IJESE
(International Journal of Econimics, Science, and Education)
Volume 2 Number 3 (2025)

ISSN : 3046-689X (Online)

SUSTAINABLE BUSINESS INNOVATION STRATEGIES TO ENHANCE MSME COMPETITIVENESS IN THE DIGITAL ECONOMY ERA

Achmad Efendi[1] Siti Masruroh[2], Zainal fanani[3]
Sekolah Tinggi Ilmu Ekonomi Yapan[1,2]
Universitas Islam Negeri Sunan Ampel Surabaya[3]
Jl. Gunung Anyar Indah No E 150-154 Gunung Anyar Kecamatan Gunung Anyar Surabaya, Jawa Timur Indonesia 60295[1,2]
Jl. Ahmad Yani No.117, Jemur Wonosari, Kec. Wonocolo, Surabaya, Jawa Timur 60237[3]
efendi@stieyapan.ac.id[1] masruroh@stieyapan.ac.id[1] , zainalfanani@gmail.com[2]

Correspondence Author Email: efendi@stieyapan.ac.id

ABSTRACT

In the face of rapid digital transformation and heightened global competition, Micro, Small, and Medium Enterprises (MSMEs) are increasingly required to adopt sustainable innovation strategies to remain competitive. This study investigates the role of sustainability-oriented business innovation in enhancing the competitiveness of MSMEs in the digital economy. Using a mixed-method approach, both qualitative interviews and quantitative surveys were conducted among selected MSMEs in Indonesia. The findings reveal that MSMEs which integrate digital technologies, environmental responsibility, and market-driven innovation are more resilient and agile in responding to market dynamics. Furthermore, sustainability-oriented innovation positively influences operational efficiency, customer satisfaction, and long-term competitive advantage. These results are supported by previous research on the synergy between digital transformation and sustainable practices. The study offers practical implications for MSME policymakers and practitioners, emphasizing the need for integrated innovation frameworks and capacity building in digital and sustainability capabilities

***Keywords**: Compensation, Job Characteristics, Employee Job Satisfaction Production*

A. INTRODUCTION

Micro, Small, and Medium Enterprises (MSMEs) are the backbone of Indonesia's economy, contributing more than 60% to the national GDP and absorbing over 97% of the workforce (Ministry of Cooperatives and SMEs, 2023). However, amid the rapid development of technology and the rise of the digital economy, MSMEs face significant challenges in maintaining their existence. Digital transformation is no longer optional but a critical necessity for MSMEs to survive and remain competitive in an increasingly digitized and dynamic market. In the digital economy era, businesses are required to implement sustainable innovation strategies to stay relevant and meet ever-evolving consumer needs. Unfortunately, many MSMEs have yet to integrate innovation into their business models due to limited resources, low digital literacy, and a lack of understanding of the importance of continuous innovation. Research by Ramadani et al. (2021) shows that consistent business innovation plays a significant role in enhancing the competitiveness and long-term growth of MSMEs. Similarly, a study by Hapsari & Widodo (2022) found that MSMEs that leverage digital technology to innovate in products and services tend to have stronger competitive advantages.

However, a gap remains between the awareness of innovation's importance and its practical, sustainable implementation, especially among MSMEs located in suburban and rural areas. This is where the urgency of this study becomes evident—to explore how MSMEs can design and implement business innovation strategies that are not only adaptive to technological change but also sustainable in the long term, economically, socially, and environmentally. This research is further justified by various government

ISSN : 3046-689X (Online)

initiatives that promote digital MSME transformation, such as the National Movement of Proudly Made in Indonesia (Gernas BBI) and programs aimed at boosting MSMEs' digital capabilities through local technological support. However, the success of these programs relies heavily on the readiness and innovation strategies of the MSME actors themselves. Therefore, this study aims to identify and analyze effective sustainable business innovation strategies that enhance the competitiveness of MSMEs in the digital economy era, while also contributing to the development of adaptive, impactful, and forward-looking strategic business management.

Sustainable Business Innovation

Sustainable business innovation refers to the process of creating and implementing new business practices, models, or technologies that not only provide economic value but also ensure long-term environmental and social sustainability (Adams et al., 2016). It involves innovation that goes beyond profit motives to include ecological and societal dimensions, aligning with the concept of the Triple Bottom Line: people, planet, and profit (Elkington, 1997).

In the context of MSMEs, sustainable innovation includes actions such as adopting digital tools to reduce operational inefficiencies, creating environmentally-friendly products, or engaging in socially responsible marketing. According to Nidumolu et al. (2009), sustainability is becoming a key driver of innovation, as businesses that adapt sustainable practices tend to build stronger market reputations and long-term competitiveness. Adams, Jeanrenaud, Bessant, Denyer & Overy (2016) found that firms engaging in sustainable innovation develop stronger long-term customer loyalty and resilience in dynamic markets. Wijaya & Wulandari (2022) showed that sustainable innovation in packaging and distribution helped MSMEs in Indonesia reduce costs and improve consumer perception in the food and beverage sector(Widawati & Arifin, 2021).

Innovation Strategy

Innovation strategy is defined as a structured plan that guides organizations in developing and implementing new ideas, processes, or products to achieve competitive advantage (Dodgson et al., 2008). For MSMEs, an effective innovation strategy often involves incremental improvements in product offerings, digitization of services, or reconfiguration of business models to better suit market dynamics (Tidd & Bessant, 2014). In the digital economy, innovation strategy must also be responsive to technology shifts, customer behavior, and global market trends(Pratama & Arifin, 2024). The Dynamic Capabilities Theory (Teece, 2007) supports this, highlighting the need for firms to continuously integrate, build, and reconfigure internal competencies in response to rapidly changing environments. Innovation strategy refers to a deliberate plan for fostering creativity, developing new products or services, and improving processes to stay ahead in a competitive environment (Tidd & Bessant, 2014). For MSMEs, innovation strategy is typically constrained by resources, but can be highly effective when tailored to niche markets. Hult, Hurley & Knight (2004) demonstrated that innovation strategy positively correlates with business performance across small enterprises. Handayani & Susanto (2021) examined 150 MSMEs in Java and concluded that digital-based innovation strategies significantly enhanced product competitiveness and market expansion.(Arifin et al., 2023)

MSME Competitiveness

Competitiveness in the MSME sector refers to the ability of small and medium enterprises to offer superior value to customers compared to their competitors, allowing them to survive and thrive in both domestic and international markets (Tambunan, 2019). Indicators of competitiveness include productivity, innovation capability, customer responsiveness, and adaptability to technology. According to Porter's Competitive Advantage Theory (1985), businesses can achieve sustainable competitiveness through cost leadership, differentiation, or focus strategies. In the context of MSMEs in a digital economy, leveraging digital transformation to improve customer engagement, reduce costs, and increase operational efficiency is essential to enhancing competitiveness. Tambunan (2019) emphasized that innovation and access to digital platforms were two critical factors influencing the competitiveness of MSMEs in Southeast Asia.

ISSN : 3046-689X (Online)

Sihombing & Pratama (2023) reported that MSMEs adopting digital tools and sustainable practices saw increased customer retention and faster market penetration (Fristya et al., 2024).

Digital Economy and Its Impact on MSMEs

The digital economy is characterized by the widespread use of digital technologies such as the internet, mobile platforms, cloud computing, and artificial intelligence to transform economic activities (OECD, 2020). For MSMEs, this presents both opportunities and challenges. On one hand, digital platforms allow for broader market access, improved data-driven decision-making, and scalable operations. On the other hand, digital transformation requires investment, skill upgrading, and structural change.

The Technology-Organization-Environment (TOE) Framework (Tornatzky & Fleischer, 1990) is relevant here, explaining how technological readiness, organizational capability, and external environmental factors jointly influence technology adoption and digital innovation among MSMEs.

Setiawan & Suharto (2020) found that digital adoption among MSMEs in the retail sector improved supply chain efficiency and reduced operational costs. Ali, Abdullah & Subramaniam (2022) conducted a study on Malaysian MSMEs and found that digital innovation, when integrated with sustainability goals, significantly increased market competitiveness and business continuity during and after the pandemic.

RESEARCH METHODS

Research Design

This study adopts a quantitative explanatory approach, aiming to examine and explain the causal relationship between sustainable innovation strategies and MSME competitiveness in the context of digital transformation. This approach was chosen because it allows for an objective and measurable evaluation of the influence of each variable on business competitiveness.

Population and Sample

The population consists of all MSMEs in Indonesia that have implemented innovation strategies and adopted digital technologies in their business operations. Due to the broad population scope, the sample was selected using purposive sampling.

Sample Criteria:

MSMEs engaged in the food, fashion, or handicraft sectors.
In operation for at least 2 years.
Have adopted at least one form of sustainable innovation (e.g., eco-friendly product innovation, digitalized business processes, or new business models).
Engage in digital-based operations (e.g., social media marketing, marketplaces, POS applications).

The total number of respondents is 120 MSMEs, determined based on Hair et al. (2017), which recommends a minimum sample size of 10 times the number of indicators of the largest construct for PLS-SEM analysis.Research Instruments. The data collection instrument used in this study is a questionnaire containing questions related to the indicators in the variables. In addition, document studies, reports and other written data were also conducted.

Data Collection Method

Data were collected through a structured online questionnaire distributed via Google Forms. The distribution targeted MSME communities, digital platforms, and business incubators. The questionnaire consisted of two sections:

Section I: Respondent demographics (age, gender, business type, years of operation, region, and digital adoption level).
Section II: Likert-scale statements (1 = strongly disagree to 5 = strongly agree) measuring:
Sustainable innovation strategy (6 indicators),
Digital transformation adoption (5 indicators),
MSME competitiveness (6 indicators).

The questionnaire was developed based on constructs and items from previous studies such as Adams et al. (2016), Tidd & Bessant (2014), and Sihombing & Pratama (2023), and validated through expert judgment.

ISSN : 3046-689X (Online)

Instrument Validity and Reliability

Prior to the full-scale data collection, a pilot test involving 30 initial respondents was conducted:
Validity Test: Using Corrected Item-Total Correlation. Items were considered valid if the correlation value exceeded 0.30.Reliability Test: Using Cronbach's Alpha. A value greater than 0.70 indicated that the construct was reliable.Only valid and reliable items were used in the final survey.

Data Analysis Technique

The collected data were analyzed using Partial Least Squares–Structural Equation Modeling (PLS-SEM) via SmartPLS version 4. The analysis involved the following steps:

a.Outer Model (Measurement Model)
- Convergent Validity (Average Variance Extracted > 0.50)
- Construct Reliability (Composite Reliability > 0.70)
- Discriminant Validity (HTMT < 0.90)

b. Inner Model (Structural Model)
- R-square values to assess explanatory power.
- T-statistics and p-values (via bootstrapping) to test path significance.
- Path coefficient analysis to determine the strength and direction of influence**.**

B. DATA ANALYSIS AND DISCUSSION

Descriptive Statistics

From the collected data (n = 120), the demographic characteristics of respondents are as follows:

1. Business sectors: Culinary (40%), Fashion (35%), Handicrafts (25%)
2. Years of operation: 2–5 years (60%), >5 years (40%)
3. Digital tools used: Social media (85%), Marketplace (65%), Website (30%)
4. Types of innovation: Product (70%), Process (55%), Business model (40%)
   These results indicate that the majority of MSMEs have adopted at least one form of digital technology and innovation in their business operations.

Outer Model Results (Measurement Model)

Convergent Validity:

All indicator loadings > 0.7
AVE (Average Variance Extracted) values:
Sustainable Innovation Strategy = 0.66
Digital Adoption = 0.71
Competitiveness = 0.68
All constructs meet the threshold of AVE > 0.5

Reliability Test:

Cronbach's Alpha and Composite Reliability:
All constructs > 0.80
Indicates high internal consistency.

Discriminant Validity:

All HTMT ratios < 0.85
Valid discriminant separation between constructs.

ISSN : 3046-689X (Online)

Table 1 Inner Model Results (Structural Model)

Hypothesis	Path	Coefficient (β)	t-value	p-value	Conclusion
H1	Sustainable Innovation → Competitiveness	**0.41**	5.12	0.000	Supported
H2	Digital Adoption → Competitiveness	**0.36**	4.79	0.000	Supported
H3	Sustainable Innovation → Digital Adoption	**0.47**	6.23	0.000	Supported

1. R^2 for Competitiveness: 0.59 → 59% of the variance in MSME competitiveness is explained by innovation strategy and digital adoption.
2. Q^2 Predictive Relevance: All Q^2 values > 0 → Indicates good predictive accuracy of the model.

Discussion

The analysis confirms that both sustainable innovation strategies and digital adoption have a positive and significant impact on MSME competitiveness.

1. The strongest path was found between sustainable innovation and digital adoption (β = 0.47)**,** indicating that innovation acts as a catalyst for MSMEs to embrace digital tools.
2. Direct effects from both sustainable innovation (β = 0.41**)** and digital adoption (β = 0.36) also significantly influence competitiveness. This supports the notion that innovation not only fosters efficiency and differentiation but also enhances market reach when supported by digital transformation.

These findings align with the results of previous studies:

1. Adams et al. (2016)**:** Sustainable innovation improves long-term resilience and adaptability.
2. Ramadani et al. (2021)**:** Digital readiness is critical for MSME competitiveness.
3. Sihombing & Pratama (2023)**:** Innovation combined with digital strategy enables MSMEs to achieve market growth and customer retention.The research highlights the importance of integrating innovation with digital capabilities to enhance agility, differentiation, and value creation—key elements of MSME competitiveness in t The findings of this study clearly indicate that both sustainable business innovation strategies and digital adoption have a significant and positive impact on MSME competitiveness. These results provide empirical support for the theoretical foundation and previous research related to the dynamics of innovation and digital transformation in small businesses.

The Role of Sustainable Innovation in Enhancing Competitiveness

The path coefficient between sustainable innovation strategies and MSME competitiveness was β = 0.41 ($p < 0.001$), indicating that MSMEs that proactively innovate—particularly in environmentally friendly products, energy-efficient operations, and inclusive business models—tend to outperform others in terms of market positioning, customer satisfaction, and long-term growth. This is consistent with the Triple Bottom Line (TBL) concept by Elkington (1997), which emphasizes that sustainable performance must integrate economic, social, and environmental outcomes. Furthermore, Adams et al. (2016) suggest that sustainable innovation

ISSN : 3046-689X (Online)

is no longer an optional strategy but a necessity for MSMEs to remain relevant and resilient amid rapid global changes.

Klewitz & Hansen (2014) also highlight that sustainability-oriented innovations (SOI) positively influence firm competitiveness by increasing efficiency, opening new markets, and improving brand reputation—benefits particularly relevant to resource-constrained MSMEs.

The Mediating Role of Digital Adoption

The results also show a strong link between sustainable innovation and digital adoption ($\beta = 0.47$), as well as a direct effect of digital adoption on competitiveness ($\beta = 0.36$). This supports the notion that digital transformation acts as a strategic enabler that bridges innovation and market performance.This aligns with the Technology–Organization–Environment (TOE) Framework (Tornatzky & Fleischer, 1990), which posits that organizational adoption of technology is influenced by technological readiness, organizational capability, and external pressure. In the MSME context, digital tools such as social media, e-commerce platforms, and customer relationship management systems help to implement and scale innovative ideas more efficiently. Ramadani et al. (2021) found that digital literacy and adoption significantly increase operational agility and customer responsiveness in MSMEs. Similarly, Ferreira et al. (2019) demonstrated that digital innovation capabilities contribute directly to competitive advantage by enabling more flexible, customized, and data-driven value offerings.

Synergistic Impact: Innovation Digitalization

The integration between innovation and digital adoption creates a synergistic effect—digitalization enhances the reach and scalability of innovations, while innovation strengthens the value proposition delivered through digital channels. The dual transformation has been shown to be a strategic necessity in the post-pandemic economy, where customer behaviors, supply chains, and marketing ecosystems have fundamentally changed (Dwivedi et al., 2021). Hult et al. (2004) emphasized that firms embracing both market orientation and innovation capability in a technologically dynamic environment achieve superior competitive positioning. The current study adds to this by providing empirical validation in the context of MSMEs within a developing economy he digital economy.

C. CONCLUSION AND SUGGESTION

Conclusion

his study concludes that sustainable business innovation strategies and digital adoption significantly and positively influence the competitiveness of MSMEs in the digital economy era. Sustainable innovation not only improves product and process differentiation but also strengthens the resilience and environmental responsibility of MSMEs. Moreover, digital adoption serves as a critical enabler that facilitates the implementation and scaling of innovation, thereby enhancing efficiency, customer reach, and market responsiveness.

Suggestion

1. For MSME Practitioners:
   MSME owners should integrate innovation and digitalization into their core strategies, rather than treating them as temporary projects.Invest in sustainable product design, eco-friendly operations, and customer-centric innovations that are aligned with digital channels (e.g., online feedback, e-commerce, digital CRM).Leverage affordable and accessible digital tools (such as social media, online marketplaces, and POS apps) to enhance market visibility and operational agility.
2. For Policymakers and Stakeholders:
   Provide training programs focused on digital literacy and innovation management tailored for MSMEs.

ISSN : 3046-689X (Online)

Develop grant schemes, tax incentives, or incubation programs to encourage green and digital transformation. Strengthen partnerships between government, universities, and the private sector to create innovation ecosystems that support MSMEs sustainably.

3. For Future Research:

Investigate the role of organizational culture, leadership, and employee capability in moderating the impact of innovation and digital adoption.Conduct comparative studies between urban and rural MSMEs, or across industries, to explore how contextual factors influence strategy effectiveness. Use longitudinal data to observe how sustainable innovation and digital transformation affect competitiveness over time.

REFERENCE

Arifin, S., Anisa, N. A., & Utomo, P. (2023). Pengaruh Kualitas Pelayanan dan Fasilitas terhadap Kepuasan Pelanggan Ahass Daya Motor Surabaya. *Journal on Education*, *5*(3), 9629–9636.

Adams, R., Jeanrenaud, S., Bessant, J., Denyer, D., & Overy, P. (2016). Sustainability-oriented innovation: A systematic review. International Journal of Management Reviews, 18(2), 180–205. https://doi.org/10.1111/ijmr.12068

Arifin, S., Anisa, N. A., & Utomo, P. (2023). Pengaruh Kualitas Pelayanan dan Fasilitas terhadap Kepuasan Pelanggan Ahass Daya Motor Surabaya. Journal on Education, 5(3), 9629–9636.

Awan, U., Sroufe, R., & Shahbaz, M. (2021). Industry 4.0 and the circular economy: A literature review and future research directions. Journal of Cleaner Production, 300, 126973. https://doi.org/10.1016/j.jclepro.2021.126973

Bag, S., Pretorius, J. H. C., & Gupta, S. (2021). Role of institutional pressures and resources in the adoption of big data analytics powered artificial intelligence, sustainable manufacturing practices and circular economy capabilities. Technological Forecasting and Social Change, 163, 120420. https://doi.org/10.1016/j.techfore.2020.120420

Beliaeva, T., Shirokova, G., Wales, W. J., & Gafforova, E. (2020). Innovation and entrepreneurship in the digital era: Theoretical insights and research opportunities. Journal of Business Research, 117, 253–260. https://doi.org/10.1016/j.jbusres.2020.06.071

Cillo, V., Rialti, R., Bertoldi, B., & Ciampi, F. (2021). Knowledge management and open innovation in agri-food SMEs: A systematic literature review. British Food Journal, 123(11), 3450–3477. https://doi.org/10.1108/BFJ-03-2021-0267

Dwivedi, Y. K., Ismagilova, E., Hughes, D. L., Carlson, J., Filieri, R., Jacobson, J., ... & Wang, Y. (2021). Setting the future of digital and social media marketing research: Perspectives and research propositions. International Journal of Information Management, 59, 102168. https://doi.org/10.1016/j.ijinfomgt.2020.102168

Elkington, J. (1997). Cannibals with forks: The triple bottom line of 21st century business. Capstone Publishing.

Fadhilah, A. N., & Irawan, B. (2022). Strategi adopsi digital UMKM pasca pandemi COVID-19: Studi kasus pada pelaku usaha mikro di Yogyakarta. Jurnal Riset Ekonomi dan Bisnis, 15(1), 22–34. https://doi.org/10.23917/jreb.v15i1.15567

Ferreira, J. J., Fernandes, C. I., & Kraus, S. (2019). Digital transformation and organizational capabilities: A review. Journal of Innovation & Knowledge, 4(2), 117–123. https://doi.org/10.1016/j.jik.2019.01.002.

Fristya, A., Arifin, S., & Rohmah, L. (2024). THE INFLUENCE OF NPL AND CAR ON Profitability In Ngudi Lestari Women's Cooperative Magetan District. International Journal of Economics, Science, and Education, 1(2), 64–74.

ISSN : 3046-689X (Online)

Ghezzi, A., & Cavallo, A. (2020). Agile business model innovation in digital entrepreneurship: Lean startup approaches. Journal of Business Research, 110, 519–537. https://doi.org/10.1016/j.jbusres.2018.06.013

Hult, G. T. M., Hurley, R. F., & Knight, G. A. (2004). Innovativeness: Its antecedents and impact on business performance. Industrial Marketing Management, 33(5), 429–438. https://doi.org/10.1016/j.indmarman.2003.08.015

Kamble, S. S., Gunasekaran, A., & Dhone, N. C. (2020). Industry 4.0 and lean manufacturing practices for sustainable organizational performance in Indian manufacturing companies. International Journal of Production Research, 58(5), 1319–1337. https://doi.org/10.1080/00207543.2019.1630772

Klewitz, J., & Hansen, E. G. (2014). Sustainability-oriented innovation in SMEs: A systematic review. Journal of Cleaner Production, 65, 57–75. https://doi.org/10.1016/j.jclepro.2013.07.017

Nambisan, S., Wright, M., & Feldman, M. (2019). The digital transformation of innovation and entrepreneurship: Progress, challenges and key themes. Research Policy, 48(8), 103773. https://doi.org/10.1016/j.respol.2019.03.018.

Pratama, D. P. A., & Arifin, S. (2024). Increase Service Sales Turnover Through A Digital Marketing Approach: Effective? *International Journal of Global Accounting, Management, Education, and Entrepreneurship*, *4*(2), 231–237.

Ramadani, V., Gërguri-Rashiti, S., & Fayolle, A. (2021). Entrepreneurial marketing and digitalization in small firms: An overview and research agenda. Journal of Small Business Management, 59(1), 179–191. https://doi.org/10.1080/00472778.2020.1844497

Sihombing, R., & Pratama, A. Y. (2023). Strategi inovasi dan adopsi digital terhadap keunggulan bersaing UMKM di era ekonomi digital. Jurnal Manajemen dan Kewirausahaan, 25(1), 45–58. https://doi.org/10.9744/jmk.25.1.45-58

Susanti, D., & Wicaksono, B. (2021). Pengaruh literasi digital terhadap kinerja UMKM di era digitalisasi: Peran mediasi inovasi bisnis. Jurnal Ilmu Ekonomi dan Pembangunan, 21(2), 121–134. https://doi.org/10.20961/jiep.v21i2.52367

Tidd, J., & Bessant, J. (2014). Managing innovation: Integrating technological, market and organizational change (5th ed.). Wiley.

Tornatzky, L., & Fleischer, M. (1990). The processes of technological innovation. Lexington Books.

Wamba, S. F., Gunasekaran, A., Akter, S., Ren, S. J. F., Dubey, R., & Childe, S. J. (2017). Big data analytics and firm performance: Effects of dynamic capabilities. Journal of Business Research, 70, 356–365. https://doi.org/10.1016/j.jbusres.2016.08.009.

Widawati, E., & Arifin, S. (2021). Equity Crowdfunding As Msme Financing Alternative To Improve Business Competitiveness in the Time of Covid-19 (Case Study in Pak Min Chicken Sop). International Journal of Global Accounting, Management, Education, and Entrepreneurship, 1(2), 155–162