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Research Article

SWOT Analysis and Strategy Mapping in Accelerating the Adoption of Generative AI in Indonesian SMEs

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Abstract

The rapid development of generative artificial intelligence (AI) presents significant opportunities for small and medium-sized enterprises (SMEs) in Indonesia to enhance innovation, operational efficiency, and competitiveness. However, adoption remains limited due to constraints in human capital, financial capacity, and digital infrastructure. This study aims to identify the strategic factors influencing generative AI adoption among Indonesian SMEs and to design a framework that accelerates its implementation using SWOT analysis and strategy mapping. Employing a qualitative literature review method, the research synthesizes findings from academic and institutional sources published between 2018 and 2025. The results reveal that Indonesian SMEs possess notable strengths, including entrepreneurial agility and growing digital literacy, yet face weaknesses such as limited AI expertise and investment capacity. Opportunities arise from supportive national policies, affordable cloud technologies, and collaborative ecosystems, while threats include cybersecurity issues and regulatory uncertainty. Through strategy mapping based on the Balanced Scorecard framework, four perspectives—learning and growth, internal process, customer, and financial—are connected to guide AI adoption strategically. The study proposes actionable recommendations for SME managers, policymakers, and supporting institutions to build capability, governance, and collaboration. Overall, this research provides a comprehensive strategic model to facilitate effective and sustainable generative AI adoption among Indonesian SMEs.

Keywords: Generative AI, SMEs, SWOT Analysis, Strategy Mapping.

INTRODUCTION

The rapid advancement of artificial intelligence (AI), particularly generative AI, has created transformative opportunities for organizations to enhance innovation, operational efficiency, and competitiveness (Kshetri et al., 2025). While large corporations have begun integrating generative AI into various processes and services, its adoption among small and medium-sized enterprises (SMEs) remains relatively limited (Hussain & Rizwan, 2024). In Indonesia, a recent survey indicated that approximately 28% of business actors have adopted AI in some capacity, yet most applications remain at a basic level, and the in-depth use of generative AI is still uncommon (Amazon Web Services, 2025).

Indonesian SMEs face several structural barriers in adopting emerging technologies, including a shortage of AI-skilled human resources, limited investment capacity, and organizational resistance to change (Sánchez et al., 2025). These challenges are compounded by the absence of a clear technological strategy, resulting in fragmented or delayed adoption processes (Digitalization SWOT Analysis of SMEs, 2024). A study on AI integration in Indonesia's e-commerce sector shows that although the potential benefits are substantial, organizations struggle with technical complexity, model interpretability, and operational adaptation (Tiwari & Fahrudin, 2024).

Given this context, Indonesian SMEs require a strategic framework that not only identifies internal and external factors but also maps actionable strategies for effective and sustainable generative AI adoption (Kshetri, 2024). The SWOT analysis approach enables organizations to evaluate strengths, weaknesses, opportunities, and threats systematically, while strategy mapping serves as a visual tool that links strategic goals, initiatives, and performance drivers (R. S. Kaplan & Norton, 2003). The integration of SWOT analysis with strategy mapping is expected to provide a comprehensive overview and a concrete strategic roadmap to accelerate AI adoption among Indonesian SMEs.

As strategic management literature evolves, strategy mapping has been extensively applied in medium and large enterprises to ensure alignment between strategic vision and operational execution (Kaplan & Norton, 2001). However, the application of such tools among SMEs—especially in the context of generative AI—is still limited. SMEs differ significantly from large corporations in terms of structure,

flexibility, and resources, which necessitates a tailored strategic approach. Therefore, developing an analytical framework that combines SWOT and strategy mapping can help SMEs structure their AI adoption initiatives more effectively.

This study is crucial because strategic and well-planned adoption of generative AI can enhance the competitiveness of Indonesian SMEs in the digital economy, ensuring that technological transformation benefits are not confined to large enterprises (Catalysing Indonesia's Next Stage, 2025). Without a clear strategic direction, SMEs risk inefficient investments or failed adaptation. The combined use of SWOT analysis and strategy mapping offers a practical and structured model that SMEs can use to accelerate and sustain generative AI adoption.

Several studies have examined factors influencing AI adoption among SMEs or small-scale organizations (Hussain & Rizwan, 2024). For instance, Aljarboa et al. (2024) identified technical and organizational barriers as key determinants of AI adoption in e-SMEs. Similarly, Bening et al. (2023) investigated technology adoption strategies (e.g., e-commerce) among Indonesian SMEs using the DTOE framework and found that IT capability development is a top strategic priority (Bening et al., 2023). While prior research largely focused on adoption drivers and digital strategies, few studies have integrated SWOT analysis and strategy mapping to analyze generative AI adoption specifically in Indonesian SMEs.

Based on the above background, this study aims to:

1. Identify internal (strengths and weaknesses) and external (opportunities and threats) factors influencing generative AI adoption among Indonesian SMEs through SWOT analysis.
2. Develop a strategy map linking strategic goals, initiatives, and key performance drivers to accelerate generative AI adoption in Indonesian SMEs.
3. Formulate strategic recommendations for stakeholders—such as SME managers, policymakers, and support institutions—to facilitate effective and sustainable generative AI implementation.

METHOD

This study employs a qualitative research approach with the literature study (desk study) type of research. The qualitative approach was selected because this study aims to conduct an in-depth analysis of concepts, theories, and empirical findings

related to the strategic adoption of Generative Artificial Intelligence (AI) in small and medium-sized enterprises (SMEs) in Indonesia (Creswell & Poth, 2016). The literature study method is appropriate as it allows researchers to explore, synthesize, and interpret various academic and institutional publications concerning generative AI adoption, SWOT analysis, and strategy mapping frameworks (Snyder, 2019). This approach focuses on identifying theoretical patterns, strategic models, and empirical insights that contribute to a comprehensive understanding of the research topic.

Data Sources

The study relies entirely on secondary data obtained from a systematic review of relevant and up-to-date literature. The main data sources include peer-reviewed journal articles, institutional reports, and policy documents from both international and national organizations. International sources encompass databases such as Scopus and Google Scholar, along with reports from organizations like the OECD, UNESCO, and the World Economic Forum. National sources include publications from the Ministry of Cooperatives and SMEs of the Republic of Indonesia. The inclusion criteria for selecting literature were: (1) publications from 2018 to 2025 to ensure topical relevance; (2) research focusing on digital transformation, AI, or SME strategic management; and (3) sources that provide conceptual, empirical, or policy-oriented insights applicable to SWOT and strategy mapping analysis (Boell & Cecez-Kecmanovic, 2015).

Data Collection Technique

The data collection process followed a systematic literature review procedure, consisting of four stages: identification, screening, evaluation, and synthesis (Tranfield et al., 2003).

In the identification stage, keywords such as “generative AI adoption in SMEs,” “SWOT analysis for digital transformation,” and “strategy mapping for AI strategy” were used to locate relevant academic and institutional sources. The screening stage involved reviewing abstracts and full texts to ensure relevance to the research objectives and credibility of sources, based on citation indices and publisher reputation. The evaluation stage assessed the methodological rigor and theoretical contribution of each selected work. Finally, in the synthesis stage, the data were categorized according to thematic relevance to the four components of SWOT—strengths, weaknesses, opportunities, and

threats—and their integration within the strategy mapping framework. This systematic process ensured data reliability, conceptual consistency, and comprehensive coverage of the research domain.

Data Analysis Method

The study employs thematic content analysis as the primary method of data analysis. This technique involves systematically identifying, organizing, and interpreting patterns and relationships among key themes derived from the reviewed literature (Nowell et al., 2017). Each source was carefully analyzed to extract relevant statements or insights concerning the adoption of generative AI in SMEs, which were then categorized under the SWOT framework. The four dimensions—strengths, weaknesses, opportunities, and threats—were mapped to illustrate the internal and external factors influencing generative AI adoption. Subsequently, these insights were integrated into a strategy map model that visually links strategic objectives, initiatives, and performance drivers (Kaplan & Norton, 2003).

The analytical process was conducted iteratively, ensuring conceptual validity through cross-comparison among sources and literature triangulation. The results of the analysis were synthesized narratively to provide an integrated strategic overview of Indonesian SMEs' readiness, challenges, and potential pathways for generative AI adoption. Through this qualitative literature-based method, the study aims to contribute both theoretically and practically to the development of strategic models for accelerating digital transformation in the SME sector.

RESULT AND DISCUSSION

SWOT Analysis of Generative AI Adoption in Indonesian SMEs

The SWOT analysis revealed a combination of internal and external factors that significantly influence the readiness and success of generative AI adoption among Indonesian SMEs. The results are summarized as follows:

1. Strengths

   The main internal strengths of Indonesian SMEs lie in their entrepreneurial agility, customer proximity, and flexibility in business operations. These characteristics enable SMEs to experiment with emerging technologies such as generative AI more quickly than large corporations (Kshetri, 2024). Furthermore,

some innovative SMEs, especially in creative and digital sectors, have demonstrated the capacity to integrate AI tools for marketing content generation, customer service chatbots, and product design (Ahmed & Ahmed, 2024; Kemp, 2024; Waltzman et al., 2020). The growing digital literacy among SME owners and employees, fostered by government-led programs like Digital Talent Scholarship and UMKM Go Digital, also serves as a reinforcing strength (Ministry of Communication and Information Technology, 2024).

2. Weaknesses

Despite these advantages, several internal weaknesses hinder the large-scale adoption of generative AI. The most critical issue is the limited technical capability among SME managers and staff to operate and maintain AI systems. Moreover, financial constraints limit SMEs' ability to invest in AI infrastructure, cloud computing, and data security systems. The absence of a structured digital transformation roadmap and low awareness of ethical and data governance frameworks further exacerbate implementation challenges (Hussain & Rizwan, 2024). Additionally, cultural resistance to automation persists among traditional SMEs that fear job losses or perceive AI as an unnecessary complexity (Kshetri, 2024).

3. Opportunities

From the external environment, numerous opportunities exist for accelerating AI adoption. The Indonesian government has introduced various policy frameworks, such as the National AI Strategy (2020–2045), emphasizing AI integration across industries, including the SME sector (Bappenas, 2023). The rapid expansion of affordable cloud platforms and open-source AI tools such as ChatGPT API, Midjourney, and Google Gemini provides SMEs with accessible technological options (Amazon Web Services, 2025). Moreover, the increasing demand for personalized customer experience in e-commerce and digital services creates a market-driven incentive for adopting generative AI to enhance creativity and efficiency (Tiwari & Fahrudin, 2024). Collaboration opportunities with startups, universities, and tech hubs are also growing, which can serve as external catalysts for SME innovation (OECD, 2024).

4. Threats

The main external threats include cybersecurity and data privacy risks, unclear regulatory frameworks, and unequal access to digital infrastructure between

urban and rural SMEs (UNESCO, 2024). The potential misuse of AI-generated content, such as misinformation or copyright infringement, poses reputational and legal risks (A. Kaplan & Haenlein, 2020). In addition, rapid global technological changes could leave local SMEs technologically obsolete if they fail to adapt in time. The dominance of global tech providers also raises dependency concerns, potentially limiting SMEs' control over data and AI customization (World Economic Forum, 2024).

Overall, the SWOT results indicate that while opportunities and strengths are considerable, weaknesses and threats remain substantial. Therefore, a structured strategic framework is essential to align resources, initiatives, and policies in accelerating AI adoption sustainably.

Strategy Mapping for Generative AI Adoption in SMEs

Based on the SWOT analysis, a strategy map was designed to translate the identified factors into strategic objectives, initiatives, and performance drivers. The strategy mapping follows Kaplan and Norton's (2004) Balanced Scorecard logic, which connects four strategic perspectives: learning and growth, internal process, customer, and financial outcomes.

1. Learning and Growth Perspective

   Strategic Objective: Develop AI literacy and digital capabilities within SMEs.

   Key Initiatives: Conduct AI skill training programs in collaboration with universities and digital incubators.

   Key Drivers: Number of AI-trained employees, AI awareness index, and participation in innovation networks.

2. Internal Process Perspective

   Strategic Objective: Integrate generative AI into operational workflows such as marketing, product design, and customer support.

   Key Initiatives: Pilot AI-based tools for automating design and content creation; establish internal data management systems.

   Key Drivers: Number of AI-enabled processes, data quality metrics, and process efficiency improvements.

3. Customer Perspective

   Strategic Objective: Enhance customer experience and market competitiveness

through generative AI applications.

Key Initiatives: Use AI to personalize marketing campaigns, improve response time, and analyze customer sentiment.

Key Drivers: Customer satisfaction index, brand engagement rate, and repeat purchase ratio.

4. Financial Perspective

   Strategic Objective: Increase profitability and cost efficiency through AI-driven innovation.

   Key Initiatives: Adopt scalable cloud-based AI solutions and measure return on digital investments.

   Key Drivers: ROI from AI projects, sales growth from AI-enabled products, and cost reduction percentage.

This strategy mapping approach provides a visual and logical connection between learning, process improvement, customer outcomes, and financial performance, ensuring a holistic framework for AI adoption.

Strategic Recommendations

To ensure effective and sustainable implementation, three levels of strategic recommendations are proposed:

1. For SME Managers:

   Develop a clear digital transformation roadmap prioritizing generative AI adoption aligned with business goals. Begin with small-scale pilot projects to test feasibility and build internal AI capabilities through targeted training and mentorship (Snyder, 2019).

2. For Government and Policy Makers:

   Strengthen policy support by offering tax incentives or grants for SMEs adopting AI technologies. Improve AI-related regulations focusing on data governance, ethical standards, and intellectual property protection (Bappenas, 2023; OECD, 2024).

3. For Supporting Institutions (Universities, Tech Hubs, and Financial Institutions):

   Facilitate collaboration platforms between SMEs and AI solution providers to reduce technology access barriers. Universities can play a key role in developing training curricula and research-based AI tools tailored for SMEs (Nowell et al., 2017).

In summary, by integrating SWOT analysis with strategy mapping, this study proposes a structured framework that links internal readiness and external opportunities with actionable strategies. This integrated approach can accelerate generative AI adoption among Indonesian SMEs while ensuring competitiveness, innovation, and long-term sustainability.

CONCLUSION

This study concludes that accelerating generative AI adoption among Indonesian SMEs requires a structured, capability-driven, and collaborative strategy. The integration of SWOT analysis with strategy mapping effectively links internal readiness with external opportunities, providing a clear strategic pathway for AI transformation. SMEs should prioritize developing digital literacy, implementing pilot AI projects, and aligning technological initiatives with long-term business goals.

Practical implications highlight the importance of targeted capacity-building programs, government-backed incentives, and partnerships with universities and technology incubators. These efforts can bridge gaps in technical skills, funding, and AI awareness, ensuring that SMEs can implement AI solutions responsibly and efficiently.

Limitations of this study lie in its reliance on secondary data and literature synthesis, which may not fully capture the rapidly evolving AI landscape or the unique conditions of each SME sector. The qualitative approach, while comprehensive, lacks empirical validation through field observation or quantitative measurement.

Future research should extend this framework by conducting case studies and mixed-method research to test and refine the proposed strategy map. Further exploration of ethical AI adoption, data governance models, and sector-specific readiness assessments will be valuable to enhance the applicability of the findings for policymakers and practitioners.

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