts.

Keywords: Responsible AI Adoption, Strategic Readiness Framework, Emerging-Economy MSMEs.

1 Introduction

Generative artificial intelligence (GenAI) is reshaping how firms create value by automating knowledge work, supporting decision-making, and enabling more personalized customer engagement. For micro, small, and medium-sized enterprises (MSMEs), these

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capabilities may strengthen competitiveness through leaner operations, faster experimentation, and improved market responsiveness [1, 2]. The promise, however, is accompanied by risks that are particularly acute for smaller firms. Algorithmic bias, privacy breaches, opaque model outputs, and weak accountability arrangements can erode stakeholder trust and undermine sustained performance, especially when firms lack dedicated compliance teams and mature control systems [3, 4]. The issue is strategically important because MSMEs represent about 90 percent of firms and up to 40 percent of formal gross domestic product in emerging economies [5], while the adoption of advanced analytics and AI-related tools remains uneven [6].

Existing adoption theories, including Diffusion of Innovation and the Technology-Organization-Environment framework, help explain why firms adopt digital technologies by highlighting technological readiness, organizational capability, and environmental pressure [7, 8]. These theories are useful, but they do not fully explain how ethical safeguards become part of readiness or how responsible use contributes to durable competitive advantage. In practice, many MSMEs begin GenAI pilots with enthusiasm for productivity gains but without clear routines for transparency, fairness, human oversight, data protection, and accountability [9, 10]. This gap matters because weak governance can turn promising AI adoption into reputational, legal, and operational exposure.

Normative guidance has advanced more quickly than MSME-oriented implementation tools. UNESCO's Recommendation on the Ethics of Artificial Intelligence emphasizes human agency, inclusiveness, proportionality, transparency, and accountability [3]. The ASEAN Guide on AI Governance and Ethics translates similar principles into practical themes such as human-centricity, fairness, security, privacy, accountability, and reliability [24]. Both documents are valuable, yet neither provides a compact readiness model that explicitly links responsible GenAI adoption with the performance durability expected by MSME owners and managers. Empirical studies also remain fragmented: some focus on infrastructure and capability, while others examine trust, ethics, or governance mechanisms, often without integrating these elements into a strategic framework for smaller firms [11, 12].

This study addresses the gap by developing a conceptual framework that embeds responsible GenAI readiness within a sustainability logic of enduring firm performance. Sustainability in this paper refers primarily to the ability of MSMEs to preserve and renew competitive advantage over time, rather than to ecological sustainability alone. Three research questions guide the study: (1) which readiness dimensions shape GenAI adoption in MSMEs; (2) which ethical-governance challenges and mechanisms are most salient; and (3) how readiness and ethics can be integrated into a practical, performance-oriented model for MSMEs in emerging economies?

2 Research Methods

This study used a structured literature synthesis informed by integrative literature review logic. This approach is appropriate for theory-building studies that draw on het-

erogeneous empirical, conceptual, and policy sources [13, 14]. This study used a structured literature synthesis informed by integrative literature review logic. This approach is appropriate for theory-building studies that draw on heterogeneous empirical, conceptual, and policy sources [4].

A Scopus search was conducted from February to April 2025 using combinations of terms related to generative AI, readiness, adoption, governance, ethics, sustainability, competitive advantage, performance, SMEs, and MSMEs. The search was limited to English-language, peer-reviewed journal articles in relevant areas, including business, management, computer science, information systems, and social sciences. The query retrieved 58 records. After deduplication, title-abstract screening, and full-text assessment, 54 articles were retained. Studies were included when they addressed GenAI or closely related AI technologies, examined adoption or governance determinants, and discussed outcomes linked to firm performance, competitiveness, or responsible use. To strengthen the normative dimension, 13 grey-literature sources were added purposively, including UNESCO's Recommendation on the Ethics of Artificial Intelligence and the ASEAN Guide on AI Governance and Ethics [3, 24].

The synthesis followed three steps. First, abstracts and full texts were coded to identify recurring constructs related to readiness, governance, ethics, trust, and performance. Second, related constructs were grouped into mid-level categories through iterative comparison. Third, these categories were consolidated into three higher-order domains: organizational readiness, ethical governance, and sustainability-bridging mechanisms. A synthesis matrix was used to trace how each article informed the emerging domains, supporting transparency and reducing the risk that the framework would rely on isolated studies. The resulting model is therefore best understood as a conceptually grounded framework for future empirical validation, rather than as a statistically tested causal model.

3 Result and Discussion

The synthesis identified seven closely related constructs that shape responsible GenAI readiness in MSMEs: strategic leadership, data and technology infrastructure, workforce capability, learning culture, ethical principles, governance routines, and contextual sensitivity. These constructs are organized into a tri-layer framework in which organizational readiness and ethical governance are connected through bridging mechanisms. Sectoral, regulatory, and sociocultural conditions surround the framework because they shape how readiness and governance are interpreted in practice.

3.1 Organizational Readiness as a Capability Nexus

Organizational readiness in MSMEs combines strategic-technical alignment and learning capacity. Unlike larger firms, MSMEs often rely on informal decision-making, concentrated leadership, and limited resources. Leadership commitment is therefore critical because it determines whether GenAI is framed as a strategic investment or merely as an operational shortcut. Readiness is stronger when leaders connect GenAI initiatives

to durable performance indicators, such as customer retention, service reliability, process efficiency, and innovation speed, rather than only to short-term cost reduction [15]. Technical readiness also matters. Firms need usable data, interoperable systems, reliable digital infrastructure, and employees who can work critically with AI-enabled tools [2, 16]. A learning-oriented culture then converts small experiments into routines, allowing MSMEs to accumulate capability gradually instead of treating GenAI adoption as a one-off project.

3.2 Ethical Governance as Performance Protection

Ethical governance should be viewed as a strategic protection mechanism rather than a downstream compliance task. Transparency, fairness, accountability, privacy, reliability, and human oversight reduce the likelihood that GenAI adoption will damage trust, trigger regulatory exposure, or produce decisions that stakeholders cannot accept [3, 9, 24]. Evidence from AI governance and responsible adoption studies suggests that impact assessments, bias checks, decision logs, and clear accountability roles are more useful when embedded early in the design and deployment cycle [17, 18]. This finding supports the argument that readiness and ethics are interdependent: firms are not fully ready for GenAI when they have technical capacity but lack routines for responsible use. Recent studies similarly argue that ethical considerations need to be integrated into strategic and technological planning, not added after deployment [19, 20].

3.3 Trust as a Reinforcing Condition for Adoption

Trust is both a precondition for and an outcome of responsible GenAI use. Users, employees, partners, and customers are more likely to accept GenAI-supported processes when firms can explain data provenance, model limitations, human-in-the-loop arrangements, and escalation procedures [17]. For MSMEs, trust has direct strategic value because repeat transactions, referrals, and partner confidence often determine survival and growth under thin margins [15, 18]. Responsible GenAI readiness therefore depends not only on whether the technology works, but also on whether stakeholders believe the system is understandable, fair, and governed by accountable human judgment.

3.4 Governance Architectures Across Organizational Levels

Effective governance combines light internal controls with external alignment. Internally, MSMEs can begin with role-based data access, simple decision logs, model-use registers, bias checklists, and periodic review meetings. These practices create traceability without imposing the bureaucracy of large enterprise governance [17, 18]. Externally, alignment with sectoral codes, data-protection expectations, and regional guidance such as the ASEAN Guide can reduce uncertainty when MSMEs engage partners, customers, and regulator [24]. The key is proportionality. Governance routines must be serious enough to protect stakeholders but simple enough to fit MSME capacity.

3.5 Sociocultural and Sectoral Contingencies

Responsible readiness is context dependent. Cultural norms shape risk perception, willingness to share data, expectations about automation, and acceptance of human-AI collaboration [21]. Sectoral context also changes the level of ethical scrutiny. Health, education, financial services, and public-facing services require stronger safeguards because errors or biased outputs can directly affect welfare, rights, or access to essential services [18, 22]. MSMEs therefore need governance routines that are not only technically sound but also legitimate within the expectations of their sector and community.

3.6 Bridging Mechanisms as the Operational Layer

The synthesis points to three bridging mechanisms that connect capability and governance. First, ethics-by-design routines integrate value mapping, risk scoring, and human oversight into product or process development, allowing responsibility to be considered during design rather than after rollout [17, 23]. Second, cross-functional oversight groups help MSMEs balance speed, feasibility, and accountability. Such groups do not need to be large; a founder or manager, a technical lead, and a domain expert may be enough at an early stage [16, 18]. Third, adaptive toolkits, including bias scorecards, modular risk templates, incident logs, and dashboards linking GenAI outcomes with key performance indicators, translate abstract principles into repeatable checks [3, 9, 24]. Together, these mechanisms make ethical governance operational and connect responsible use with sustained performance.

3.7 An Integrated, Layered Framework

Figure 1 summarizes the proposed framework. Organizational readiness provides strategic direction, technical infrastructure, workforce capability, and learning routines. Ethical governance provides normative anchors and accountability instruments. Sustainability-bridging mechanisms connect the two layers by translating principles into routines, feedback loops, and performance dashboards. The outer layer represents regulatory, sectoral, and sociocultural conditions that shape the intensity and form of governance. The framework is dynamic: stronger data infrastructure improves auditability; clearer governance increases legitimacy; and learning loops allow MSMEs to adjust GenAI use as risks, capabilities, and market expectations change.

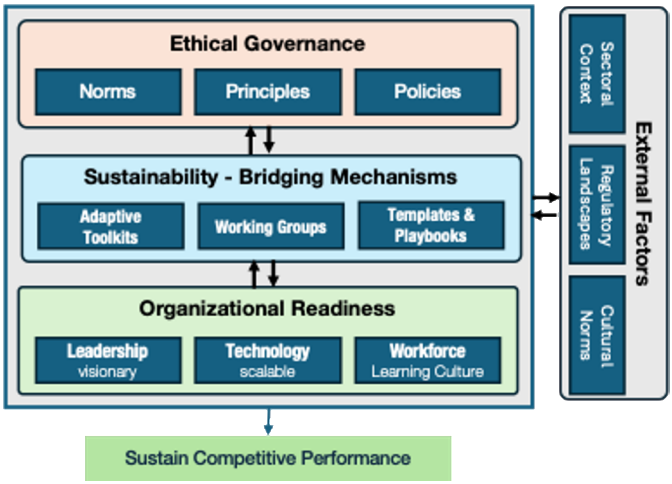

Fig. 1. Conceptual Framework for Responsible GenAI Readiness in emerging economies MSMEs

3.8 Theoretical Contribution and Practical Implications

The framework contributes to technology-adoption research by extending the Technology-Organization-Environment and Diffusion of Innovation perspectives [7, 8]. Its main contribution is to position ethics as part of readiness and value creation, not as an external constraint. This view also enriches AI readiness literature by showing how socio-technical capability, governance safeguards, and performance durability can be integrated for MSMEs [11]. For managers, the framework suggests a staged path: clarify strategic objectives, identify high-value and low-risk GenAI use cases, build minimal governance routines, test and document outcomes, and scale only when trust, accountability, and performance indicators are sufficiently visible. For policymakers, the framework supports tiered governance instruments, such as MSME-friendly sandboxes, simplified disclosure templates, shared audit tools, and incentives for fairness and impact assessments.

3.9 Sustainability Payoff: Linking Readiness to Enduring Advantage

The sustainability payoff of responsible GenAI readiness lies in repeatable value creation. Organizational learning helps firms turn experiments into capabilities. Ethical governance protects these capabilities from trust erosion, compliance failure, and reputational loss. Bridging mechanisms keep strategy, technology, and ethics connected as conditions change. In this sense, MSMEs do not gain durable advantage simply by adopting GenAI; they gain it by adopting GenAI in ways that remain trusted, adaptive, and strategically aligned over time.

4 Conclusion

This study developed a performance-oriented framework that embeds sustainability, defined as enduring competitive advantage, within responsible GenAI readiness for MSMEs in emerging economies. Based on a structured synthesis of 54 peer-reviewed articles and 13 normative sources, the framework integrates three domains: organizational readiness, ethical governance, and sustainability-bridging mechanisms. Organizational readiness provides leadership direction, data and technology foundations, workforce capability, and learning routines. Ethical governance protects stakeholder trust through transparency, fairness, accountability, privacy, reliability, and human oversight. Bridging mechanisms translate these principles into daily practice through ethics-by-design routines, cross-functional oversight, adaptive templates, scorecards, and dashboards. The framework offers a compact roadmap for MSME leaders seeking to move from experimental GenAI use toward responsible and durable value creation. It also gives policymakers a basis for designing capacity-sensitive support instruments aligned with UNESCO and ASEAN principles. Future research should test the framework empirically across sectors and countries, refine measurable constructs such as governance maturity and trust-loop intensity, and examine how different regulatory and cultural contexts shape the relationship between responsible readiness and competitive resilience.

Disclosure of Interests. The authors have no competing interests to declare that are relevant to the content of this article.

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