






## **Harnessing Sustainability and Innovation in Micro, Small, and Medium Enterprises: Strategies and Challenges for Competitive Advantage**

Marsya Aulia Rizkita<sup>1,2\*</sup> , Agung Winarno<sup>3</sup> , Hadi Suwono<sup>4,5</sup> 

<sup>1</sup> Management Doctoral Students, Faculty of Economics and Business, State University of Malang, Malang 65145, Indonesia

<sup>2</sup> Applied Marketing Management, Faculty of Vocational Studies, State University of Malang, Malang 65145, Indonesia

<sup>3</sup> Department of Management, Faculty of Economics and Business, State University of Malang, Malang 65145, Indonesia

<sup>4</sup> Department of Biology, Faculty of Mathematics and Natural Sciences, State University of Malang, Malang 65145, Indonesia

<sup>5</sup> Center of Research and Innovation in STEM Education, Faculty of Mathematics and Natural Sciences, State University of Malang, Malang 65145, Indonesia

Corresponding Author Email: [marsyaauliarr.fv@um.ac.id](mailto:marsyaauliarr.fv@um.ac.id)

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### **ABSTRACT**

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This study focuses on the relationship between innovation and sustainability practices in Micro, Small, and Medium Enterprises (MSMEs). As MSMEs navigate the complexities of modern commercial demands and environmental expectations, adopting sustainable practices is crucial. This article utilizes data analytics, explores green marketing, and evaluates occupational health and safety management systems, drawing on empirical research to highlight essential elements that affect MSMEs' performance. Moreover, we investigate how innovation can enhance performance and competitive advantage, particularly during challenging times like the COVID-19 pandemic. Through a comprehensive literature review, we identify barriers and enablers to incorporating sustainability into business models, offering strategic recommendations for MSMEs to thrive in an increasingly environmentally conscious market. This study enriches the understanding of MSMEs' operational dynamics and underscores the importance of a sustainable strategy for long-term survival and growth.

## **1. INTRODUCTION**

The long-term viability and competitiveness of Micro, Small, and Medium Enterprises (MSMEs) in Java, Indonesia, rely heavily on sustainability [1]. As key drivers of Indonesia's economy, MSMEs contribute significantly to GDP growth and job creation, underscoring their crucial role in maintaining economic stability [2]. In an increasingly environmentally conscious global economy, ensuring the sustainability of MSMEs is essential for enhancing their resilience and competitiveness [3]. As Indonesia's most densely populated island, Java is home to most MSMEs, making it a strategic focal point for this study. With over 60% of the nation's population and a substantial economic output, Java presents unique challenges and opportunities in fostering sustainable business practices [4].

Implementing sustainable practices will increase consumer legitimacy and brand loyalty, critical to financial success in the highly competitive MSME market [5]. The commercial benefits of sustainability are validated by the good correlation between environmentally friendly activities and green marketing techniques with customer brand loyalty [6, 7]. Ultimately, aligning with these market trends drives economic success and environmental stewardship by enabling MSMEs to innovate and strategically position themselves to meet customer expectations for sustainable goods [8, 9].

MSMEs that implement sustainable practices help achieve the SDGs, as shown in Table 1. By practicing sustainable operating procedures, such as the circular economy, these businesses can become more resilient and adaptable to disruptive events. In addition to reducing waste and promoting resource efficiency, research shows that implementing circular practices can open up new business opportunities to increase profits.

This study examines how sustainability enhances MSMEs' long-term viability and competitiveness in Java, Indonesia. As global markets increasingly prioritize environmental and social responsibility, integrating sustainable business practices such as the circular economy and efficient resource management has become essential for maintaining relevance and resilience. To guide this analysis, "sustainability" in this study refers to long-term practices that balance economic viability, environmental stewardship, and social equity. In parallel, "digital marketing" uses search engine optimization (SEO), social media platforms, and e-commerce to promote MSME products and strengthen stakeholder engagement. By aligning with these principles, MSMEs can improve their market positioning, increase customer trust and loyalty, and contribute meaningfully to achieving the SDGs [10].

Furthermore, this study seeks to provide insights into strategic approaches that enable MSMEs to thrive in an evolving economic landscape. Analyzing existing literature

and empirical findings highlights the role of digital transformation, organizational culture, and environmental initiatives in improving MSME resilience. The findings aim to inform business owners, policymakers, and researchers on effective strategies for fostering sustainability-driven growth in the MSME sector [11]. Based on the background above, this study aims to answer the following research questions:

- How do MSMEs in Java implement sustainability principles in digital marketing?
- What are MSMEs' main challenges and enablers in adopting sustainable digital strategies?
- What strategic insights can be drawn from best practice cases for broader replication?

Previous studies emphasize diverse strategies in MSME sustainability, yet many remain descriptive. For instance,

while research by Endris and Kassegn [12] highlights the alignment between MSME activities and SDGs, it does not critically examine how these alignments evolve. Research by Eweje [13] provides a strong qualitative case on cultural and managerial influence, but lacks generalizability and integration with digital tools. Other studies focus on isolated variables such as green marketing or e-commerce, without synthesizing their interdependence within sustainability frameworks. Moreover, many do not account for contextual factors such as geographic infrastructure, policy dynamics, and institutional trust. This review addresses those gaps by synthesizing evidence across methodological designs and sectoral contexts, focusing on Indonesian MSMEs operating in Java.

**Table 1.** State of the art

Method	Novelty	Results	Future Research Potential	Reference
A systematic review of existing literature, including research articles and policy documents	Using a systematic evidence-based approach in assessing SDG achievement by MSMEs in Ethiopia	MSMEs contribute significantly to sustainable development by creating jobs, eradicating poverty, and improving living standards; 83% of SDG 8 and 88% of SDG 9 targets were achieved	Empirical studies on policy interventions that can further optimize the role of MSMEs in sustainable development	[12]
Quantitative Approaches to analyzing productivity levels and productivity profit-sharing models	Demonstrating the effectiveness of the productivity profit-sharing model in increasing MSME profits during the pandemic	MSME profits from the productivity-sharing model for herbal products increased by 500% between 2019 and 2020	Longitudinal evaluation of the impact of this model on the long-term resilience of MSME businesses	[14]
Triangulation of research methods: integrative literature review, computer-assisted telephone interviews, and individual in-depth interviews	A multi-method study highlighting resource management strategies in rubber industry MSMEs during the crisis	Sustainable resource management increases MSME turnover during the pandemic, demonstrating their resilience amid economic challenges	Comparative analysis of similar strategies in different industrial sectors and under various economic conditions	[15]
Qualitative case study with CEO/owner and employee interviews, using managerial discretion theory	Using managerial wisdom theory to understand sustainability strategies in MSMEs	Sustainability initiatives in Japanese SMEs reduce environmental impact, increase employee support, and drive positive outcomes for the company	A cross-cultural study comparing the effectiveness of sustainability strategies across countries	[13]
Online questionnaire survey of 1,024 small businesses in the culinary field; descriptive analysis, cross-tabulation, Mann-Whitney test	Providing a data-based comparison between MSMEs that adopted e-commerce and those that did not during the pandemic	E-commerce adoption increased MSME revenue during the pandemic, while non-adopters experienced significant losses	Investigating digital transition strategies for non-adopter MSMEs to improve their competitiveness	[16]
Quantitative with Smart-PLS 4 analysis, data from 300 MSMEs and customers	Linking organizational culture factors to customer satisfaction in the context of MSMEs	Organizational culture, digital marketing strategy, service quality, and environmental sustainability significantly positively affect customer satisfaction of MSMEs in Indonesia	An exploratory study on the impact of product innovation and customer experience on customer satisfaction	[17]
Qualitative with in-depth interviews and content analysis	Using a qualitative approach to identify key elements of a sustainable digital marketing strategy	A sustainable digital marketing strategy can increase brand visibility, customer engagement, and market competitiveness for MSMEs	Development of a quantitative model to measure the effectiveness of digital marketing strategies on sales conversion	[18]
Quantitative with SmartPLS 4.0 analysis, data from 150 respondents	Using brand image as a mediating variable in the relationship between green and digital marketing and MSME competitiveness	Green marketing and digital marketing significantly positively affect brand image, further increasing the competitiveness of MSME tempeh chips in Malang	A long-term investigation into the correlation between green marketing and customer loyalty	[19]

## 2. METHOD

This research employs a Schematic Literature Review (SLR) to systematically examine the literature on sustainable digital marketing strategies for MSMEs in Java, Indonesia. This methodological approach was chosen to identify core concepts, emerging trends, and prevailing challenges in integrating sustainability within digital marketing practices in the MSME sector. The review followed a transparent and replicable protocol, involving the following steps:

- Databases searched included Scopus, Web of Science, and Google Scholar.

- A keyword-based search strategy was implemented using terms such as “MSME,” “sustainability,” “digital marketing,” “Indonesia,” and “Java.”

- Inclusion criteria encompassed peer-reviewed articles published between 2010 and 2025, in English or Bahasa Indonesia, focusing on sustainable innovation or digital practices within MSMEs.

- Exclusion criteria eliminated grey literature, opinion pieces, and studies not directly addressing MSME sustainability.

- The selected literature was analyzed through thematic coding to extract key insights on strategic approaches, implementation challenges, and real-world case studies.

Following the literature selection, we undertook a thematic synthesis of the studies. We categorized the literature based on the interaction between sustainability practices and innovation, identifying recurrent themes along with barriers and enablers that influence the implementation of sustainable practices in MSMEs. This analytical process culminated in a nuanced understanding of the correlation between sustainable practices and competitive advantage, particularly in light of ongoing market dynamics.

To present our findings clearly, we summarized the results within a schematic framework that visually delineates the relationship between sustainability, innovation, and performance outcomes in MSMEs. This visual representation not only elucidates the critical factors that influence the operations of MSMEs but also highlights practical implications for enhancing their competitive positioning via sustainability initiatives.

Through our detailed methodology and thorough analysis, we aim to elucidate the complex interplay between sustainability and innovation within the landscape of MSMEs, particularly focusing on the context of Java, Indonesia. By critically examining this relationship, we aspire to contribute valuable insights that can inform policy-making, academic discourse, and practical applications, ultimately fostering a more sustainable and innovative ecosystem for MSMEs in the region, particularly in Java, Indonesia.

The study process follows the flow depicted in Figure 1, introducing the concept of sustainability and its role in the MSME ecosystem in Java. Next, the study discusses the environmental challenges MSMEs face, the digital marketing landscape, and sustainable marketing and branding strategies. Case studies of successful MSMEs are applied to provide additional insights, followed by identifying implementation barriers. Finally, the study develops a framework for sustainable digital marketing strategies, including guidelines and evaluation metrics, before concluding with key findings and recommendations.

## 3. CHALLENGES IN IMPLEMENTING SUSTAINABLE DIGITAL MARKETING

Many environmental barriers prevent MSMEs from implementing sustainable practices [20]. These difficulties fall into three categories: environmental, social, and economic. Economic barriers include limited financial resources, ignorance, and societal expectations [21]. Limited resources and skills, and pressure to meet social standards are examples of social difficulties. High energy use and waste production are environmental problems that exacerbate ecological damage. Reducing their carbon footprint is a significant issue for MSMEs, especially in high-emission sectors [22].

Despite these constraints, implementing sustainable practices can help MSMEs in many ways. Cost savings, competitiveness in the marketplace, regulatory compliance, increased brand recognition, community engagement, less environmental impact, and support for international sustainability goals are examples of economic benefits [23].

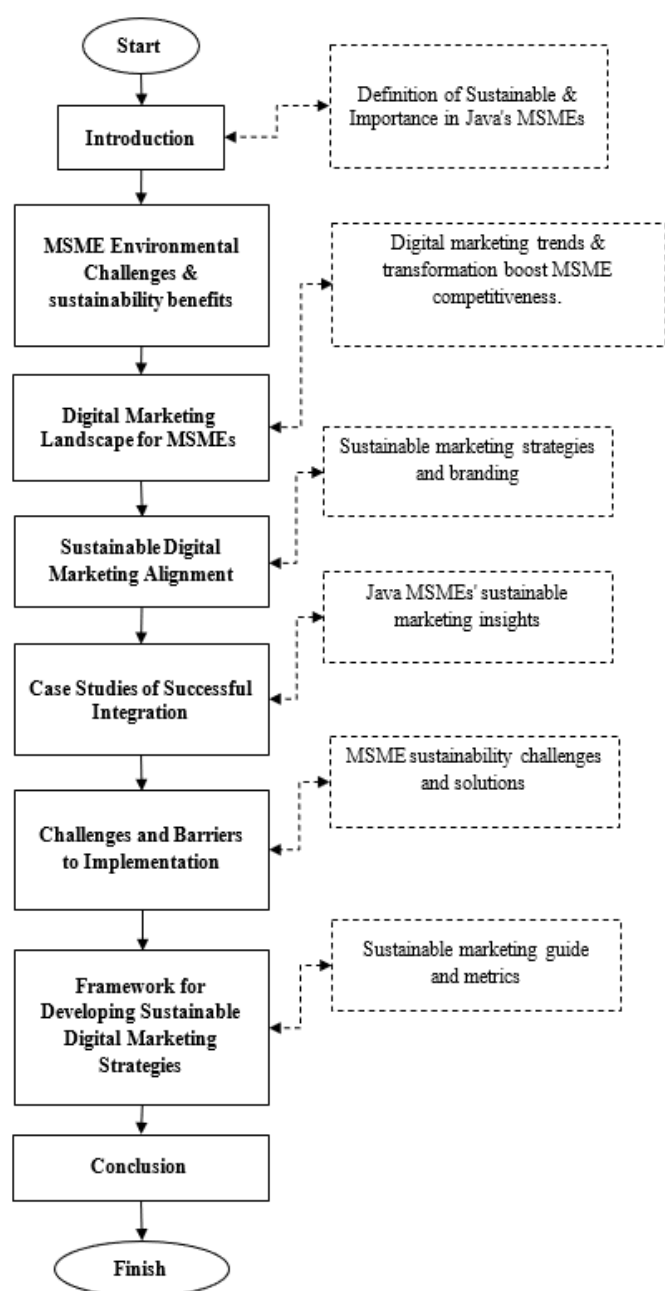


Figure 1. Flowchart of the research

MSMEs can reduce their environmental impact and support global sustainability goals by implementing sustainable practices, including waste reduction, energy efficiency, and supply chain management. By addressing these issues, MSMEs can increase their competitiveness, reduce their environmental impact, and support global sustainability goals [24].

MSMEs can overcome barriers and optimize profits by using sustainable practices. Collaboration with other stakeholders, technology integration, and government support are essential. The government can encourage MSMEs to adopt sustainable practices by offering tax breaks, financial incentives, and legislative assistance [25]. MSMEs can invest in sustainable technologies with the help of green financing options such as impact investing and green loans. Resource optimization and waste reduction are two benefits of using green information systems. Blockchain and other digital technologies can improve supply chain efficiency and transparency [26]. Partnerships with other companies, non-governmental organizations, and educational institutions can also help MSMEs exchange best practices and information on sustainability [27]. The ability of MSMEs to adopt environmentally friendly operations can be enhanced through training and education on sustainable practices. Green marketing and innovation can help MSMEs stay competitive by attracting ecologically conscious customers [28]. Due to local issues, laws, and cultural norms, regional perspectives on sustainability differ [29]. However, implementing sustainable practices has many benefits, including lower environmental impact, increased market competitiveness, and cost savings. To overcome these obstacles, MSMEs must leverage government assistance, technology integration, and teamwork. MSMEs can achieve long-term sustainability and help preserve the environment by paying attention to these factors [1]. Table 2 outlines common barriers MSMEs face in transitioning to sustainable practices, categorized into environmental, economic, and social domains. These categories include internal limitations such as financial capacity, technological gaps, and market-related pressures. Furthermore, beyond resource-related and ecological constraints, MSMEs face structural and behavioral barriers that hinder the adoption of sustainable digital marketing practices. These additional challenges are elaborated below.

Adopting a sustainable digital marketing strategy for

MSMEs in Java, Indonesia, is challenging [30]. Limited financial resources, lack of digital skills, poor infrastructure, reluctance to change, and market competitiveness are some of the difficulties these businesses face [31].

MSMEs may find it more difficult to run successful campaigns if they do not have the funds to invest in sophisticated digital marketing tools and technologies [32]. In addition, workers and business owners may find it more difficult to use digital channels efficiently if they do not have the necessary digital capabilities. The capacity of MSMEs to use digital marketing services and interact with clients online may also be hampered by inadequate internet access and technology infrastructure [33].

Another significant barrier for MSMEs is resistance to change. Due to ingrained routines and old traditions, companies may be reluctant to innovate. This inertia can hinder digital marketing strategies, mainly when they aim to revolutionize the company's processes [34].

Financial assistance programs, training and capacity building, infrastructure spending, change management support, collaborative networks, and open digital resources can address these barriers [35]. Microfinance, grants, and subsidized loans are just some financing options for MSMEs through government programs and collaborations with financial institutions.

While training and mentoring programs can foster a culture that welcomes innovation and adaptability, existing change management assistance can facilitate the shift of MSMEs to digital processes. MSMEs can build networks by exchanging resources, best practices, and expertise on digital marketing through collaborative networks [36].

Finally, MSMEs can establish their online presence without significant expenditure by utilizing free or low-cost digital marketing tools. MSMEs in Java can thrive independently and significantly contribute to the overall economy by addressing these challenges with workable answers and easily accessible resources [36]. Although digital marketing offers excellent opportunities for MSMEs, various challenges must be overcome before adoption becomes more effective. Table 3 summarizes some of the main obstacles MSMEs face in implementing digital marketing strategies, ranging from limited digital literacy to financial constraints and competition with large companies.

**Table 2.** Challenges and benefits of MSME sustainability

Environmental Challenges	Potential Benefits of Sustainable Practices	Reference
<b>Regulatory Compliance</b>	<b>Wider Market Access</b>	
Due to limited resources and knowledge, MSMEs often experience difficulties complying with environmental regulations.	Implementing sustainable practices can open up new market opportunities and attract environmentally conscious consumers.	[37]
<b>Limited Resources</b>	<b>Cost Savings</b>	
Limited financial and human resources hamper the use of environmentally friendly technologies.	Increasing energy efficiency and reducing waste can significantly reduce operating costs.	[38]
<b>Lack of Environmental Awareness</b>	<b>Better Corporate Image</b>	
Many MSMEs are not aware of the environmental impact of their operational activities.	Implementing sustainable practices can enhance reputation and stakeholder trust.	[39]
<b>Technology Limitations</b>	<b>Compliance with Regulations</b>	
Access to and understanding of environmentally friendly technologies is still limited.	A proactive environmental strategy helps MSMEs comply with evolving regulations.	[40]
<b>Market Pressure</b>	<b>Competitive Advantage</b>	
Low demand for environmentally friendly products can make MSMEs reluctant to implement sustainable practices.	Implementing sustainable practices early on can be a differentiating factor for MSMEs in the market.	[41]

**Table 3.** MSMEs' challenges in digital marketing

Challenges/ Barriers	Description	Reference
Limitations of Digital Literacy	Many MSMEs do not yet understand digital technology, making adopting effective online marketing strategies challenging.	[42]
Technology Infrastructure Constraints	Unequal internet access and inadequate technological infrastructure hamper the implementation of digital marketing by MSMEs in certain areas.	[43]
Competition with Big Companies	MSMEs often have difficulty competing with large companies with more resources to optimize digital marketing strategies.	[44]
Financial Resource Constraints	Limited capital prevents MSMEs from investing in the technology and training needed for digital marketing.	[45]
Lack of Trust in Technology	Some MSMEs are doubtful about the security and effectiveness of digital technology, so they are reluctant to adopt it in their marketing strategies.	[46]

These findings indicate that MSMEs encounter various challenges in adopting sustainable practices, including financial, technological, and regulatory barriers. Financial constraints limit their access to green technologies and training, while a lack of awareness hinders behavioral change. Unclear policies and insufficient institutional support often complicate regulatory compliance. Multi-level collaboration among government, industry, and civil society is essential to address these gaps.

This summary also highlights the persistent barriers to digital transformation faced by MSMEs, such as limited infrastructure, low trust in technology, and a shortage of necessary skills. These obstacles delay innovation and exacerbate inequality between digitally advanced and lagging firms. Without supportive ecosystems, many MSMEs remain excluded from digital growth opportunities. Strategic public-private partnerships are crucial for promoting inclusive digital readiness.

#### 4. DIGITAL MARKETING LANDSCAPE FOR MSMEs

Increasing competitiveness and visibility in a world prioritizing digitalization drives rapid evolution in the digital marketing environment of MSMEs in Java. For MSMEs to expand their market reach and improve operational efficiency, there is a real movement toward digital transformation in line with current trends. To remain competitive, this shift requires various digital marketing techniques and tools [47, 48].

Social media, SEO and content marketing, e-commerce and online marketplaces, and data-driven marketing are some of Javanese MSMEs' current digital marketing trends. Through operational simplification, cost reduction, and faster service delivery, digital transformation enables MSMEs to access global audiences, overcome regional constraints, and improve operational efficiency. MSMEs can provide individualized

and quick customer support thanks to technologies such as ChatGPT and Management Information Systems (MIS), which increase customer satisfaction and loyalty [48, 49].

For MSMEs, strategic decision-making also becomes more critical as they can make informed choices, adapt to market trends, and improve their marketing strategies with the help of real-time data and analytics. However, MSMEs face various obstacles, such as low levels of digital literacy, reluctance to adapt, and limited infrastructure. MSMEs can overcome these obstacles and leverage digital marketing to increase competitiveness by investing in infrastructure development and digital skills training [50, 51]. The growing digital marketing trends among MSMEs in Java reflect the efforts to adapt to the ongoing digital transformation. This can be seen from the various strategies implemented, as summarized in Table 4, which presents a summary of recent innovations in digital marketing adopted by MSMEs in Java. It highlights the integration of emerging tools and strategies such as artificial intelligence (AI), short-form video content, local influencers, chatbots, and location-based marketing. These innovations demonstrate how MSMEs leverage digital platforms to enhance customer engagement, personalize marketing efforts, and broaden their market reach in an increasingly competitive landscape.

In conclusion, the desire to increase market reach and competitiveness has driven a dynamic shift towards digital transformation in the digital marketing environment of MSMEs in Java. Despite the obstacles, there are also many opportunities for development and innovation as long as MSMEs can adapt to the rapidly evolving digital landscape.

The table illustrates the increasing adoption of advanced digital marketing methods among MSMEs in Java. Tools such as AI and chatbots enable personalized customer interactions and operational efficiency. However, the effectiveness of these innovations depends on digital literacy and access to stable infrastructure. Investments in training and local digital ecosystems will be crucial for sustainable competitiveness.

**Table 4.** Digital marketing of MSMEs

Digital Marketing Trends	Description	Reference
Utilization of Artificial Intelligence (AI) in Marketing	Using AI to analyze customer data, personalize content, and improve customer engagement.	[52]
Marketing Through Short Videos	Using platforms like TikTok and Instagram Reels to promote products through engaging short video content.	[53]
Marketing Through Local Influencers	Collaborate with local influencers to increase product reach and credibility in local communities.	[54]
Using Chatbots for Customer Service	Implement chatbots to provide 24/7 customer service, answer frequently asked questions, and process orders.	[55]
Location-Based Marketing	Use location data to offer relevant promotions to customers in specific areas.	[56]

## 5. ALIGNING SUSTAINABLY WITH DIGITAL MARKETING INITIATIVES

A shift from conventional marketing strategies to ones that prioritize transparency, authenticity, and long-term value creation is necessary to incorporate sustainability into digital marketing campaigns. This can support profitable social benefits, meet stakeholder expectations, enhance consumer engagement and brand reputation, and support corporate goals. Stakeholder-centric strategies, delivering relevant and reliable content, using digital technologies such as artificial intelligence (AI), the Internet of Things (IoT), and big data, and promoting transparency and ethical service are some strategies to achieve this alignment [57, 58].

Using eco-friendly packaging, avoiding greenwashing, and being transparent are best practices for branding and marketing. Companies should provide ethical goods and openly explain their sustainability commitments, as these actions increase customer engagement and brand reputation. To build trust and loyalty, companies should emphasize environmental responsibility, and authenticity is essential as customers become increasingly suspicious of greenwashing techniques [59, 60].

However, adoption can be hampered by several issues, including organizational inertia, financial constraints, and the potential for greenwashing. Companies must develop an active corporate culture and continuous learning to encourage green innovation. To be consistent with sustainability goals, it is also necessary to carefully manage the contradictory functions of digital advertising, which can promote excessive consumption [61]. Various innovative strategies can be implemented to support sustainable digital marketing.

**Table 5.** Innovative strategies for sustainable digital marketing

Innovative Strategy	Description	Reference
Blockchain Use for Supply Chain Transparency	Implementation of blockchain technology to ensure transparency and authenticity in the supply chain of sustainable products.	[62, 63]
Location-Based Marketing to Reduce Carbon Footprint	Using location data to target local consumers reduces the need for long-distance delivery and associated emissions.	[64]
Mobile Application Development for Eco-Friendly Product Promotion	Creating an application that promotes environmentally friendly products and provides educational information to consumers.	[65]
Social Media Sentiment Analysis to Monitor Sustainability Perceptions	Leveraging sentiment analysis to understand consumer perceptions of corporate sustainability initiatives.	[66]
Using Virtual Reality (VR) for Sustainable Product Education	Using VR technology to provide consumers with an interactive experience about the benefits of sustainable products.	[67]

Table 5 summarizes emerging strategies that integrate sustainability goals with digital marketing tools, offering

practical approaches for companies to enhance transparency, reduce carbon footprints, and strengthen consumer engagement in sustainability initiatives. Key innovations highlighted include using blockchain technology for transparent supply chains, geolocation-based marketing to target eco-conscious consumers, and immersive technologies such as virtual reality (VR) to communicate sustainability narratives more effectively.

In short, integrating sustainability into digital marketing campaigns requires a holistic strategy that prioritizes transparency, authenticity, and stakeholder engagement. Companies can increase brand recognition and customer trust while supporting international sustainability initiatives by emphasizing transparency, authenticity, and stakeholder engagement.

These innovative strategies demonstrate the potential of technology to drive sustainability in marketing practices. Blockchain, VR, and sentiment analysis offer transparency, engagement, and customer insight. Yet, their implementation is limited by cost, complexity, and readiness at the MSME level. Capacity building and scalable pilot programs could help bridge these gaps effectively.

## 6. CASE STUDIES OF SUCCESSFUL INTEGRATION

The potential to increase corporate resilience and competitiveness has made integrating sustainable practices with digital marketing initiatives a concern among local MSMEs in Java [68]. Examples of effective integration tactics and lessons learned include KWT Kuncup Mekar, Dhea Rasa in West Java, and Honoya Group in Blitar City [69].

These examples show how collaboration, digital literacy, and innovative digital technologies can enhance competitiveness and sustainability. MSMEs can adopt sustainable practices with the assistance and resources of partnerships with public and private organizations [70]. Initiatives such as the “TUWO” model in Central Java demonstrate the importance of providing ongoing education and training in sustainability and digital marketing [71].

Several case studies demonstrate MSMEs' opportunities and challenges in implementing digital marketing strategies. For example, Dhea Rasa's adoption of digital accounting tools improved traceability and reduced error rates by 40%, yet the absence of structured performance metrics hindered proper evaluation. Similarly, the Honoya Group experienced increased customer engagement through WhatsApp commerce, but lacked analysis regarding its operational scalability. These cases highlight the need for contextual benchmarking and tailored capacity-building programs [72]. While effective digital marketing depends on high-quality content and a strong understanding of industry dynamics [73], many MSMEs struggle with long-term adaptation. Some adopted digital tools only during crises such as the COVID-19 pandemic, later abandoning them due to weak integration with core business functions. Others showed initial promotional success but failed to adjust logistics or supply chains to meet rising demand. For instance, KWT Kuncup Mekar leveraged community-based marketing via Facebook Live but lacked follow-up data to assess long-term customer retention [23]. These mixed outcomes reflect the complexity of scaling digital sustainability in MSMEs and underscore the urgent need for systemic, long-term mentoring beyond temporary tools and funding.

The knowledge from this case study can be used by other SMEs who want to combine digital marketing with sustainable practices [74]. However, technology management and digital literacy remain, requiring ongoing cooperation from all parties involved [75]. To achieve the best results, strategies must be tailored to different MSMEs' specific difficulties and conditions, including financial availability, market conditions, and regulatory frameworks [76, 77]. The knowledge gained from this case study provides valuable insights for MSMEs who wish to adopt digital marketing with a sustainable approach. Table 6 summarizes a range of case studies illustrating how MSMEs across different regions in Java have implemented digital marketing strategies to enhance operational efficiency, expand market reach, and support business sustainability. These examples demonstrate the effective utilization of digital tools to streamline processes, reduce operational costs, and reach broader audiences across various industry sectors.

**Table 6.** MSMEs digital marketing case study

Case Study	Description	Reference
"Kremes Ubi" Business Group in Cibunar Village, Sumedang	This business group implemented a digital marketing strategy to increase sales of their "Kremes Ubi" product, which is a local product made from cassava. Through the implementation of digital marketing, they managed to expand their market reach and increase sales significantly.	[78]
MSMEs in Jayagiri Village, Lembang	MSMEs in this village implement digital technology in their marketing strategies to improve operational efficiency and market reach. The digital marketing training provided has shown a significant impact on promotional strategy and the use of digital technology among MSMEs. This study examines the sustainability of MSMEs in West Java and the role of digital transformation, digital dividends, and entrepreneurship in driving the sustainability of these businesses. The results show that financial access, market access, government policies and regulations, and human resources are important factors that influence the sustainability of MSMEs.	[79]
MSMEs in West Java	This study analyzes the influence of digital marketing and entrepreneurial competence on the marketing performance of MSMEs in West Java. The study results indicate that digital marketing and entrepreneurial competence have a positive and significant effect on the marketing performance of MSMEs.	[80]
MSMEs in West Java	This study explores the impact of information technology implementation on marketing cost efficiency in MSMEs in West Java. The results show that applying information technology can reduce marketing costs and increase the operational efficiency of MSMEs.	[81]
MSMEs in West Java	The results show that applying information technology can reduce marketing costs and increase the operational efficiency of MSMEs.	[82]

The case studies provide practical illustrations of MSMEs leveraging digital platforms to enhance visibility and sales. Despite diverse contexts, successful MSMEs share traits like adaptability, local collaboration, and proactive learning. Nonetheless, most lack formal evaluation systems to track the impact of these initiatives. Future interventions should incorporate performance metrics to ensure strategic outcomes.

## 7. FRAMEWORK FOR DEVELOPING SUSTAINABLE DIGITAL MARKETING STRATEGIES

This study guides sustainable digital marketing tactics for MSMEs in Java, Indonesia. The study provides detailed guidance to MSMEs on conducting a situation analysis, setting goals and objectives, creating a sustainable digital marketing strategy, using digital tools and technologies, empowering and training staff, tracking and assessing performance, and measuring success using metrics and indicators [83].

Conducting a situation analysis is the first step, which involves evaluating the target audience, the competitive environment, and the organization's current status. Determine sustainability goals and ways to integrate them with marketing goals. A SWOT analysis is used to assess internal and external issues [84].

The second step is setting goals and objectives related to digital marketing and sustainability. Set measurable goals, such as increasing the proportion of green product sales by 20% over the next year and increasing online exposure by 30% in six months through focused digital marketing [85, 86].

Creating high-quality, eco-conscious content that emphasizes the sustainability of your goods or services is the third step in creating a sustainable digital marketing plan. Create a sustainability-centric network using social media sites like Facebook, Instagram, and TikTok. Use sustainable keywords in your website text to increase search engine exposure. Create ad campaigns that promote eco-friendly goods and educate customers about sustainable practices [33, 86].

The fourth phase is implementing digital tools and technologies, such as social media management tools like Hootsuite, email marketing platforms like Mailchimp for campaigns, and Google Analytics to measure website traffic and user activity. To enable online sales and ensure a seamless client experience, spend money on an e-commerce platform like Shopify or WooCommerce [87, 88].

The fifth phase is to inspire and educate staff members, motivate them to participate in sustainability projects, and foster an eco-friendly culture within the company. Review performance frequently regarding goals and modify tactics as needed [89]. To achieve sustainable digital marketing, MSMEs must implement various strategies to increase competitiveness while supporting responsible business practices. Table 7 summarizes the main aspects of sustainable digital marketing strategies that can help MSMEs expand market reach, increase customer engagement, and optimize their online presence.

In conclusion, MSMEs in Java can become more resilient, visible, and competitive by implementing sustainable digital marketing tactics. MSMEs can improve their overall marketing performance and successfully address the growing market demand for sustainability by following this standard approach.

**Table 7.** Sustainable digital marketing strategy for MSMEs

Strategy Aspect	Description	References
Utilization of E-commerce	Integration of e-commerce platforms to expand market reach and increase sales of MSME products.	[70]
Use of Social Media	Optimizing social media as a promotional tool and customer interaction to increase brand awareness.	[90]
Increasing Competitiveness through Digitalization	Adopting digital technology to improve operational efficiency and competitiveness of MSMEs in the global market.	[2]
Creative Content Development	Creating engaging and informative content to attract consumer interest and increase customer engagement.	[91]
Use of SEO	Implementation of SEO to increase the visibility of MSME websites in search engines.	[92, 93]

## 8. CONCLUSIONS

This study underscores that while integrating sustainability into digital marketing strategies offers clear benefits for MSMEs in Java, such as enhanced competitiveness, operational efficiency, and alignment with SDG targets, the real challenge lies in execution. The gap between strategy and practice remains wide due to structural and contextual constraints, including limited digital infrastructure, knowledge asymmetries, and inconsistent policy support. Therefore, moving forward, the focus must shift from awareness to institutionalization. Practical policy interventions should prioritize the development of localized digital ecosystems, including rural internet hubs, MSME-specific e-commerce platforms, and standardized sustainability metrics to guide implementation. Regulatory bodies could play a catalytic role by embedding sustainability reporting into MSME compliance frameworks and offering fast-track access to green finance for digitally active enterprises. Additionally, cross-sector partnerships should be incentivized to co-create modular, low-cost digital solutions that address specific sectoral needs, especially with tech providers and academia. Future studies should explore the long-term behavioral changes in MSMEs post-adoption and develop context-sensitive scalability models that bridge digital and environmental priorities.

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## REFERENCES

[1] Fauzi, A.A., Sheng, M.L. (2022). The digitalization of micro, small, and medium-sized enterprises (MSMEs): An institutional theory perspective. *Journal of Small*

*Business Management*, 60(6): 1288-1313. <https://doi.org/10.1080/00472778.2020.1745536>

[2] Kilay, A.L., Simamora, B.H., Putra, D.P. (2022). The influence of e-payment and e-commerce services on supply chain performance: Implications of open innovation and solutions for digitalizing Micro, Small, and Medium Enterprises (MSMEs) in Indonesia. *Journal of Open Innovation: Technology, Market, and Complexity*, 8(3): 119. <https://doi.org/10.3390/joitmc8030119>

[3] Utama, S., Yusfiarto, R., Pertiwi, R.R., Khoirunnisa, A.N. (2024). Intentional model of MSMEs growth: A tripod-based view and evidence from Indonesia. *Journal of Asia Business Studies*, 18(1): 62-84. <https://doi.org/10.1108/JABS-08-2022-0291>

[4] Muafi, Sanusi, Z.M., Roostika, R. (2023). Digital skills, digital entrepreneurship, job satisfaction, and sustainable performance of MSMEs: A survey on MSMEs in Indonesia. *International Journal of Sustainable Development and Planning*, 18(2): 465-473. <https://doi.org/10.18280/ijstdp.180215>

[5] Tarihoran, A.D.B., Hubeis, M., Jahroh, S., Zulfainarni, N. (2023). Market-based dynamic capabilities for MSMEs: Evidence from Indonesia's ornamental fish industry. *Journal of Open Innovation: Technology, Market, and Complexity*, 9(3): 100123. <https://doi.org/10.1016/j.joitmc.2023.100123>

[6] Lestari, N.S., Rosman, D., Triana, I. (2024). Analyzing the effect of innovation and strategic planning on MSME performance, utilizing technology adoption as a moderator. *Procedia Computer Science*, 245: 500-507. <https://doi.org/10.1016/j.procs.2024.10.276>

[7] Juwana, W.E., Alfaiz, N.F., Prasetyo, S.D., Rachmanto, R.A., Bangun, W.B., Arifin, Z. (2024). Techno-economic analysis of solar-wind powered EV charging stations at train station parking lots. *Journal Européen des Systèmes Automatisés*, 57(4): 1135-1143. <https://doi.org/10.18280/jesa.570420>

[8] Sugangga, A., Handayati, P., Zagladi, A.N. (2023). Measuring the contribution of financial literacy in building the competitive advantage of MSMEs in Indonesia: Systematic Literature Review (SLR). *Brilliant International Journal of Management and Tourism*, 3(3): 63-77. <https://doi.org/10.55606/bijmt.v3i3.2225>

[9] Maran, R. (2022). Improving micro-, small and medium enterprise's access to start-up financing in ASEAN countries. *Journal of Research, Innovation and Technologies*, 1(2): 121-140. [https://doi.org/10.57017/jorit.v1i2\(2\).03](https://doi.org/10.57017/jorit.v1i2(2).03)

[10] Gultom, P., Marpaung, J.L., Weber, G.W., Sentosa, I., Sinulingga, S., Putra, P.S.E., Agung, V.R. (2024). Optimizing the selection of the sustainable micro, small, and medium-sized enterprises development center using a multi-criteria approach for regional development. *Mathematical Modelling of Engineering Problems*, 11(11): 2977-2987. <https://doi.org/10.18280/mmep.111110>

[11] Widjajanti, K., Prihantini, F.N., Wijayanti, R. (2022). Sustainable development of business with canvas business model approach: Empirical study on MSMEs Batik Blora, Indonesia. *International Journal of Sustainable Development and Planning*, 17(3): 1025-1032. <https://doi.org/10.18280/ijstdp.170334>

[12] Endris, E., Kassegn, A. (2022). The role of micro, small



- and medium enterprises (MSMEs) to the sustainable development of sub-Saharan Africa and its challenges: A systematic review of evidence from Ethiopia. *Journal of Innovation and Entrepreneurship*, 11(1): 20. <https://doi.org/10.1186/s13731-022-00221-8>
- [13] Eweje, G. (2020). Proactive environmental and social strategies in a small-to medium-sized company: A case study of a Japanese SME. *Business strategy and the environment*, 29(7): 2927-2938. <https://doi.org/10.1002/bse.2582>
- [14] Trenggonowati, D.L., Kulsum, K., Ridwan, A., Sirajuddin, S. (2021). The use of productivity gain sharing model in increasing productivity of MSMEs herbal products during the COVID-19 pandemic era to achieve sustainable development goals (SDGs) in Indonesia. *Agrointek: Jurnal Teknologi Industri Pertanian*, 15(4): 1159-1174. <https://doi.org/10.21107/agrointek.v15i4.11237>
- [15] Czainska, K., Sus, A., Thalassinis, E.I. (2021). Sustainable survival: Resource management strategy in micro and small enterprises in the rubber products market in Poland during the COVID-19 pandemic. *Resources*, 10(8): 85. <https://doi.org/10.3390/resources10080085>
- [16] Lestari, D., Siti, M., Wardhani, W., Yudaruddin, R. (2021). The impact of COVID-19 pandemic on performance of small enterprises that are e-commerce adopters and non-adopters. *Problems and Perspectives in Management*, 19(3): 467. [https://doi.org/10.21511/ppm.19\(3\).2021.38](https://doi.org/10.21511/ppm.19(3).2021.38)
- [17] Judijanto, L., Souisa, W., Rukmana, A.Y., Kaniawati, K. (2023). The effect of organizational culture, digital marketing strategy, service quality, and environmental sustainability on customer satisfaction of MSME products in Indonesia. *Jurnal Riset Ekonomi Manajemen (REKOMEN)*, 6(2): 181-196. <https://doi.org/10.31002/rekomen.v6i2.1177>
- [18] Benardi, B., Chaidir, M., Amelia, Y., Qalbia, F. (2022). Sustainable digital marketing strategies for enhancing micro, small and medium enterprises product branding. *Proceeding of the International Conference on Economics and Business*, 1(1): 244-252. <https://doi.org/10.55606/iceb.v1i1.373>
- [19] Pranata, Y., Ekasasi, S.R. (2022). The influence of green marketing and green brand image on green satisfaction starbucks yogyakarta. *Cakrawangsa Bisnis: Jurnal Ilmiah Mahasiswa*, 3(1): 111-122.
- [20] Molina-Sánchez, R., García-Pérez-de-Lema, D., López-Salazar, A., Godínez-López, R. (2022). Determining factors in MSMEs success: An empirical study in Mexico. *Small Business International Review*, 6(1): e384. <https://doi.org/10.26784/sbir.v6i1.384>
- [21] Vásquez, J., Aguirre, S., Puertas, E., Bruno, G., Priarone, P.C., Settineri, L. (2021). A sustainability maturity model for micro, small and medium-sized enterprises (MSMEs) based on a data analytics evaluation approach. *Journal of Cleaner Production*, 311: 127692. <https://doi.org/10.1016/j.jclepro.2021.127692>
- [22] Tejamaya, M., Puspoprodjo, W., Susetyo, H., Modjo, R. (2021). An analysis of pivotal factors in the implementation of occupational health and safety management systems in micro, small and medium enterprises (MSMEs): Literature review. *Gaceta Sanitaria*, 35: S348-S359. <https://doi.org/10.1016/j.gaceta.2021.10.050>
- [23] Behl, A., Gaur, J., Pereira, V., Yadav, R., Laker, B. (2022). Role of big data analytics capabilities to improve sustainable competitive advantage of MSME service firms during COVID-19—A multi-theoretical approach. *Journal of Business Research*, 148: 378-389. <https://doi.org/10.1016/j.jbusres.2022.05.009>
- [24] Lin, J.Y., Yang, Z.R., Li, Y.T., Zhang, Y.L. (2022). Development strategy and the MSMEs finance gap. *Journal of Government and Economics*, 5: 100034. <https://doi.org/10.1016/j.jge.2022.100034>
- [25] Khurana, S., Haleem, A., Luthra, S., Mannan, B. (2021). Evaluating critical factors to implement sustainable oriented innovation practices: An analysis of micro, small, and medium manufacturing enterprises. *Journal of Cleaner Production*, 285: 125377. <https://doi.org/10.1016/j.jclepro.2020.125377>
- [26] Javaid, M., Haleem, A., Singh, R.P., Suman, R., Khan, S. (2022). A review of Blockchain Technology applications for financial services. *Benchmark Transactions on Benchmarks, Standards and Evaluations*, 2(3): 100073. <https://doi.org/10.1016/j.tbench.2022.100073>
- [27] Larios-Francia, R.P., Ferasso, M. (2023). The relationship between innovation and performance in MSMEs: The case of the wearing apparel sector in emerging countries. *Journal of Open Innovation: Technology, Market, and Complexity*, 9(1): 100018. <https://doi.org/10.1016/j.joitmc.2023.100018>
- [28] De Simone, V., Di Pasquale, V., Miranda, S. (2023). An overview on the use of AI/ML in manufacturing MSMEs: Solved issues, limits, and challenges. *Procedia Computer Science*, 217: 1820-1829. <https://doi.org/10.1016/j.procs.2022.12.382>
- [29] Gani, A., James, A.T., Asjad, M., Talib, F. (2022). Development of a manufacturing sustainability index for MSMEs using a structural approach. *Journal of Cleaner Production*, 353: 131687. <https://doi.org/10.1016/j.jclepro.2022.131687>
- [30] Pranata, N., Soekarni, M., Mychelisda, E., Novandra, R., Nugroho, A.E., Rifai, B., Buhaerah, P., Zulhamdani, M., Yuliana, R.R.D. (2022). Technology adoption issues and challenges for micro, small and medium enterprises: A case study of the food and beverage sub-sector in Indonesia. *The Journal of Asian Finance, Economics and Business*, 9(3): 265-274. <https://doi.org/10.13106/jafeb.2022.vol9.no3.0265>
- [31] Widita, A.A., Lechner, A.M., Widyastuti, D.T. (2024). Spatial patterns and drivers of micro, small and medium-sized enterprises (MSMEs) within and across Indonesian cities: Evidence from highly granular data. *Regional Science Policy & Practice*, 16(11): 100137. <https://doi.org/10.1016/j.rspp.2024.100137>
- [32] Rofi'ah, K., Safira, M.E., Rosele, M.I. (2024). The effectiveness of accelerating halal product certification: Regulations and companions. *Journal of Human Rights, Culture and Legal System*, 4(2): 449-476. <https://doi.org/10.53955/jhcls.v4i2.203>
- [33] Mudjahidin, M., Aristio, A.P., Balbeid, N.H., Junaedi, L. (2024). The influence of social media sales intensity and competency on the improvement of business performance satisfaction in MSMEs. *Procedia Computer Science*, 234: 869-875. <https://doi.org/10.1016/j.procs.2024.03.074>
- [34] Nuryanto, U.W., Quraysin, I., Pratiwi, I. (2024).

- Magnitude of digital adaptability role: Stakeholder engagement and costless signaling in enhancing sustainable MSME performance. *Heliyon*, 10(13): e33484. <https://doi.org/10.1016/j.heliyon.2024.e33484>
- [35] Yunus, E.N., Ernawati, E., Nuraini, E., Yuniarti, K. (2025). Post-crisis growth: Resource orchestration, innovation, and diversification in MSMEs. *Journal of Open Innovation: Technology, Market, and Complexity*, 11(2): 100570. <https://doi.org/10.1016/j.joitmc.2025.100570>
- [36] Veiga, P.M., Marnoto, S., Guerra-Mota, M., Rexhepi, G. (2024). Building new business models in MSMEs: Digital capabilities, global value chains integration and the moderating role of entrepreneurial failure. *Journal of Small Business and Enterprise Development*, 31(3): 492-514. <https://doi.org/10.1108/JSBED-10-2023-0501>
- [37] Williamson, D., Lynch-Wood, G., Ramsay, J. (2006). Drivers of environmental behaviour in manufacturing SMEs and the implications for CSR. *Journal of Business Ethics*, 67: 317-330. <https://doi.org/10.1007/s10551-006-9187-1>
- [38] Hillary, R. (2004). Environmental management systems and the smaller enterprise. *Journal of Cleaner Production*, 12(6): 561-569. <https://doi.org/10.1016/j.jclepro.2003.08.006>
- [39] Petts, J. (2000). The regulator—regulated relationship and environmental protection: Perceptions in small and medium-sized enterprises. *Environment and Planning C: Government and Policy*, 18(2): 191-206. <https://doi.org/10.1068/c9861>
- [40] Susan, M., Winarto, J., Gunawan, I. (2025). An insight into Micro, Small, and Medium Enterprises' environmental responsibility and its implications on environmental performance. *Review of Integrative Business and Economics Research*, 14(3): 170-179.
- [41] Del Brío, J.Á., Junquera, B. (2003). A review of the literature on environmental innovation management in SMEs: Implications for public policies. *Technovation*, 23(12): 939-948. [https://doi.org/10.1016/S0166-4972\(02\)00036-6](https://doi.org/10.1016/S0166-4972(02)00036-6)
- [42] Mujtahid, I.M., Berlian, M., Vebrianto, R., Thahir, M., Irawan, D. (2021). The development of digital age literacy: A case study in Indonesia. *The Journal of Asian Finance, Economics and Business*, 8(2): 1169-1179. <https://doi.org/10.13106/jafeb.2021.vol8.no2.1169>
- [43] Janita, I., Chong, W.K. (2013). Barriers of B2B e-business adoption in Indonesian SMEs: A literature analysis. *Procedia Computer Science*, 17: 571-578. <https://doi.org/10.1016/j.procs.2013.05.073>
- [44] Febriani, A., Sopha, B.M., Wibisono, M.A. (2025). Dynamic capabilities for omnichannel transformation in MSMEs: A comparative case study of fashion and furniture sectors. *Journal of Open Innovation: Technology, Market, and Complexity*, 11(1): 100498. <https://doi.org/10.1016/j.joitmc.2025.100498>
- [45] Purba, M.I., Simanjutak, D.C.Y., Malau, Y.N., Sholihat, W., Ahmadi, E.A. (2021). The effect of digital marketing and e-commerce on financial performance and business sustainability of MSMEs during COVID-19 pandemic in Indonesia. *International Journal of Data and Network Science*, 5(3): 275-282. <https://doi.org/10.5267/j.ijdns.2021.6.006>
- [46] Shahadat, M.M.H., Nekkamahmud, M., Ebrahimi, P., Fekete-Farkas, M. (2023). Digital technology adoption in SMEs: What technological, environmental and organizational factors influence in emerging countries? *Global Business Review*. <https://doi.org/10.1177/09721509221137199>
- [47] Srimulyani, V.A., Hermanto, Y.B., Rustiyaningsih, S., Waloyo, L.A.S. (2023). Internal factors of entrepreneurial and business performance of small and medium enterprises (SMEs) in East Java, Indonesia. *Heliyon*, 9(11): e21637. <https://doi.org/10.1016/j.heliyon.2023.e21637>
- [48] Lucky, S., Suryani, E., Purnomo, J.D.T. (2024). Assessing the relationship between regional economic advancement and digital activity. In *2024 IEEE International Symposium on Consumer Technology (ISCT)*, Kuta, Bali, Indonesia, pp. 737-743. <https://doi.org/10.1109/ISCT62336.2024.10791289>
- [49] Kurniawan, A.C., Rachmawati, N.L., Ayu, M.M., Ong, A.K.S., Redi, A.A.N.P. (2024). Determinants of satisfaction and continuance intention towards online food delivery service users in Indonesia post the COVID-19 pandemic. *Heliyon*, 10(1): e23298. <https://doi.org/10.1016/j.heliyon.2023.e23298>
- [50] Tanjung, F.S. (2024). Data-driven decisions: Leveraging analytics for strategic marketing management. *Equator Journal of Management and Entrepreneurship (EJME)*, 12(4): 322-331. <https://doi.org/10.26418/ejme.v12i4.81935>
- [51] Owusu, J., Boateng, P.A., Yeboah, N. (2024). Strategic decision support systems for enhancing competitive advantage in small and medium enterprises. In *2024 IEEE SmartBlock4Africa*, Accra, Ghana, pp. 1-10. <https://doi.org/10.1109/SmartBlock4Africa61928.2024.10779545>
- [52] Kulkarni, A.V., Joseph, S., Patil, K.P. (2024). Artificial intelligence technology readiness for social sustainability and business ethics: Evidence from MSMEs in developing nations. *International Journal of Information Management Data Insights*, 4(2): 100250. <https://doi.org/10.1016/j.jjimei.2024.100250>
- [53] Erdoğan, İ.E., Cicek, M. (2012). The impact of social media marketing on brand loyalty. *Procedia-Social and Behavioral Sciences*, 58: 1353-1360. <https://doi.org/10.1016/j.sbspro.2012.09.1119>
- [54] Yu, X.H., Kim, J., Ahn, Y., Gu, M., Jeong, J.P., Bak, J., Jo, J. (2025). An intelligent marketing platform with influencer classification in social networking services. *Knowledge-Based Systems*, 310: 112972. <https://doi.org/10.1016/j.knosys.2025.112972>
- [55] Torrent-Sellens, J., Enache-Zegheru, M., Ficapal-Cusí, P. (2025). Twin transitions or a meeting of strangers? Unravelling the effects of AI and innovations on economic, social and environmental MSMEs sustainability. *Technology in Society*, 81: 102866. <https://doi.org/10.1016/j.techsoc.2025.102866>
- [56] Noviyanto, F., Wibowo, M. (2016). Effectiveness of mobile marketing system to improve the potential of MSMEs using location-based service system. *International Journal of Computer Applications*, 975: 8887. <https://doi.org/10.5120/ijca2016912548>
- [57] Mukherjee, S., Nagariya, R., Baral, M.M., Patel, B.S., Chittipaka, V., Rao, K.S., Rao, U.A. (2022). Blockchain-based circular economy for achieving environmental sustainability in the Indian electronic MSMEs. *Management of Environmental Quality: An International*

- Journal, 34(4): 997-1017. <https://doi.org/10.1108/MEQ-03-2022-0045>
- [58] Ananda, M.O., Annuar, S.N.S., Adam, A.A., Sharkawi, S. (2023). The pivotal role of cashless system adoption among Micro, Small, and Medium Enterprises (MSMEs) in Malaysia: The challenges and opportunities. *Economics and Law*, 28(3): 35-43.
- [59] Zhang, S.Q., Cheung, A.W. (2025). Are green finance and inclusive finance complements or substitutes for MSMEs?—Evidence from China's green finance reform and innovation pilot zone. *Energy Economics*, 141: 108125. <https://doi.org/10.1016/j.eneco.2024.108125>
- [60] Suleman, A.R., Nejati, M., Shafaei, A., Redmond, J. (2025). Green human resource management practices in the hospitality and tourism industry: An integrative multilevel systematic review. *Journal of Hospitality and Tourism Management*, 62: 46-56. <https://doi.org/10.1016/j.jhtm.2024.12.009>
- [61] Ma, Y., Feng, G.F., Yin, Z.J., Chang, C.P. (2025). ESG disclosures, green innovation, and greenwashing: All for sustainable development? *Sustainable Development*, 33(2): 1797-1815. <https://doi.org/10.1002/sd.3210>
- [62] Wahyuni, A.E., Juraida, A., Anwar, A. (2021). Readiness factor identification Bandung City MSMEs use blockchain technology. *Jurnal Sistem Dan Manajemen Industri*, 5(2): 53-62. <https://doi.org/10.30656/jsmi.v5i2.2787>
- [63] Rakshit, S., Islam, N., Mondal, S., Paul, T. (2022). Influence of blockchain technology in SME internationalization: Evidence from high-tech SMEs in India. *Technovation*, 115: 102518. <https://doi.org/10.1016/j.technovation.2022.102518>
- [64] Chatterjee, S., Kar, A.K. (2020). Why do small and medium enterprises use social media marketing and what is the impact: Empirical insights from India. *International Journal of Information Management*, 53: 102103. <https://doi.org/10.1016/j.ijinfomgt.2020.102103>
- [65] Sisay, K., Molla, S., Mekonnen, L., Gadisa, Z. (2025). Nexus between business development service and women entrepreneurs' performance: Implication for MSMEs growth and inclusive economic development in Ethiopia. *Journal of Open Innovation: Technology, Market, and Complexity*, 11(1): 100514. <https://doi.org/10.1016/j.joitmc.2025.100514>
- [66] Srivastava, R., Gupta, P., Kumar, H., Tuli, N. (2025). Digital customer engagement: A systematic literature review and research agenda. *Australian Journal of Management*, 50(1): 220-245. <https://doi.org/10.1177/03128962231177096>
- [67] Pizzi, G., Scarpi, D., Pichierri, M., Vannucci, V. (2019). Virtual reality, real reactions?: Comparing consumers' perceptions and shopping orientation across physical and virtual-reality retail stores. *Computers in Human Behavior*, 96: 1-12. <https://doi.org/10.1016/j.chb.2019.02.008>
- [68] Pieter, L.A.G., Utomo, M.M.B. (2023). Performance and development challenges of micro–small bamboo enterprises in Gunungkidul, Indonesia. *Advances in Bamboo Science*, 4: 100037. <https://doi.org/10.1016/j.bamboo.2023.100037>
- [69] Pradnyawati, N.L.P.E., Fristamara, Y. (2024). Digital marketing strategies to enhance visibility and sales of MSMEs: A case study at KWT Kuncup Mekar. *International Journal of Multidisciplinary Research and Analysis*, 7(12): 5654-5658. <https://doi.org/10.47191/ijmra/v7-i12-38>
- [70] Putri, R.L., Hidayat, S., Wahyono, E., Rahmawati, L. (2023). Big data and strengthening MSMEs after the COVID-19 pandemic (development studies on batik MSMEs in East Java). *IAIC Transactions on Sustainable Digital Innovation (ITSDI)*, 4(2): 83-100. <https://doi.org/10.34306/itsdi.v4i2.574>
- [71] Retnaningsih, C., Irmawati, B., Retnawati, B.B., Ruenda, O. (2024). Development and innovation of locally inspired food products by Micro, Small, and Medium Enterprises (MSMEs) in Central Java, Indonesia. *IOP Conference Series: Earth and Environmental Science*, 1338(1): 012066. <https://doi.org/10.1088/1755-1315/1338/1/012066>
- [72] Satryawati, S., Wibowo, R.I., Kristian, E., Aristawidya, E., Amanda, D. (2025). Role of digital transformation in enhancing sustainability and feasibility of MSMEs: A case study of Dhea Rasa. *Journal of Business Management and Economic Development*, 3(1): 155-169. <https://doi.org/10.59653/jbmed.v3i01.1266>
- [73] Abdillah, F. (2024). Dampak ekonomi digital terhadap pertumbuhan ekonomi di Indonesia. *Benefit: Journal of Bussiness, Economics, and Finance*, 2(1): 27-35. <https://doi.org/10.37985/benefit.v2i1.335>
- [74] Samputra, P.L., Alfarizi, M. (2025). Can advanced society 5.0 technology create economic and social value for millennial and generation Z MSMEs in Surabaya, Indonesia? An economic resilience perspective. *Asia Pacific Management Review*, 100355. <https://doi.org/10.1016/j.apmr.2025.100355>
- [75] Gunawan, A., Fatikasari, A.F., Putri, S.A. (2023). The effect of using cashless (QRIS) on daily payment transactions using the technology acceptance model. *Procedia Computer Science*, 227: 548-556. <https://doi.org/10.1016/j.procs.2023.10.557>
- [76] Wijaya, L.I., Zunairoh, Z., Izharuddin, M., Rianawati, A. (2025). Scope of E-Commerce use, innovation capability, and performance: Food sector MSMEs in Indonesia. *Journal of Open Innovation: Technology, Market, and Complexity*, 11(1): 100459. <https://doi.org/10.1016/j.joitmc.2024.100459>
- [77] Prasetyo, S.D., Trisnoaji, Y., Arifin, Z., Mahadi, A.A. (2025). Harnessing unconventional resources for large-scale green hydrogen production: An economic and technological analysis in Indonesia. *Unconventional Resources*, 6: 100174. <https://doi.org/10.1016/j.uncres.2025.100174>
- [78] Fadhilah, D.A., Pratiwi, T. (2021). Coopetition: Jurnal ilmiah manajemen strategi pemasaran produk UMKM melalui penerapan digital marketing. *Jurnal Ilmiah Manajemen Coopetition*, 12(1): 17-22.
- [79] Harto, B., Rukmana, A.Y., Sulistianingsih, S., Parlina, L., Reniawati, D. (2024). Implementasi transformasi digital sebagai pendorong efektivitas green marketing Untuk UMKM Desa Jayagiri Lembang. *Jurnal Pengabdian Masyarakat: Pemberdayaan, Inovasi dan Perubahan*, 4(5): 52-59. <https://doi.org/10.59818/jpm.v4i5.793>
- [80] Aulia, M.R., Hendra, J., Safitri, E., Bawono, A. (2023). Keberlanjutan UMKM di Jawa Barat di Tinjau Dari New-era Business: Transformasi digital, dividen digital, dan kewirausahaan. *Jurnal Bisnisan: Riset Bisnis dan Manajemen*, 5(1): 01-15.

- <https://doi.org/10.52005/bisnisman.v5i1.130>
- [81] Chusumastuti, D., Zulfikri, A., Rukmana, A.Y. (2023). Pengaruh digital marketing dan kompetensi wirausaha terhadap kinerja pemasaran (Studi ada UMKM di Jawa Barat). *Jurnal Bisnis dan Manajemen West Science*, 2(2): 22-32. <https://doi.org/10.58812/jbmws.v2i02.334>
- [82] Desembrianita, E., Hutaeruk, F.N., Azis, F., Iskandar, Y. (2023). Dampak implementasi teknologi informasi terhadap efisiensi biaya pemasaran pada UMKM di Jawa Barat: Perspektif akuntansi manajemen. *Jurnal Aktiva: Riset Akuntansi Dan Keuangan*, 5(2): 58-67. <https://doi.org/10.52005/aktiva.v5i2.185>
- [83] Sari, R.K., Alfarizi, M., Ab Talib, M.S. (2024). Sustainable strategic planning and management influence on sustainable performance: Findings from halal culinary MSMEs in Southeast Asia. *Journal of Modelling in Management*, 19(6): 2034-2060. <https://doi.org/10.1108/JM2-12-2023-0324>
- [84] Lee, J., Lee, S.J., Jung, K. (2020). Balanced SWOT: Revisiting SWOT analysis through failure management and success management. SSRN. <https://doi.org/10.2139/ssrn.3612519>
- [85] Yu, L. (2025). Digital marketing for behavioral change: Encouraging sustainable consumer practices to address environmental issues and support SDGs. *Journal of Lifestyle and SDGs Review*, 5(2): e03866. <https://doi.org/10.47172/2965-730X.SDGsReview.v5.n02.pe03866>
- [86] Rosário, A.T., Lopes, P.R., Rosário, F.S. (2023). The digital marketing for sustainable development. Preprint. <https://doi.org/10.20944/preprints202307.0330.v1>
- [87] Calvin, J., Kusumawati, Y.A., Radhitanti, A. (2024). ShopMe: A mobile app to introduce Indonesian local MSMEs. *Procedia Computer Science*, 245: 1192-1201. <https://doi.org/10.1016/j.procs.2024.10.349>
- [88] Hossain, M.A., Jahan, N., Al Masud, A., Nabi, M.N., Hossain, M.S., Ahmed, S. (2024). Dynamic effect of critical success factors of SMEs on entrepreneurial performance via e-commerce performance. *The Journal of High Technology Management Research*, 35(2): 100515. <https://doi.org/10.1016/j.hitech.2024.100515>
- [89] Setyaningrum, R.P., Rulianti, E., Susilo, P. (2025). Digitalisation empowerment of business to digital innovation in the achievement of SDGs: A survey on creative MSME actors in Indonesia. *Journal of Lifestyle and SDGs Review*, 5(1): e02770. <https://doi.org/10.47172/2965-730X.SDGsReview.v5.n01.pe02770>
- [90] Suariedewi, I.G.A.A.M., Adyatma, I.W.C., Wulandari, I.G.A.A. (2022). The impact of social media marketing for MSMEs sustainability in COVID-19 period. *Journal of Business and Management Review*, 3(9): 641-655. <https://doi.org/10.47153/jbmr39.4602022>
- [91] Sutomo, S., Sudarmiatin, S., Wardana, L.W. (2023). Optimizing MSME performance through implementing effective human resource management practices in the creative industries sector: Systematic literature review (SLR). *International Journal of Management Research and Economics*, 1(4): 123-141. 2023, <https://doi.org/10.54066/ijmre-itb.v1i4.1172>
- [92] Pranata, S., Narimawati, U., Syafei, M.Y. (2024). Content marketing, social media marketing and search engine optimization (SEO) on successful business performance in MSMEs in Cirebon City with digital literacy as an intervening variable. *Jurnal Riset Ekonomi Manajemen (REKOMEN)*, 7(1): 272-283. <https://doi.org/10.31002/rekomen.v7i1.1426>
- [93] Le, T.D., Le-Dinh, T., Uwizeyemungu, S. (2024). Search engine optimization poisoning: A cybersecurity threat analysis and mitigation strategies for small and medium-sized enterprises. *Technology in Society*, 76: 102470. <https://doi.org/10.1016/j.techsoc.2024.102470>