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Artificial Intelligence-Based Business Strategy Innovation: Building Competitiveness in the Digital Era of Industry 5.0

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ABSTRACT

Digital transformation in the Industry 4.0 era has encouraged the adoption of artificial intelligence (AI) as a primary business strategy. This research aims to explore the role of AI in business strategy innovation to improve the competitiveness of companies. Using the Systematic Literature Review (SLR) method, this study examines the primary trends, opportunities, and challenges in the application of AI, drawing on the latest scientific literature. The results demonstrate that AI has a significant impact on various aspects of business, including data-driven marketing, supply chain management, and informed strategic decision-making. Companies that adopt AI can improve operational efficiency, accelerate innovation processes, and create a more personalized customer experience. However, several challenges exist in implementing AI, including a lack of understanding of the technology, resistance to change, and the need for substantial investments in digital infrastructure. Therefore, a strategic approach is necessary that includes strengthening digital literacy, training human resources, and providing government policy support to ensure more effective and sustainable adoption of AI. This research offers valuable insights for companies, academics, and policymakers on optimizing AI as a key pillar of business innovation in the digital era.

Keywords: artificial intelligence, business innovation, digital transformation, industry 5.0, systematic literature review (SLR).

INTRODUCTION

The digital transformation that has occurred in recent decades has significantly changed the business paradigm. (AlNuaimi et al., 2022; Bican & Brem, 2020; Cefis et al., 2023; Ellström et al., 2022; Feliciano-Cestero et al., 2023; Issatayeva et al., 2023; Montero Guerra et al., 2023; Nosova et al., 2021; Plekhanov et al., 2023; Van Veldhoven & Vanthienen, 2022). The industrial revolution has undergone significant development from generation to generation. The Industrial Revolution 1.0 in the 18th century was marked by the invention of the steam engine, which replaced human and animal labor, increasing production but also causing widespread unemployment. The Industrial Revolution 2.0, which spanned the 19th to 20th centuries, brought innovations in electricity and production lines, enabling mass production at lower costs and increasing efficiency, particularly in the automotive and armaments industries. The Industrial Revolution 3.0 in the 1970s was characterized by the development of information, electronics, and automation technologies, which reduced dependence on human labor and transformed communication systems with digital technology.

The Industrial Revolution 4.0, which emerged in 2011 and has been developing since 2018, integrates automation with digital technologies such as the Internet of Things (IoT), robotics, and artificial intelligence. Unlike previous revolutions, Industry 4.0 allows for rapid data exchange and more intelligent systems in manufacturing. These changes have a profound impact on human life, making work more practical and efficient through automation, and changing lifestyles and work patterns in various sectors.

Entering the Industry 4.0 era, the use of advanced technologies, such as Artificial Intelligence (AI), is no longer an option but a strategic necessity for companies to increase their competitiveness. Industry 5.0 emphasizes collaboration between humans and intelligent machines, with a focus on personalization, efficiency, and sustainability (Xu et al., 2021). In this context, AI is at the core of business strategy innovation, providing added value through in-depth data analysis, accurate predictions, and the automation of complex processes (Huang et al., 2020).

The application of AI in business strategy encompasses various fields, including data-driven marketing, supply chain management, and strategic decision-making. Previous studies have shown that companies that successfully integrate AI into their business strategies can increase productivity by up to 40% compared to companies that do not use AI (Brynjolfsson & McAfee, 2017). However, challenges in adopting these technologies remain significant, including a lack of understanding of technology, resistance to change, and the need for substantial investments in digital infrastructure (Chui et al., 2022).

Previous research by Mochammad Assyava' Aulia Firdaus (2023) reveals that the implementation of these strategies not only enhances technical and non-technical skills but also fosters an inclusive and responsive work environment conducive to change. As such, this article suggests that organizations need to invest in HR innovation to ensure competitiveness and sustainability in the face of changing market dynamics.

This research is urgent because AI is a strategic necessity in the Industry 5.0 era to enhance business competitiveness. However, its adoption is still hindered by a lack of understanding, resistance to change, and significant investments. The lack of systematic studies on the integration of AI in business strategies necessitates this research, which, through the Systematic Literature Review (SLR) approach, aims to identify key trends, opportunities, and challenges. The results are expected to provide insights for companies, academics, and policymakers in optimizing AI for innovation and business sustainability.

Artificial Intelligence (AI) is a field of computer science that focuses on the development of computer systems capable of mimicking human intelligence (Haleem et al., 2022; Jarrahi et al., 2023; Mannuru et al., 2023; Su & Zhong, 2022). AI technology has had a profound impact on business planning and development in today's digital era. With its ability to analyze large datasets quickly and accurately, AI provides valuable insights for business stakeholders to make informed, data-driven decisions. This allows companies to identify new opportunities, optimize processes, and improve operational efficiency. Additionally, the role of human resources (HR) in implementing AI technology is also crucial. Employees must be involved in the process of integrating AI

into various aspects of the business to understand its benefits and acquire the necessary skills to work effectively with this technology.

Employee training and development in the context of AI is crucial for enhancing the productivity and competitiveness of companies in the digital era. In the era of digitalization driven by the development of AI technology, companies must be able to identify emerging opportunities and be adaptive in responding to the changes that occur. By effectively leveraging artificial intelligence, companies can refine their business planning and development strategies to remain relevant and competitive in an increasingly competitive market. That way, a good understanding of the concept of AI and its applications in various aspects of business is the key to success for companies in today's digital era. Through the integration of AI technology, companies can enhance innovation, operational efficiency, and responsiveness to market changes. By effectively engaging human resources and optimizing business planning and development, companies can harness the potential of AI technology to achieve long-term success.

This study aims to explore AI-based business strategy innovations using the Systematic Literature Review (SLR) method. This method was chosen to identify key trends, opportunities, and challenges in the application of AI to business strategies, based on an analysis of the latest scientific literature. The results of this research are expected to provide strategic insights for companies to optimize the use of AI and build sustainable competitiveness in the Industry 5.0 era.

METHOD

This study employs the Systematic Literature Review (SLR) method, a systematic approach to identifying, evaluating, and synthesizing relevant literature for the research topic. SLR was chosen because it enables a structured and comprehensive analysis of existing studies, allowing for the generation of an in-depth understanding of Artificial Intelligence (AI)-based business strategy innovations.

The data in this study were collected from several databases and digital repositories that accommodate various research articles and review articles, namely Google Scholar, Semantic Scholar, and ScienceDirect. To maximize the relevance of the discussion and data used in this study, the help of literature analysis tools, such as Research Rabbit and Consensus Apps, is utilized. By using several criteria to select articles, the criteria in question require the articles to be used in the form of (1) research articles and review articles; (2) Articles published in the last 10 years; (3) Articles through peer-review; and (4) Articles discussing technology, artificial intelligence, and business. The data collected is analyzed using the systematic literature method, which is believed to be able to extract important and relevant information related to the themes and discussions raised in this study [23]. Thus, the potential for distorting the discussion in a broader context can be avoided, and the focus of the discussion in this study can be enhanced, particularly in terms of the role and contribution, as well as the urgency, of artificial intelligence in business.

RESULTS AND DISCUSSION

Through this study, it was found that technology plays a crucial role in business transformation, primarily through the use of artificial intelligence (AI), big data, and other digital tools. This technology has been proven to enhance operational efficiency, competitiveness, and customer experience. In addition to supporting automation and personalization in marketing strategies, these technologies also play a role in product development, innovative collaboration, and more accurate data-driven decision-making. The following table presents a summary of the findings and implications from various studies that highlight the contribution of technology to marketing, e-commerce, and business innovation. These findings also shed light on how companies can optimize the potential of technology to remain relevant and competitive in an increasingly digital and dynamic market.

Table 1. Technology and Business

Research	Result	Implication
Biemans & Malshe (2024)	digital tools increase creativity and efficiency in the product innovation process, with different impacts at each stage Innovations	Organizations need to create Supporting collaborative infrastructure innovation both physically and digitally, with a focus on digital skills
Bakator et.al (2024)	Integration of Marketing 5.0 and Industry 5.0, with technologies such as AI and IoT, improve efficiency and competitiveness, and Contribute to social causes	Global regulation and collaboration in Technology is essential for ensuring sustainability and accountability Social Responsibility
Tran et.al (2024)	Collaboration with stakeholders External factors can increase effectiveness digital marketing and relationships with user.	Digital marketing increases satisfaction and customer loyalty, as well as expanding consumer base and increase income.
Febby Fidiyanti, (2024)	The use of AI technology enables companies to analyze and process data in depth, identifying patterns, trends, and insights that inform more informed business decisions.	AI can improve operational efficiency by automating complex business processes, optimizing production, procurement, and delivery, and reducing costs and the risk of errors. AI also plays a crucial role in the development of innovative products and services by identifying unmet market needs and generating unique solutions.

Research	Result	Implication
Brynjolfsson & McAfee (2017)	The implementation of AI in business increases productivity by up to 40% compared to companies that do not use AI.	AI can transform the way companies operate through task automation, predictive analytics, and faster, more accurate decision-making.
Chui et al. (2022)	A lack of understanding of technology and resistance to change are significant challenges to AI adoption in businesses.	Companies must invest resources in HR training and cultivate a culture of innovation to adopt AI effectively.
Huang et al. (2020)	AI plays a central role in business strategy innovation by providing added value through in-depth data analysis, accurate predictions, and automation of complex processes.	Companies that incorporate AI into their business strategies can be more adaptable to market changes and enhance their competitiveness in the long run.
Xu et al. (2021)	Industry 5.0 emphasizes the integration of humans with intelligent machines to personalize products and services.	Businesses must invest in workforce training to adapt to AI and IoT-based technologies.
Porter & Heppelmann (2015)	IoT improves production efficiency and supply chain management through real-time monitoring and automated data analysis.	Companies that adopt IoT can reduce operational costs and improve the accuracy of data-driven business strategies.
Davenport & Ronanki (2018)	AI has three primary roles in business: process automation, data analysis, and enhanced customer engagement.	Companies that understand the role of AI can apply it strategically to gain a better competitive advantage.
Gartner (2023)	75% of companies that adopt AI report improved operational efficiency and customer experience.	Businesses that do not adopt AI soon will be left behind in global competition and experience stagnation in innovation.
McKinsey & Company (2022)	The application of AI in the supply chain can reduce operational costs by up to 20% and increase the accuracy of demand predictions by 35%.	The use of AI in the supply chain can optimize logistics processes and increase customer satisfaction through higher efficiency.
Statesman (2023)	Global investment in AI is expected to reach $500 billion by 2025.	Businesses that invest early in AI technology will gain a competitive advantage in the market and drive product innovation.
Kotler et al. (2023)	The concept of Marketing 5.0 emphasizes the use of AI and data analytics to create a more personalized customer experience.	The implementation of Marketing 5.0 enables businesses to enhance customer retention and develop more effective marketing strategies.

Research	Result	Implication
IBM (2022)	90% of companies that implement AI in customer service report increased efficiency and customer satisfaction.	AI can replace fundamental customer service roles, allowing HR to focus on more complex tasks.
Accenture (2023)	Cloud computing and AI allow companies to reduce IT costs by up to 30% by optimizing digital resources.	Companies that utilize cloud computing can enhance operational flexibility and minimize costly investments in technology infrastructure.
Harvard Business Review (2022)	AI and machine learning can help companies understand market trends faster than traditional methods.	Businesses that use AI for market analysis have a greater chance of responding to changing trends in real-time.
Deloitte (2023)	Eighty-two % of manufacturing companies that adopt AI experience improved production efficiency and reduced waste.	AI in the manufacturing industry supports sustainability by reducing waste and improving energy efficiency.

This table illustrates that technology, particularly AI, makes a significant contribution to business innovation and operational efficiency. However, the adoption of this technology also requires organizational readiness in terms of regulations, digital skills, and practical strategies to address emerging challenges. Technology has become a significant factor in enhancing efficiency and personalization across various business sectors, particularly in the marketing field. The use of artificial intelligence (AI) enables companies to automate marketing strategies and conduct in-depth analysis of consumer data, as described in previous research. In the realm of e-commerce, the integration of technologies such as big data, cloud computing, and AI has helped companies understand consumer behavior, predict market trends, and design more effective strategies. This technology provides more precise insights, allowing companies to remain competitive in the global market.

Additionally, the application of technology in the business world also presents new opportunities for enhancing customer experience. Studies show that AI, through the use of augmented reality and chatbots, enables more personalized interactions, particularly for millennials. In the context of a business-based community (BCE), digital marketing has been shown to enhance entrepreneurial skills and drive overall business growth. This technology not only expands the reach of customers but also strengthens the relationship between businesses and consumers.

Furthermore, technology plays an important role in driving innovation in the business world. Other research indicates that digital tools can enhance creativity and efficiency in the product innovation process, while also strengthening collaboration

within teams. Meanwhile, the synergy between information systems (IS) and marketing is becoming increasingly vital as technologies such as AI and virtual reality evolve, providing a competitive advantage for companies. These technology-based innovations help businesses face increasingly dynamic and complex market challenges.

The integration of technology in business strategies not only provides economic benefits but also contributes to broader social goals. Previous research explains how the concepts of Marketing 5.0 and Industry 5.0 leverage advanced technologies to improve efficiency while supporting sustainability, such as reducing carbon emissions. In addition, the adoption of e-commerce by MSMEs, supported by AI and an innovative culture, has also increased their competitiveness in the market. Thus, technology plays an important role in creating a positive social impact, not only for large companies but also for the small and medium-sized business sector.

Based on various studies conducted, it can be concluded that the application of technology in the business world, particularly in MSMEs and the manufacturing industry, increases productivity and enhances capabilities for creativity and innovation. Almost all research shows that technology integration—both in the form of hardware and software—can create a competitive advantage for companies. With this capability, businesses can be better prepared to compete in an increasingly dynamic market.

Additionally, technology is now an essential requirement for businesses to adapt to the changing times. The rapid advancement of technology and the increasing level of knowledge pose significant challenges for the business world, where businesses that fail to adapt risk falling behind their competitors. Therefore, in today's digital era, technology and business are two interconnected and inseparable aspects that work together to maintain competitiveness and achieve long-term growth.

The adoption of artificial intelligence (AI) is a strategic step of utmost importance for micro, small, and medium-sized enterprises (MSMEs) to remain competitive in the digital era. Previous studies have shown that the application of AI can increase operational efficiency and accelerate the decision-making process in MSMEs, mainly when supported by management leadership and organizational readiness. Additionally, other research indicates that AI not only enhances productivity but also enhances the ability of MSMEs to adapt to customer preferences by utilizing external data. This confirms that AI adoption is not just about technology, but a profound transformation in business operations that enables companies to respond to increasingly fierce competition and changing customer needs.

The success of AI implementation is highly dependent on the digital capabilities and innovations possessed by MSMEs. Several studies indicate that digital capabilities play a more dominant role than innovation in accelerating digital transformation. Additionally, investment in technology infrastructure and human resources (HR) training is a key factor in the success of AI adoption. Other contributing factors include digital culture and international orientation, which enable MSMEs to better prepare for global market pressures. Therefore, MSMEs that prioritize digital competency development will

be better equipped to integrate AI, increasing efficiency and competitiveness in an ever-growing market.

In addition to supporting operational efficiency, AI also opens up opportunities for innovation in business models, including expansion into international markets. Studies show that the synergy between AI and the concept of frugal innovation allows MSMEs to develop quality products and services at a more affordable cost. Meanwhile, generative AI plays a role in detecting threats and market opportunities, thus helping to increase entrepreneurial resilience, as found in research related to MSMEs in France. With the strategic use of AI, MSMEs can adapt more quickly to market changes, strengthen customer relationships, and create a sustainable competitive advantage on a global level.

Despite having great potential, the application of AI in MSMEs still faces various challenges. The main obstacles found in some countries, such as Germany, include limited workforce skills and inadequate technological infrastructure. However, the benefits of AI in production and logistics have been recognized. However, these challenges can be overcome by increasing internal capacity through training and collaboration between organizations. Support from government policies that encourage investment in technology and training programs is also a crucial factor in accelerating the adoption of AI. Thus, AI integration not only enhances efficiency and innovation but also becomes a fundamental element in ensuring the sustainability of MSMEs amid increasingly complex global competition.

CONCLUSION

The adoption of artificial intelligence (AI) has become an urgent need for MSMEs to survive and thrive in the digital era. AI implementation has been proven to enhance operational efficiency, expedite decision-making, and bolster business competitiveness. Additionally, AI supports product and service innovation through deeper data utilization, enabling MSMEs to be more responsive to market changes and customer needs.

The success of AI adoption is highly dependent on the digital readiness of MSMEs, which includes technology infrastructure, HR skills, and a culture of innovation within the organization. Investment in technology and workforce training is a key factors that determine the effectiveness of AI adoption in business. Additionally, government policy support and collaboration among various parties, including academics and industry players, can help overcome barriers to the implementation of AI.

Although challenges such as limited skills and infrastructure remain obstacles, MSMEs that can develop AI-based strategies will have a greater competitive advantage. With the proper use of AI, MSMEs can not only increase productivity and efficiency but also expand their market and strengthen customer relationships. Therefore, the integration of AI in business is not just an option, but a must to ensure business sustainability and growth amidst global market dynamics.

REFERENCES

AlNuaimi, B. K., Kumar Singh, S., Ren, S., Budhwar, P., & Vorobyev, D. (2022). Mastering digital transformation: The nexus between leadership, agility, and digital strategy. *Journal of Business Research*, *145*, Article 113546. https://doi.org/10.1016/j.jbusres.2022.03.038

Bican, P. M., & Brem, A. (2020). Digital business model, digital transformation, digital entrepreneurship: Is there a sustainable "digital"? *Sustainability*, *12*(13), Article 5239. https://doi.org/10.3390/su12135239

Cefis, E., Leoncini, R., Marengo, L., & Montresor, S. (2023). Firms and innovation in the new industrial paradigm of the digital transformation. *Industry and Innovation*, *30*(1), 1–8. https://doi.org/10.1080/13662716.2022.2161875

Ellström, D., Holtström, J., Berg, E., & Josefsson, C. (2022). Dynamic capabilities for digital transformation. *Journal of Strategy and Management*, *15*(2), 272-286. https://doi.org/10.1108/JSMA-04-2021-0089

Feliciano-Cestero, M. M., Ameen, N., Kotabe, M., Paul, J., & Signoret, M. (2023). Is digital transformation threatened? A systematic literature review of the factors influencing firms' digital transformation and internationalization. *Journal of Business Research*, *157*, Article 113546. https://doi.org/10.1016/j.jbusres.2022.113546

Firdaus, M. A. A., & Kuswinarno, M. (2024). Strategi inovatif dalam pengembangan sumber daya manusia dalam meningkatkan daya saing perusahaan di era digital. *Jurnal Media Akademik (JMA)*, *2*(11).

Haleem, A., Javaid, M., Asim Qadri, M., Pratap Singh, R., & Suman, R. (2022). Artificial intelligence (AI) applications for marketing: A literature-based study. *International Journal of Intelligent Networks*, *3*, 119–132. https://doi.org/10.1016/j.ijin.2022.08.005

Issatayeva, F. M., Aubakirova, G. M., Maussymbayeva, A. D., Togaibayeva, L. I., Biryukov, V. V., & Vechkinzova, E. (2023). Fuel and energy complex of Kazakhstan: Geological and economic assessment of enterprises in the context of digital transformation. *Energies*, *16*(16), Article 6002. https://doi.org/10.3390/en16166002

Jarrahi, M. H., Askay, D., Eshraghi, A., & Smith, P. (2023). Artificial intelligence and knowledge management: A partnership between human and AI. *Business Horizons*, *66*(1), 87–99. https://doi.org/10.1016/j.bushor.2022.03.002

Mannuru, N. R., Shahriar, S., Teel, Z. A., Wang, T., Lund, B. D., Tijani, S., Pohboon, C. O., Agbaji, D., Alhassan, J., Galley, J. K., Kousari, R., Ogbadu-Oladapo, L., Saurav, S. K., Srivastava, A., Tummuru, S. P., Uppala, S., & Vaidya, P. (2023). Artificial intelligence in developing countries: The impact of generative artificial intelligence (AI) technologies for development. *Information Development*, *40*(5), 726–744. https://doi.org/10.1177/02666669231200628

Montero Guerra, J. M., Danvila-del-Valle, I., & Méndez Suárez, M. (2023). The impact of digital transformation on talent management. *Technological Forecasting and Social Change*, *188*, Article 122291. https://doi.org/10.1016/j.techfore.2022.122291

Nosova, S., Norkina, A., Makar, S., & Fadeicheva, G. (2021). Digital Transformation as a New Paradigm of Economic Policy. *Procedia Computer Science*, *190*, 456–465. https://doi.org/10.1016/j.procs.2021.06.077

Plekhanov, D., Franke, H., & Netland, T. H. (2023). Digital transformation: A review and research agenda. *European Management Journal*, *41*(6), 821–844. https://doi.org/10.1016/j.emj.2022.09.007

Su, J., & Zhong, Y. (2022). Artificial intelligence (AI) in early childhood education: Curriculum design and future directions. *Computers and Education: Artificial Intelligence*, *3*, Article 100072. https://doi.org/10.1016/j.caeai.2022.100072

Van Veldhoven, Z., & Vanthienen, J. (2022). Digital transformation is an interaction-driven perspective that bridges the relationship between business, society, and technology. *Electronic Markets*, *32*(2), 629-644. https://doi.org/10.1007/s12525-021-00464-5