RSF Conference Proceeding Series: Business, Management and Social Science, Vol. 5 No. 2 (2025)https://doi.org/10.31098/bmss.v5i2.1078

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Research Paper

Reframing MSME Competitiveness: Integrating Digital Transformation, Customer-Centric Value, and Green Innovation for Sustainable Advantage

Mohamad Irhas Effendi[1*], Dyah Sugandini[1], Rezky Saputra[2], Rahajeng Arundati[3], Rava Fernanda Purnama[5]

[1]Universitas Pembangunan Nasional Veteran Yogyakarta, Indonesia

[2]Universitas Gajah Mada, Indonesia

[3]Universitas Islam Indonesia, Indonesia

Received : Sept 27, 2025	Revised : Sept 29, 2025	Accepted : Sept 29, 2025	Online : October 14, 2025

Abstract

Globalization and rapid technological disruption have created a highly dynamic and competitive business landscape, posing significant challenges for Micro, Small, and Medium Enterprises (MSMEs) in Indonesia. Despite their strategic role as the backbone of the national economy, MSMEs face structural constraints, including limited access to technology, financial resources, and innovation capacity. This study examines the impact of digital transformation (DT), customer value creation (CVC), and green innovation (GI) on sustainable competitive advantage (SCA), utilizing the Resource-Based View (RBV) as the theoretical framework. Using a quantitative approach, data were collected from 300 MSMEs across manufacturing and service sectors in Indonesia through a structured questionnaire. The results suggest that while digital transformation and green innovation provide strategic foundations, their effectiveness is amplified when aligned with customer value creation. The study contributes to the innovation and strategic management literature by extending RBV to the context of MSMEs in emerging economies. Practically, the findings offer policymakers and MSME managers valuable insights for designing strategies that integrate digital adoption, customer-centric innovation, and sustainability orientation to achieve a sustainable competitive advantage in the face of global competition.

Keywords: *Digital Transformation; Customer Value Creation; Green Innovation; Sustainable Competitive Advantage; MSMEs; Resource-Based View*

INTRODUCTION

In an increasingly dynamic global business landscape, maintaining competitiveness is a significant challenge for Micro, Small, and Medium Enterprises (MSMEs). In Indonesia, MSMEs play a vital role in the economy, contributing more than 60% to the Gross Domestic Product (GDP) and employing more than 97% of the workforce (Ministry of Cooperatives and SMEs, 2023). These figures underscore the pivotal role of MSMEs as the backbone of the national economy, not only in terms of economic growth but also in the social context, through job creation and poverty reduction. However, despite these significant contributions, MSMEs face various structural limitations, including limited capital and access to technology, as well as low innovation capacity.

From the Resource-Based View (RBV) perspective (Barney, 1991), an organization's success in creating sustainable competitive advantage (SCA) is primarily determined by its ability to manage resources that are valuable, rare, inimitable, and non-substitutable (VRIN). The challenge is that most MSMEs in Indonesia still struggle to access strategic resources that meet the VRIN criteria. Research by Mirza et al. (2022) highlights that limited financial and technological resources make MSMEs vulnerable to uncertainty in the business environment. Similarly, Zhang et al. (2023) found that low innovation among MSMEs in developing countries hinders their ability to achieve sustainable competitiveness compared to large companies, which have more substantial financial

Corresponding author's email: m_irhaseffendi@upnyk.ac.id

and human resources.

In this context, several strategies have emerged that can help MSMEs enhance their competitive advantage. First, Digital Transformation (DT) is a crucial instrument for improving operational efficiency, expanding market reach, and building digital capabilities that become new strategic resources (Warner & Wäger, 2019; Verhoef et al., 2021). Second, Customer Value Creation (CVC) is key to building relationship-based differentiation with customers, where the value created is no longer limited to products, but also includes experiences, personalization, and services inherent in interactions with consumers (Vargo & Lusch, 2004; Yrjölä et al., 2018). Third, Green Innovation (GI) has emerged as a response to increasing regulatory pressure and environmental awareness, where research by Chen et al. (2020) and García-Sánchez et al. (2022) shows that green innovation not only improves resource efficiency but also strengthens consumer reputation and loyalty, which ultimately becomes a source of sustainable competitive advantage. Although these variables have been studied separately, a research gap remains in testing how DT, CVC, and GI simultaneously affect SCA, particularly in MSMEs of developing countries such as Indonesia. Most previous studies have focused more on large companies in developed countries with mature innovation ecosystems. Hence, the results are not entirely relevant to the context of SMEs, which have limited resources but are required to be adaptive in the era of digitalization and sustainability (Greco et al., 2017; Patricia & Rodhiah, 2024).

Thus, this study offers novelty by integrating the RBV perspective in analyzing the role of Digital Transformation, Customer Value Creation, and Green Innovation in achieving sustainable competitive advantage in MSMEs in Indonesia. This approach is expected not only to enrich strategic management literature but also to provide practical implications for SME actors in designing adaptive, customer-centric, and sustainability-oriented competitive strategies amid global challenges.

LITERATURE REVIEW

Digital Transformation and Sustainable Competitive Advantage

Digital transformation (DT) is defined as the process of integrating digital technology into all aspects of business, which changes the way organizations operate and provides value to customers (Bharadwaj et al., 2013). DT is not limited to technology adoption, but also involves changes in business models, organizational culture, and the development of new capabilities that support business continuity in the digital era (Warner & Wäger, 2019). Verhoef et al. (2021) emphasize that DT is a combination of technology strategy, consumer orientation, and innovation that enables companies to remain competitive in a highly dynamic market. In the context of MSMEs, DT plays a dual role. First, DT enables operational efficiency by utilizing technologies such as e-commerce, social media, cloud computing, and big data to reduce costs while expanding market access (Liu, Chen, & Chou, 2011). Second, DT provides opportunities for differentiation by delivering a more personalized, responsive, and value-added customer experience. A recent study by Kraus et al. (2021) shows that MSMEs that implement DT tend to be more adaptive in facing external disruptions, thereby strengthening their sustainable competitive advantage (SCA).

From a Resource-Based View (RBV) perspective, digital transformation can be categorized as a valuable strategic resource (improving efficiency and effectiveness), rare (not all MSMEs possess digital capabilities), and difficult to imitate (because it requires significant investment, specialized skills, and a specific digital culture). Thus, DT has the potential to become the primary foundation for building SCA, which is difficult for competitors to match (Barney, 1991; Teece et al., 2016). Empirical research also supports this relationship. Li et al. (2018) found that the adoption of digital technology increases organizational innovation and competitive advantage in the international market. Similarly, Jonathan & Kuika Watat (2020) emphasized that digitization in

MSMEs in developing countries contributes significantly to increasing sustainable competitiveness. This fact demonstrates that DT is not just a temporary trend, but a long-term, relevant strategy to ensure the sustainability of MSMEs amid the pressures of globalization and digitization. Based on these theoretical arguments and empirical findings, the following hypothesis can be proposed:

H1: Digital Transformation has a positive effect on Sustainable Competitive Advantage.

Customer Value Creation and Sustainable Competitive Advantage

The concept of Customer Value Creation (CVC) was developed from the Service-Dominant Logic (SDL) paradigm proposed by Vargo & Lusch (2004), in which value is not only attached to products but is also created through interactions and experiences between companies and customers. Companies do not merely sell goods or services; they also create added value through personalization, service quality, long-term relationships, and active consumer involvement in the value creation process (Lindgreen et al., 2012). In the context of MSMEs, CVC is a key strategy because it enables small companies to compensate for limited resources by differentiating themselves based on customer relationships. Research by Payne et al. (2017) indicates that organizations that prioritize creating customer value are more effective in building long-term loyalty, which in turn contributes directly to a competitive advantage. Furthermore, Yrjölä et al. (2018) emphasize that customer value creation is a strategic resource in line with the Resource-Based View (RBV) perspective, due to its difficult-to-imitate and rare nature, and its significant contribution to shaping sustainable competitiveness.

Empirically, research by Eggert et al. (2018) confirms that a focus on customer value creation enhances profitability and competitiveness by fostering customer loyalty and retention. Hidayat et al. (2020), in a study on Indonesian MSMEs, also found that companies oriented towards creating customer value can survive longer and compete more effectively than MSMEs that rely solely on cost advantages or low prices. This confirms the importance of customer value as one of the main pillars of sustainable competitive advantage (SCA). Thus, from an RBV perspective, customer value creation can be viewed as a relational resource that provides long-term advantages. Customer value creation not only strengthens loyalty but also creates barriers to entry for competitors due to its relational nature, which is difficult to imitate.

H2: Customer Value Creation has a positive effect on Sustainable Competitive Advantage.

Green Innovation and Sustainable Competitive Advantage

Green Innovation (GI) refers to the application of product, process, and business model innovations that are oriented towards environmental sustainability, such as emission reduction, energy efficiency, material recycling, and the development of environmentally friendly products (Chen et al., 2006). Unlike traditional innovation, which focuses only on improving efficiency or creating economic value, GI encompasses a dual dimension, namely economic value and environmental value (García-Sánchez et al., 2022). From the perspective of the Natural Resource-Based View (NRBV) (Hart, 1995), an organization's ability to proactively manage environmental issues can be a strategic resource that contributes to achieving sustainable competitive advantage (SCA). GI meets the VRIN criteria (valuable, rare, inimitable, non-substitutable) because not all companies have the capability to integrate sustainability into innovation. At the same time, demand for environmentally friendly products continues to increase.

Various previous studies confirm the role of GI in sustainable competitiveness. Chen (2008) demonstrates that GI enhances a company's reputation while fostering consumer loyalty to green products. Similarly, Dangelico & Pontrandolfo (2015) found that companies that consistently implement GI not only comply with environmental regulations but also gain a differentiation advantage in the market. A recent study by Xie et al. (2019) demonstrates that green innovation

contributes to improved long-term performance through enhanced resource efficiency and increasingly stringent regulatory compliance. In the context of MSMEs in Indonesia, GI is becoming increasingly relevant due to growing consumer awareness of environmental issues and government regulatory pressure. Patricia and Rodhiah (2024) emphasize that MSMEs that adopt green innovation are better able to attract young consumers who care about the environment, thereby increasing their competitiveness in both domestic and international markets. This fact confirms that GI is not only an adaptive strategy but also a key driver for achieving sustainable competitive advantage.

H3: Green Innovation has a positive effect on Sustainable Competitive Advantage.

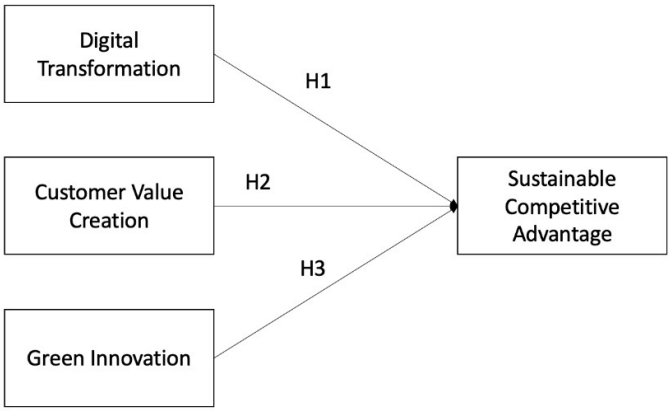

Figure 1. Conceptual Framework

RESEARCH METHOD

This study uses a quantitative approach with a causality design to examine the effect of digital transformation (DT), customer value creation (CVC), and green innovation (GI) on sustainable competitive advantage (SCA) in MSMEs in Indonesia. The research population consists of innovation-based MSMEs in the manufacturing and service sectors. The sample was selected through purposive sampling, with the criteria that MSMEs have been operating for at least three years, have innovated within the last two years, and have established involvement with external parties. Based on the SEM-PLS guidelines (Hair et al., 2019), a minimum sample size of 300 respondents was established. Primary data were collected through a five-point Likert scale questionnaire, while secondary data were obtained from official reports and academic publications. The variable indicators were adapted from previous studies: DT includes digital technology integration and business model change (Verhoef et al., 2021), CVC includes value differentiation and customer relationships (Eggert et al., 2018), GI includes environmentally friendly innovation and regulatory compliance (Chen, 2008), while SCA is measured through resource uniqueness and sustainable innovation (Barney, 1991; Wang, 2021). Data analysis was performed with SEM-PLS using SmartPLS. The analysis stage included measurement model testing to assess validity and reliability, as well as structural model testing to examine the significance of the relationships between variables and the predictive power of the model. With this design, the study is expected to provide empirical evidence regarding the role of DT, CVC, and GI in strengthening the sustainable competitiveness of MSMEs in Indonesia.

FINDINGS AND DISCUSSION

Table 1. Respondent Characteristics

Respondents	Description	Frequency	Percentage
Gender	Male	171	57
	Female	129	43
Age	Under 20 years old	5	1.6
	20-29 years old	40	13.2
	30-39 years	201	66.7
	40-49 years	53	17.6
	Over 50 years old	2	0.9
Level of Education	Elementary/Junior High School	11	3.7
	High School/Vocational School	32	10.6
	Diploma (D1-D4)	59	19.6
	Bachelor's Degree (S1)	175	58.1
	Graduate (S2-S3)	24	7.9
Operating Period of MSMEs	2-3 years	49	16.2
	3-5 Years	221	73.4
	Over 5 years	31	10.3
Collaboration	Government	82	27.2
	Private	186	61.8
	University	33	11

Source: Processed by Researchers (2025)

The respondents in this study were predominantly male (57%), with the majority being in the productive age group of 30–39 years (66.7%). This condition is significant because the productive age group tends to be more adaptable to digitalization and open to innovation, making it relevant to the research topic of digital transformation and green innovation. In terms of education, most of them hold a bachelor's degree (58.1%), indicating a relatively strong academic foundation in understanding managerial concepts, innovation strategies, and customer value creation. In addition, the majority of MSMEs have been operating for 3–5 years (73.4%), a phase that is generally characterized by the need for expansion and product differentiation in order to remain competitive. This is closely related to the urgency of sustainable competitive advantage, which is the dependent variable of the study. In terms of collaboration, most MSMEs work with the private sector (61.8%), while involvement with the government (27.2%) and universities (11%) is relatively lower. This fact shows that MSMEs rely more on practical business networks than research or regulatory support, making the implementation of OI, digital transformation, and green innovation increasingly relevant to close this gap. Thus, the respondent profile supports the focus of this study: characteristics such as age, education, business experience, and collaboration patterns are factors that influence the extent to which MSMEs can adopt digital transformation, create customer value, and develop green innovation as a source of sustainable competitive advantage.

Table 2. Data Distribution

Variable	Indicator	Factor Loading > 0.7	AVE > 0.5	Cronbach's Alpha > 0.7	CR > 0.7
Digital Transformation	DT1	0.911	0.892	0.976	0.980

	DT2	0.927			
	DT3	0.907			
	DT4	0.932			
	DT5	0.925			
	DT6	0.945			
Customer Value Creation	CVC1	0.951	0.864	0.947	0.962
	CVC2	0.953			
	CVC3	0.960			
	CVC4	0.950			
Green Innovation	GI1	0.951	0.849	0.956	0.966
	GI2	0.944			
	GI3	0.930			
	GI4	0.907			
	GI5	0.873			
Sustainable Competitive Advantage	SCA1	0.900	0.886	0.974	0.979
	SCA2	0.934			
	SCA3	0.961			
	SCA4	0.964			
	SCA5	0.946			
	SCA6	0.942			

Source: Processed by the researcher (2025)

Table 3. Discriminant Validity Fornell & Larcker Criterion

	CVC	DT	GI	SCA
Customer Value Creation	0.930			
Digital Transformation	0.928	0.916		
Green Innovation	0.933	0.943	0.945	
Sustainable Competitive Advantage	0.924	0.968	0.947	0.841

Source: Processed by the researcher (2025)

Table 4. Discriminant Validity Heterotrait-Monotrait Ratio (HTMT)

	CVC	DT	GI	SCA
Customer Value Creation				
Digital Transformation	0.928			
Green Innovation	0.933	0.943		
Sustainable Competitive Advantage	0.924	0.968	0.947	

Source: Processed by Researchers (2025)

Table 5. Multicollinearity Test

Variable	VIF	Description
DT -> SCA	4.21	No Multicollinearity
CVC → SCA	3,778	No Multicollinearity
GI → SCA	2,824	No Multicollinearity

Source: Processed by the researcher (2025)

Table 6. R Square Test

Endogenous Variable	R-Square	Q-Square
Sustainable Competitive Advantage	0.550	0.337

Source: Processed by the researcher (2025)

The outer model testing results show that all indicators used in this study are valid and reliable. The factor loading values of each indicator exceed the threshold of 0.7, indicating that the indicators are highly representative of their respective constructs. In addition, the AVE (Average Variance Extracted) values for all constructs are above 0.5 (DT = 0.892; CVC = 0.864; GI = 0.849; SCA = 0.886), thus meeting the convergence validity requirements. The high Cronbach's Alpha values (0.947–0.976) and Composite Reliability values (0.962–0.980) also reinforce that the four latent variables in this study are consistent and reliable. These findings align with the criteria proposed by Hair et al. (2019), which state that the validity and reliability of instruments are important prerequisites for SEM-PLS analysis. Discriminant validity has also been confirmed through two approaches. First, the Fornell & Larcker criteria indicate that the AVE root of each construct is greater than its correlation with other constructs, which means that each construct can distinguish itself from other constructs. Second, the HTMT (Heterotrait-Monotrait Ratio) test produced a value of < 0.90, which reinforces the conceptual differences between variables. These results are consistent with the recommendations of Henseler et al. (2015), which state that HTMT < 0.90 indicates no discriminant problems.

Furthermore, the multicollinearity test results show that all independent variables have a VIF value < 5 (DT = 4.214; CVC = 3.778; GI = 2.824), so there are no signs of multicollinearity. This means that DT, CVC, and GI do not distort each other in explaining SCA, allowing the contribution of each variable to be interpreted independently. This confirms that the research model is free from biases that often arise due to high correlations between predictors (Hair et al., 2019). From the inner model perspective, the R^2 value for SCA = 0.550 indicates that the combination of DT, CVC, and GI can explain 55% of the variation in sustainable competitive advantage. According to Chin (1998), an R^2 value between 0.33 and 0.67 is classified as moderate to strong, meaning that this model has substantial explanatory power. Additionally, the Q^2 value of 0.337 indicates that the model's predictive ability falls into the good category, as the value is greater than zero. Thus, this study has successfully produced a model that is not only valid and reliable but also exhibits strong predictive power for SCA.

Table 7. Hypothesis Test Results

Hypothesis	Variable Relationship	β	T-Statistic	P Value	Description
H1	DT -> SCA	0.273	2.238	0.000	Significant
H2	CVC -> SCA	0.570	5.610	0.000	Significant
H3	GI → SCA	0.128	3.772	0.002	Significant

Source: Processed by the researcher (2025)

That all three research hypotheses were accepted, with significant path coefficients (β), t-statistic, and p-value values. This confirms that digital transformation (DT), customer value creation (CVC), and green innovation (GI) have a positive effect on sustainable competitive advantage (SCA) in MSMEs in Indonesia. First, the relationship between DT and SCA is proven to be significant, with β = 0.273, t = 2.238, and p = 0.000. This finding suggests that the implementation of digital transformation in MSMEs can enhance efficiency, expand market access, and strengthen

adaptive capabilities, ultimately contributing to the creation of sustainable competitive advantage. This result aligns with Warner & Wäger (2019) and Verhoef et al. (2021), who emphasize that digitalization encourages organizations to develop new capabilities that are difficult for competitors to imitate. Research by Jonathan and Kuika Watat (2020) on SMEs in developing countries also shows that digitalization plays a significant role in creating long-term competitive advantage through technology optimization. Second, CVC on SCA shows the most significant influence, with $\beta = 0.570$, $t = 5.610$, and $p = 0.000$. These results confirm that customer value creation is a key determinant for MSMEs to achieve sustainable competitiveness. The orientation towards value creation enables companies to strengthen their differentiation, consumer loyalty, and long-term relationships, which are difficult to replace. This finding is consistent with Eggert et al. (2018) and Payne et al. (2017), who emphasize that customer value creation is a relationship-based strategic resource that contributes significantly to competitive advantage. In the context of Indonesian MSMEs, these results reinforce the study by Hidayat et al. (2020), which found that a focus on customer value is more effective than simply competing on low prices or cost efficiency. Third, GI towards SCA is also significant, with $\beta = 0.128$, $t = 3.772$, and $p = 0.002$. This indicates that environmentally friendly innovation can make a positive contribution to the sustainable competitiveness of MSMEs, although its influence is relatively smaller than that of DT and CVC. This finding supports the Natural Resource-Based View (NRBV) theory (Hart, 1995), which emphasizes that environmental orientation can be a unique resource for building SCA. Research by Chen (2008) and Dangelico & Pontrandolfo (2015) also indicates that green innovation contributes to corporate reputation, resource efficiency, and regulatory compliance, ultimately strengthening competitiveness. A recent study by Patricia and Rodhiah (2024) on Indonesian MSMEs confirms that green innovation is a key differentiating factor in attracting environmentally conscious consumers. Overall, the results of this study indicate that the three independent variables play a significant role in SCA, with CVC being the dominant factor, followed by DT, and then GI. These findings suggest that, in the context of Indonesian MSMEs, the focus on customer value creation remains the primary strategy for achieving long-term competitiveness. Meanwhile, digital transformation and green innovation are complementary factors that enhance the position of MSMEs in the face of global competition dynamics.

CONCLUSIONS

This study confirms that digital transformation (DT), customer value creation (CVC), and green innovation (GI) play a significant role in driving sustainable competitive advantage (SCA) for MSMEs in Indonesia. CVC has proven to be the most dominant factor, while DT and GI remain important as drivers of efficiency, adaptability, and sustainability-based differentiation. These findings reinforce the Resource-Based View theory (Barney, 1991), which emphasizes the importance of unique and difficult-to-imitate resources as the basis for sustainable competitiveness. In practical terms, this study provides strategic guidance for MSMEs to prioritize customer value creation through service innovation and long-term relationships, while strengthening digital transformation to improve efficiency and market access. Furthermore, the implementation of green innovation needs to be encouraged not only to comply with regulations but also as a valuable differentiation for modern consumers. For policymakers, the results of this study emphasize the need for support in the form of pro-digitalization policies, environmentally friendly innovation incentives, and programs to improve the capacity of MSME human resources.

LIMITATIONS & FURTHER RESEARCH

The limitations of this study include its context being limited to Indonesian MSMEs, its cross-sectional design, and its failure to include mediating or moderating variables such as organizational

learning and dynamic capabilities. Therefore, future research is recommended to expand the scope to cross-sectors or countries, use a longitudinal design, and add mediation or moderation mechanisms. Thus, further studies can enrich academic understanding while producing more relevant practical recommendations to strengthen the sustainable competitiveness of MSMEs in the digital and sustainability era.

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