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Enhancing organizational performance through agility strategies: The mediating effects of green innovation and digital transformation

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Abstract

Amid disruption and constant change, the ability to respond with flexibility, often referred to as strategic agility, has become vital in helping MSMEs remain competitive. This is especially true for the handicraft sector, which continues to feel the effects of the pandemic alongside increasing pressure to adopt digital and sustainable practices. This research explores how strategic agility directly influences organizational performance, while also examining whether digital transformation and green innovation play mediating roles in that relationship. The study builds upon the resource-based view (RBV) and natural-resource-based view (NRBV), which underline the importance of internal strengths and sustainable approaches as key drivers of advantage. Data were gathered from 50 MSMEs in the Special Region of Yogyakarta through a Likert-scale questionnaire. The analysis was conducted using partial least squares structural equation modeling (PLS-SEM). Results indicate that strategic agility contributes positively to performance, both on its own and by facilitating green innovation and digital transformation. Moreover, the presence of green innovation appears to reinforce the effect of digital transformation on business outcomes, emphasizing the value of environmentally responsible practices. This research enriches current literature by presenting an integrated framework and offering insights that can assist MSMEs in aligning their innovation strategies with both technological and ecological shifts. In conclusion, strengthening strategic agility along with developing digital capacity and sustainability focus can be a valuable direction for MSMEs. The findings offer useful input for practitioners and policymakers seeking to formulate long-term, resource-based strategies for business resilience in evolving markets.

Introduction

Peter Drucker (1993) states that, "Times of turmoil are dangerous times, but the greatest danger is the temptation to deny reality." In the context of modern disruptive business, this statement is still very relevant. Organizations today are faced with rapid and unpredictable environmental changes, ranging from advances in digital technology, shifts in consumer preferences, to increasing pressures on sustainable business practices (Ramadan et al., 2023). In this context, strategic agility has become a key capability in improving organizational performance. Strategic agility enables organizations to respond quickly to change, allocate resources flexibly, and maintain strategic direction amid market dynamics (Doz & Kosonen, 2010; Al Taweel & Al-Hawary, 2021).

This phenomenon is significant for craft MSMEs in the Special Region of Yogyakarta. After the COVID-19 pandemic, MSMEs face double pressures: economic recovery and demands to carry out digital transformation and meet the demand for environmentally friendly products (Rahmatullah et al., 2024). Digital transformation is seen as a key driver of organizational efficiency and adaptability

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(Aminullah et al., 2024; Rawashdeh et al., 2024), while green innovation is a strategic response to increasing consumer awareness of environmental issues (Aftab et al., 2024; Lu et al., 2023). In this landscape, organizational performance is not only determined by direct strategic agility, but also by how organizations can integrate digital transformation and green innovation into their strategies.

Despite previous research, several critical questions remain unanswered. Prior studies (Al Taweel & Al-Hawary, 2021; Hartanto & Hasim, 2024; Olaleye et al., 2021) have established a direct link between strategic agility and organizational performance. However, only a few have explored the combined mediating roles of digital transformation and green innovation, particularly within the context of craft-based MSMEs in developing nations. Integrating these two elements could potentially amplify the effect of strategic agility on performance outcomes.

To explain the relation between these variables, this study adopts two main theoretical frameworks. First, the resource-based view (RBV) emphasizes that an organization's competitive advantage comes from the management of unique internal resources (Barney, 1991; Barney et al., 2001). Second, the natural-resource-based view (NRBV), which is an extension of the RBV, includes aspects of environmental sustainability as a source of competitive advantage (Hart, 1995). These two theories provide a strong conceptual foundation for analyzing the role of strategic agility in improving organizational performance through digitalization and green innovation.

In light of this, the present study seeks to empirically investigate the mediating influence of digital transformation and green innovation in the relationship between strategic agility and organizational performance among craft MSMEs in Yogyakarta. The key contribution lies in addressing a gap in the literature through a dual mediation approach tailored to MSMEs dealing with both technological and environmental challenges. Furthermore, this research offers actionable insights to help MSME stakeholders develop more adaptive, innovative, and sustainable strategies.

Literature Review and Hypotheses Development

Theoretical Framework: Resource-Based View (RBV) and Natural Resource-Based View (NRBV)

The resource-based view (RBV) framework highlights how internal resources play a central role in building sustainable competitive advantage. As noted by Barney (1991) and Barney et al. (2001), a firm's resources can serve as a source of advantage if they possess characteristics such as being valuable, rare, difficult to imitate, and inimitable. From this standpoint, organizations are considered to be made up of distinctive capabilities that emerge from knowledge, internal operations, and shared experience (Khraishi et al., 2023).

When applied to MSMEs, this theory becomes particularly relevant. Since access to external resources is often limited, these businesses tend to rely on their internal resources to maintain their competitiveness. Previous studies (Al Taweel & Al-Hawary, 2021; Rawashdeh et al., 2024) indicate that capabilities like organizational strategy, innovation, and digital adoption significantly shape how MSMEs perform and compete. Accordingly, this study draws on RBV to understand how internal strengths, especially strategic agility, can enhance performance in MSME contexts (Barney, 1991; Barney et al., 2001).

However, the dynamics of modern business also require organizations to pay attention to environmental aspects as a strategic factor. External pressures from consumers, regulations, and international markets encourage organizations to respond proactively to sustainability issues. In this case, the RBV needs to be expanded to capture the role of environmental-based resources.

For this reason, this study also adopts the natural resource-based view (NRBV) approach as an enrichment of RBV. The NRBV theory was developed by (Hart, 1995) placing environmental sustainability as a new source of competitive advantage. NRBV emphasizes that companies that can integrate environmentally friendly practices into their business strategies not only carry out social responsibility but also create long-term advantages through efficiency, reputation, and innovation.

In the context of craft MSMEs, this is very relevant. This sector is closely related to the use of natural materials, manual production processes, and consumer preferences that are increasingly concerned with sustainability aspects. Therefore, green innovation is a key strategy in dealing with

external pressures while creating product differentiation (Siswanto et al., 2025). Previous studies have also shown that green innovation contributes positively to organizational performance, in particular (Aftab et al., 2024; Lu et al., 2023; Rahmatullah et al., 2024). In this study, it is positioned as one of the environmental-based strategic capabilities.

Thus, RBV is used to explain the role of digital transformation as an internal capability. In contrast, NRBV is used to explain the role of green innovation as a strategic response to external sustainability issues. These two theories complement each other to form a theoretical foundation in understanding how strategic agility can be transformed into superior organizational performance through two main mediation pathways. The integration of RBV and NRBV strengthens the argument that the competitive advantage of today's MSMEs depends not only on internal efficiency, but also on adaptation to the demands of an increasingly complex business environment.

Strategic Agility and Organizational Performance

Strategic agility is an organization's capability to adapt quickly to the dynamics of the external environment by developing, updating, and utilizing strategic knowledge (Al Taweel & Al-Hawary, 2021; Olaleye et al., 2021). This capability includes the flexibility in resource allocation, the speed in decision making, and the ability to change strategic direction when facing market changes. Organizational performance refers to the extent to which an organization achieves its goals, whether in the form of operational efficiency, financial performance, competitiveness, or long-term sustainability (Al Taweel & Al-Hawary, 2021).

Within the framework of the resource-based view (RBV), strategic agility is seen as a valuable internal capability that contributes directly to achieving competitive advantage. In the context of MSMEs in the Special Region of Yogyakarta, agility in strategy becomes particularly essential in navigating post-pandemic market pressures, such as shifts in consumer behavior and increased demands for sustainability. The ability of MSMEs to react to change, exchange insights among actors, and pursue innovative strategic ideas is considered an essential component for sustained success. Therefore, strategic agility is expected to positively influence organizational performance, as it supports the creation of long-term value.

Previous studies provide empirical evidence for this relationship (Al Taweel & Al-Hawary, 2021) confirm a significant relationship between strategic agility and organizational performance. Olaleye et al. (2021) also states that strategic agility helps organizations maintain their existence through knowledge management. Al Shawabkeh (2024) adds that agility enables companies to maintain a sustainable competitive advantage. In addition, Clauss et al. (2021) shows that strategic agility can increase market share, while Tufan and Mert (2023) finds an increase in financial performance aspects. Activities such as exchanging experiences and best practices and managing knowledge-based assets also support the role of strategic agility in improving organizational performance. Based on the theoretical basis of RBV, logical reasoning, and relevant empirical findings, the hypotheses proposed in this study are:
H_1: Strategic agility has a positive effect on organizational performance.

Strategic Agility and Green Innovation

Green innovation refers to the creation of new products, processes, or managerial approaches that are intended to minimize environmental harm and enhance the efficiency of resource usage (Frempong et al., 2021; Lu et al., 2023). Rather than simply reacting to external pressures, this form of innovation also plays a role in delivering sustainable and added value to organizations.

Meanwhile, strategic agility is a dynamic capability that allows organizations to respond quickly to change and develop new ideas (Al Taweel & Al-Hawary, 2021). In the RBV and NRBV perspectives, strategic agility includes valuable and difficult-to-imitate resources (Barney, 1991; Hart, 1995), and is the basis for a company's green strategy to carry out green innovation in order to achieve sustainable business (Siswanto et al., 2025).

Adaptive strategic agility, accelerating learning, and encouraging exploration of ideas are all important in supporting green innovation. This is particularly relevant for craft sector MSMEs, which need to adapt to sustainability demands while maintaining competitiveness.

Several studies support this relationship. Tufan and Mert (2023) shows that agility strengthens the ability to produce sustainable solutions. Hartanto and Hasim (2024), Nguyen et al. (2023) highlight the importance of adaptability in creating environmentally friendly processes. Siswanto et al. (2025) shows that green strategy bridged by green innovation increases competitiveness, while Doloan et al. (2024), Lu et al. (2023) emphasize its impact on efficiency and long-term reputation. Based on this, the hypothesis in this study is:
H_2: Strategic agility has a positive effect on green innovation capability.

Green Innovation and Organizational Performance

In the natural resource-based view (NRBV) approach, sustainable competitive advantage does not only originate from valuable, rare, and hard-to-replicate internal resources, but also from an organization's capability to strategically manage its environmental impacts (Hart, 1995). One of the core capabilities highlighted in NRBV is green innovation, which refers to the organization's capacity to produce environmentally friendly products, processes, and management practices in a sustainable manner (Siswanto et al., 2025). In the context of MSMEs, this capability is becoming more essential as awareness of environmental concerns and regulatory pressure regarding responsible business conduct continues to rise (Lu et al., 2023). Therefore, green innovation is viewed as a type of internal capability that not only addresses external demands but also adds value and leads to a long-term competitive edge (Hart & Dowell, 2011).

Green innovation does not just improve product sustainability, but also supports operational efficiency that significantly contributes to better financial performance (Borah et al., 2025). Moreover, this capability enhances the organization's reputation and brand perception in the eyes of stakeholders, which are key intangible assets in supporting long-term business sustainability (Afab et al., 2024; Lu et al., 2023; Siswanto et al., 2025).

In the NRBV framework, green innovation also reflects an organizational culture that supports creativity, team collaboration, and continuous learning (Hart & Dowell, 2011). This culture allows organizations to develop strategies that are adaptive to external dynamics, while strengthening holistic performance achievement (Ratulian et al., 2024). Thus, green innovation is positioned as one of the internal strategic resources that directly improves organizational performance.
H_3: Green innovation leads to improvements in organizational performance.

Mediating Role of Green Innovation Capability

As part of a strategic mechanism, green innovation acts as a bridge connecting the influence of strategic agility on organizational performance. Organizations with a high level of agility can respond to the market dynamics and environmental pressures quickly and flexibly, including in creating environmentally friendly innovations (Frempong et al., 2021). Strategic agility forms an internal environment that supports cross-functional collaboration, rapid decision-making, and adaptive innovation processes (Aftab et al., 2024).

Green innovation capabilities emerging from an agile organizational environment enable companies to adapt to the evolving sustainability expectations. It expands the market access, increases competitiveness, and improves overall performance (Nguyen et al., 2023; Rahmatullah et al., 2024; Siswanto et al., 2025). In other words, green innovation is not only a reaction to external pressures, but also the result of dynamic internal capabilities (Lu et al., 2023).

The ability of an organization to integrate sustainability values into the innovation process through a culture of learning, team collaboration, and creativity makes green innovation a critical element in achieving superior performance. Therefore, in NRBV, green innovation acts as a mediating variable that strengthens the organization's ability to adapt quickly through the development of sustainability-oriented business processes. In other words, green innovation becomes a strategic link between agility and organizational performance in dealing with external environmental dynamics (Siswanto et al., 2025).
H_{3a}: Green innovation mediates the link between strategic agility and organizational performance.

Strategic Agility and Digital Transformation

Digital transformation is now an important process that supports organizational change. This process helps organizations leverage digital technology to review and redevelop business models that support economic sustainability (Chen & Wang, 2024; Hrustek, 2020). In addition, digital transformation drives organizational performance through digitalization, data utilization in decision-making, and system integration in daily operations (Rawashdeh et al., 2024). The combination of capabilities in digital transformation also strengthens organizational agility, especially in the context of MSME businesses that require rapid adaptation to market dynamics (Pelletier et al., 2023). Digital transformation also facilitates the role of leadership in accelerating strategic decision-making (Ramadan et al., 2023), and plays an important role in helping organizations respond to extreme and rapid changes (Vial, 2021).

However, the success of digital transformation is influenced not only by the use of technology, but also by how ready an organization is, both in terms of structure and culture, particularly among MSMEs that might encounter limited resources or resistance to change. In this regard, strategic agility becomes a key capability that allows organizations to handle the uncertainty and complexity of digital transformation effectively (Abdurrahman et al., 2024). Strategic agility is essential to initiate, implement, and achieve successful digital transformation, as this process requires significant adjustments at multiple organizational levels: strategic, operational, and cultural. As a result, strategic agility serves as a vital base for organizations to remain resilient and succeed in unpredictable and highly competitive environments (Do & Mai, 2020).

Strategic agility also enables organizations to build flexible internal networks, adapt to market changes, and proactively take advantage of emerging digital opportunities. This capability is increasingly important because digital transformation is not only a matter of technology, but also involves cross-functional coordination, managing organizational cultural change, and overhauling business processes as a whole (Rawashdeh et al., 2024). In other words, beyond supporting digital transformation, strategic agility also acts as a key enabler that ensures the process delivers sustainable and impactful outcomes.

Through strategic agility, organizations can develop superior products and services that are more responsive to market dynamics, including by exploring information about the latest technologies, industry trends, and consumer needs (Ramadan et al., 2023). It allows organizations to design more relevant and competitive products. In today's fast-moving and ever-evolving business landscape, reaching digital transformation objectives is essential to keeping an organization resilient. For this reason, MSMEs need to be able to respond swiftly and proactively to changes across different areas to leverage the benefits that digital transformation can offer fully.

Although the link between strategic agility and digital transformation shows a positive trend, several factors, such as technological infrastructure, HR competency, and organizational culture, can influence the success of their integration. Several studies even emphasize that high agility does not necessarily guarantee the success of digitalization if it is not balanced with the technological readiness or the overall organizational support. Therefore, empirical testing of this relation is vital to understand the contextual role that can strengthen or weaken this influence. Based on this discussion, the hypotheses that can be developed are:

H_4: Organizations that are strategically agile tend to navigate digital transformation more effectively.

Digital Transformation Capability and Organizational Performance

Within the resource-based view (RBV) framework, strategic agility empowers organizations to rearrange their internal resources in order to adapt and respond effectively to external environmental shifts (Pelletier et al., 2023). A key component of strategic reconfiguration involves digital transformation, which entails the incorporation of digital technologies into core business operations to enhance agility, efficiency, and innovation.

Digital transformation facilitates data-driven decision making, fosters greater transparency in operations, and improves collaboration between units within the organization (Nasiri et al., 2020; Rawashdeh et al., 2024). With robust digital capabilities, organizations are better positioned to

respond swiftly to changes in the market, optimize internal workflows, and deliver superior customer value. It contributes positively to enhancing organizational outcomes, particularly in terms of efficiency, profitability, and sustaining long-term competitive advantage (Abdurrahman et al., 2024).
H_5: Digital transformation contributes positively to organizational performance.

Mediating Role of Digital Transformation

In addition to exerting a direct influence on organizational performance, digital transformation also functions as a mediating mechanism in the link between strategic agility and organizational outcomes. From the resource-based view (RBV) standpoint, both strategic agility and digital transformation are valuable, rare, and hard to replicate internal competencies, thus contributing to a sustainable competitive edge (Barney, 1991; Barney et al., 2001). Agile firms tend to demonstrate greater readiness to adopt digital technologies strategically, aiming to enhance the value of their resources.

In this context, digital transformation operates as a bridge connecting agility capabilities and organizational performance by enhancing operational efficiency, improving flexibility, and accelerating responsiveness to market dynamics (Rawashdeh et al., 2024). These digital competencies align strategic efforts with performance goals, positioning them as vital elements in reinforcing the effect of strategic agility on firm performance (Nasiri et al., 2020). Within the MSMEs landscape, digital transformation further supports access to digital tools, facilitates modern data management, and improves supply chain performance, which collectively contribute to the achievement of more adaptive and sustainable business results (Asbeetah et al., 2025; Rawashdeh et al., 2024).
H_{5a}: Strategic agility enhances organizational performance through the mediating role of digital transformation.

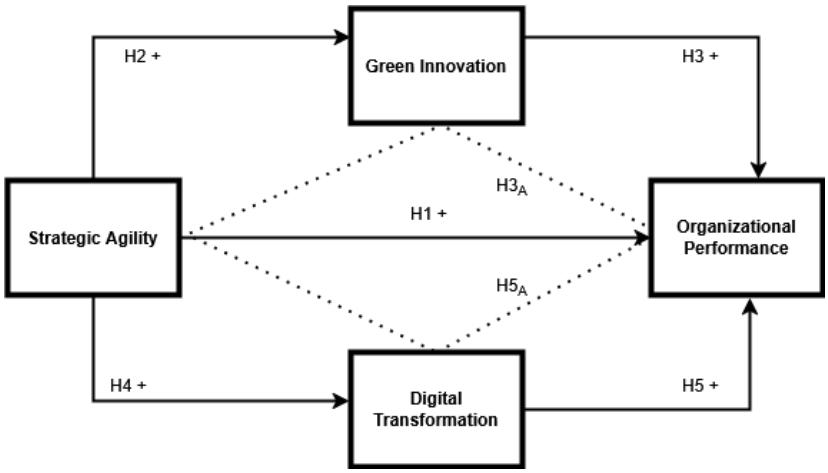

Figure 1. Research Framework

Research Methods

This study seeks to understand the extent to which strategic agility shapes the performance of MSMEs, with a specific focus on the handicraft industry. In addition, it considers how green innovation and digital transformation capabilities might contribute to enhancing business outcomes in this context.

Population and Sample

This study targets micro, small, and medium-sized enterprises (MSMEs) involved in the handicraft industry, specifically those based in the Special Region of Yogyakarta, Indonesia, as its research population. Based on data (Badan Pusat Statistik, 2023), Yogyakarta has a very high and diverse number of MSMEs, especially in the handicraft sector. The number of samples used in this study was 50 MSMEs selected purposively, with the following criteria: (1) have been operating for at least 3 years, (2) have a basic organizational structure, and (3) are registered in the MSME craft incubation or mentoring program under the local industry service.

Although the number of samples in this study is 50 respondents, the approach follows the exploratory character of the study and the analysis technique used, namely, partial least squares structural equation modeling (PLS-SEM). Based on the (PLS-SEM) as explained by (Hair et al., 2014), particularly well-suited for situations where sample sizes are relatively small but the model is complex. This makes it a practical choice for studies like this one, especially in real-world contexts such as MSMEs, where data collection can be challenging. As long as the model demonstrates acceptable levels of reliability and validity, which this study has achieved across all constructs, the results can still be regarded as both robust and meaningful. Therefore, the sample size used is considered sufficient to support the analysis and conclusions drawn in the context of craft-based MSMEs in Yogyakarta.

Data Collection and Procedures

This study uses Google Forms as the primary tool to collect data online and offline. The questionnaire was distributed to fifty (50) handicraft MSMEs actors in the Special Region of Yogyakarta. The purpose of this data collection is to evaluate the application of four research variables, namely strategic agility, green innovation capability, digital transformation capability, and organizational performance in the context of the MSMEs business environment.

Respondents who filled out the questionnaire were the owners or leading managers of each MSME, who are considered to have the most understanding of the strategic and operational activities of the organization. The selection of respondents was carried out to ensure that the answers given were relevant and representative of the company's condition.

Table 1. Variables and Statements of Indicator

Variables	Item Code	Description	Sources
Strategic Agility	SA1	My organization is able to detect market changes faster than competitors (Strategic Sensitivity).	(Al Tawell & Al-Hawary, 2021; Doz & Kosonen, 2010)
	SA2	My organization has the flexibility to allocate resources as needed (Resource Fluidity).	
	SA3	There is unity of vision and leadership in facing business dynamics (Leadership Unity).	
Green Innovation	GI1	My organization actively develops environmentally friendly products.	(Al Tawell & Al-Hawary, 2021; Frempong et al., 2021)
	GI2	My organization is committed to creating sustainable products.	
Digital Transformation	DT1	My organization uses digital technologies in the main operational processes.	(Rawasdeh et al., 2024)
	DT2	Data-driven decision making has been implemented in organizations.	
	DT3	Digital systems have been integrated into various business activities.	
Organizational Performance	OP1	The organization's operations run efficiently.	(Singh et al., 2016)
	OP2	The organization is able to measure and manage its environmental impact.	
	OP3	Organization oriented towards long-term sustainability.	
	OP4	Organizational stakeholders show satisfaction with company performance.	

The questionnaire was carefully structured to ensure clarity and encourage genuine responses from business participants. To minimize bias, the items for independent, mediating, and dependent variables were placed in different sections, and the statements were written using diverse

phrasing to avoid repetitive patterns. In line with this, Harman's single-factor test was used to statistically assess the possibility of a dominant factor affecting the results, thereby addressing common method bias (Podsakoff et al., 2003).

This research includes three variable types: independent, mediating, and dependent. A detailed breakdown of each variable and its indicators is shown in Table 1.

This study uses a 5-point Likert scale to measure all variables, ranging from 1 (strongly disagree) to 5 (strongly agree). The statements in the questionnaire are structured to be relevant to the context of digitalization and environmentally friendly practices in MSMEs, making them easily understood by business owners. The average value of respondents' answers is then classified into five categories based on the interval formula $(5 - 1) \div 5 = 0.8$. The categories used are 1.00–1.79 (very low), 1.80–2.59 (low), 2.60–3.39 (sufficient), 3.40–4.19 (high), and 4.20–5.00 (very high).

Data Analysis Technique

In this study, descriptive analysis is used to observe the characteristics of MSMEs, focusing on aspects such as performance, strategic agility, green innovation, and digital transformation. The questionnaire responses were then analyzed using partial least squares (PLS), a method under the SEM (Structural Equation Modeling) family, which is known for its practical use in studies with relatively small sample sizes (Hair et al., 2014; Henseler et al., 2016). Compared to traditional multivariate methods, PLS-SEM offers greater flexibility and is effective in examining how latent variables relate to their indicators.

Results and Discussion

Table 2. Demographic and Respondents

Category	Subcategory	Frequency (n=50)	Percentage (%)
Business Experience (Years)	1–2 years	0	0%
	3–5 years	32	64%
	>5 years	18	36%
Organizational Structure	Exists (Formal)	50	100%
	Does Not Exist	0	0%
Participation in MSME Incubation Program	Registered	50	100%
	Not Registered	0	0%
Gender	Male	19	38%
	Female	31	62%
Age (Years Old)	20–29 years	30	60%
	30–39 years	20	40%
Education Level	Junior High School	2	4%
	High School	28	56%
	Bachelor's Degree (S1)	19	38%
	Master's Degree (S2)	1	2%
Market Orientation	Local	26	52%
	Regional	24	48%
Number of Employees	1–4 persons	36	72%
	5–19 persons	14	28%
Business Size	Micro	28	56%
	Small	16	32%
	Medium	6	12%
Income per Year	<300 million rupiahs	28	56%
	300 million – 1 billion rupiahs	16	32%
	>1 billion – 2.5 billion rupiahs	6	12%

Source: Processed data, 2024

Imagine stepping into the vibrant workshops of these 50 craft MSMEs and meeting the people behind the products. Most have been at it for at least a year 70% to be exact, and six out of ten are still in their twenties, bringing fresh energy and ideas. You will notice a warm majority are women (62%), many of whom are proud high-school graduates (56%) who have turned creativity into a livelihood. Their businesses are truly "micro" in scale, as over half employ just one to four teammates (72%), yet they reach both local neighbors (52%) and broader regional markets (48%).

Financially, they are humble operators: more than half report annual turnover under IDR 300 million, while the rest hover between IDR 300 million and 2.5 billion. Despite tight budgets, these entrepreneurs juggle raw materials, production, and sales with remarkable adaptability. Their story is one of resourcefulness, balancing tradition with new digital tools and environmentally friendly practices to carve out sustainable success in a competitive landscape.

Outer Model Evaluation: Convergent Validity

Indicators are declared valid if they have a correlation value of more than 0.5 against the appropriate construct (Hair et al., 2014). Convergence validity is evaluated by looking at the correlation between the indicator score and the construct being studied. The results of the convergence validity test show that the loading factor value is above 0.50, indicating that all indicators meet the criteria for convergence validity.

Table 3. Indicator Test Results

Variables	Indicator Theme	Code	Outer Loading	Cronbach's Alpha	Composite Reliability	AVE
Strategic Agility	1. Strategic sensitivity	AG1	0.735	0.819	0.890	0.730
	2. Resource fluidity	AG2	0.887			
	3. Leadership unity	AG3	0.933			
Digital Transformation	1. Use of digital technology	DT1	0.749	0.719	0.843	0.650
	2. Utilizing data for decision making	DT2	0.917			
	3. Technology integration in operations	DT3	0.730			
Green Innovation	1. Eco-friendly product innovation	GIC1	0.828	0.738	0.878	0.780
	2. Sustainable product innovation	GIC2	0.939			
Organization Performance	1. Operational efficiency	OP1	0.882	0.941	0.958	0.850
	2. Environmental impact measurement	OP2	0.930			
	3. Long-term sustainability	OP3	0.958			
	4. Stakeholder satisfaction	OP4	0.918			

SmartPLS Output, 2024

Note: Minimum accepted level: factor loading >0.6; AVE >0.5; Cronbach's alpha >0.7; CR >0.7.

Discriminant Validity

To assess discriminant validity, the AVE (Average Variance Extracted) for each construct should be greater than 0.50, as recommended by (Hair et al., 2014). As shown in Table 3, each construct correlates more strongly with its items than with those of other constructs, indicating acceptable discriminant validity. Based on the Fornell and Larcker (1981) approach, this is further supported if the square root of the AVE for a construct exceeds its correlations with other constructs.

Additionally, the HTMT (Heterotrait-Monotrait Ratio) method can also be used as an alternative test. However, its use in PLS-SEM is debated, and some researchers, including (Henseler et al., 2015), caution against over-reliance on this criterion only evaluates the relation between constructs individually, has a debatable cut-off value, and can provide an overestimation or underestimation of the correlation between constructs, thus risking producing incorrect interpretations.

Table 4. Fornell-Larcker Criterion

	Strategic Agility	Digital Transformation	Green Innovation	Organization Performance
Strategic Agility	0.856			
Digital Transformation	0.871	0.803		
Green Innovation	0.790	0.651	0.885	
Organization Performance	0.954	0.879	0.867	0.922

SmartPLS Output, 2024

Composite Reliability

Composite Reliability (CR) serves to evaluate the consistency of variables. A construct is regarded as reliable when its composite reliability score surpasses 0.70. Referring to Table 4, all CR values are above this threshold, suggesting that each construct possesses a satisfactory degree of reliability.

Inner Model Evaluation

R Square

Table 5. R Square Test Result

	R-Square	R-Square Adjusted
Digital Transformation	0.758	0.753
Green Innovation	0.624	0.616
Organizational Performance	0.959	0.957

SmartPLS Output, 2024

Based on the R-square analysis, the model in this research demonstrates relatively strong explanatory power. The R-square value for digital transformation is 0.758, indicating that this part of the model is considered robust. Green innovation records an R-square value of 0.624, which reflects a moderate level of explanatory capability. In contrast, organizational performance achieves the highest R-square value of 0.959, suggesting that the model can account for the vast majority of its variance. In general, the structural model applied in this study can be regarded as dependable and effective in explaining the relationships among the variables.

F Square

Table 6. F Square Test Result

Variables	Organizational Performance
Digital Transformation	3.136
Green Innovation	1.659
Strategic Agility	0.880

SmartPLS Output, 2024

Based on Table 6, all constructs in the model contribute significantly to the increase in R^2 on organizational performance. Digital transformation shows the most considerable influence with an f^2 value of 3.136, followed by green innovation (1.659) and strategic agility (0.880). All three are included in the large effect category according to (Hair et al., 2014) criteria, which shows that both mediating and independent constructs have an important role in explaining variations in organizational performance. This finding supports the strength of the structural model in the study.

Q Square

Table 7. Q Square Test Result

Variables	Q^2 (= 1 - SSE/SSO)
Digital Transformation	0.590
Green Innovation	0.419
Performance Organization	0.725

SmartPLS Output, 2024

Based on Table 7, all constructs have positive Q^2 values, indicating that the model has predictive relevance. Organizational performance is recorded as the highest Q^2 value of 0.725 (very strong), followed by digital transformation (0.590) and green innovation (0.419), which show strong and moderate predictive ability, respectively. This finding indicates that both mediating and independent variables can predict organizational performance adequately, supporting the empirical accuracy of the model. Following (Sarstedt & Mooi, 2014), Q^2 value above 0.35 already reflects a strong predictivity in the context of social research.

Predictive Sample Performance

Table 8. Predictive Sample Performance

Variables	RMSE	MAE	Q^2 Predict
Digital Transformation	0.521	0.437	0.758
Green Innovation	0.641	0.587	0.629
Strategic Agility	0.314	0.246	0.910

SmartPLS Output, 2024

The evaluation results suggest that the model is capable of making accurate predictions, as shown by the consistently high Q^2 Predict values for each variable: strategic agility (0.910), digital transformation (0.758), and green innovation (0.629). These values indicate that the model can predict new data quite accurately. In addition, the low RMSE and MAE values reinforce that the prediction error in the model is relatively small. Based on the theory of (Sarstedt & Mooi, 2014), these results indicate that the model is suitable for use in a predictive analysis.

Hypothesis Testing: Direct Relationship

Table 9. Direct Relationship Between Variables

Hypotheses	Relation Between Variables	Original Sample (O)	T-Statistics	P-Value	Conclusion
H1	Strategic Agility → Organizational Performance	0.480	5.592	0.000	Significant
H2	Strategic Agility → Green Innovation	0.790	17.331	0.000	Significant
H3	Green Innovation → Organizational Performance	0.325	7.209	0.000	Significant
H4	Strategic Agility → Digital Transformation	0.871	22.458	0.000	Significant
H5	Digital Transformation → Organizational Performance	0.250	3.590	0.000	Significant

Note. *p<0.05; **p<0.01; ***p<0.000.
SmartPLS Output, 2024

Based on the results of data processing in Table 9, all hypotheses in this study are statistically significant. The details and interpretation of the results are presented as follows:

Strategic Agility → Organizational Performance

The analysis confirms that strategic agility significantly enhances the performance of organizations involved in this study (B = 0.480; T-statistic = 5.592; $p < 0.001$). This finding strengthens previous studies (Abdurrahman et al., 2024; Al Taweel & Al-Hawary, 2021; Hartanto & Hasim, 2024; Rawashdeh et al., 2024), and supports the argument that organizations that can respond to environmental changes quickly and flexibly tend to be superior in maintaining competitiveness and improving performance.

In the context of craft SMEs in Yogyakarta that are recovering after the pandemic, this capability is very vital. Agility allows organizations to make real-time strategic adjustments,

including in the face of supply chain disruptions, changes in consumer tastes, and the transition to digital platforms. According to the RBV approach (Barney et al., 2001), agility is a form of dynamic capability that allows organizations to utilize internal resources efficiently and responsively to external changes. Thus, agility is not just an adaptation tactic, but also a source of strategic advantage that has a direct impact on organizational outcomes.

Strategic Agility → Green Innovation

Strategic agility is also proven to have a significant influence on green innovation (B = 0.790; T-statistic = 17.331; $p < 0.001$). This finding is consistent with previous literature (Hartanto & Hasim, 2024; Nguyen et al., 2023; Olaleye et al., 2021; Siswanto et al., 2025) which states that agile organizations tend to be more responsive to environmental regulatory pressures and market expectations that lead to sustainability. In the context of MSMEs, the ability to detect and adapt to green consumerism trends is a potential added value for creating environmentally oriented innovations.

In the NRBV perspective, green innovation can be considered as a form of resource management that takes into account the environment as part of a long-term competitive strategy (Siswanto et al., 2025). Agile MSMEs have the advantage of integrating sustainability principles into the innovation process, both in the selection of raw materials, production methods, and environmentally friendly packaging. This is crucial as green product certification increases and export market demands become increasingly stringent in terms of sustainability.

Green Innovation → Organizational Performance

Green innovation significantly contributes to improving organizational performance (B = 0.325; T-statistic = 7.209; $p < 0.001$). This finding supports the NRBV assumption that sustainable innovation can be a rare, difficult to imitate, and highly competitive strategic resource. For MSMEs, green innovation not only reflects corporate social responsibility but also becomes a promising business strategy (Siswanto et al., 2025).

The products that implement environmentally friendly principles generally have a stronger brand image, increase customer loyalty, and can command premium prices. In addition, the adoption of green innovation can create operational efficiencies, such as waste reduction and energy savings. It has a direct impact on increasing productivity and profitability (Nusraningrum et al., 2024). Thus, green innovation becomes a bridge between sustainability and the organizational performance of MSMEs.

Strategic Agility → Digital Transformation

Strategic agility is proven to significantly drive digital transformation (B = 0.871; T-statistic = 22.458; $p < 0.001$). This finding supports the view that agile organizations are more adaptive and proactive in responding to technological disruption (Rawashdeh et al., 2024).

In the context of craft MSMEs, agility facilitates the acceleration of technology adoption, such as e-commerce platforms, social media, digital cashier applications, and simple production automation (Imran et al., 2025). The speed of integrating digital solutions is a key determinant of post-pandemic competitiveness. Thus, agility and digitalization reinforce each other as key capabilities in creating organizational value and sustainability.

Digital Transformation → Organizational Performance

Digital transformation also has a positive effect on organizational performance (B = 0.250; T-statistic = 3.590; $p < 0.001$), in line with prior research (Chen & Wang, 2024; Rawashdeh et al., 2024). Digitalization helps MSMEs access broader markets, increase process efficiency, and improve customer service quality. A study by Aminullah et al. (2024) shows that digital capabilities are a form of strategic asset that enables the achievement of operational efficiency and revenue growth.

In the craft sector, digitalization enables product personalization, supply chain transparency, and remote collaboration with suppliers and customers (Wang & Zhang, 2025). In addition, MSMEs that adopt digital technology can respond more quickly to the market demand and have better visibility into consumer trends. Therefore, digital transformation plays an important role in the strategy to improve organizational performance sustainably.

Hypothesis Testing: Indirect Relationship

Table 10. Indirect Influence Between Variables

Hypotheses	Mediation Path	Original Sample (O)	T-Statistics	P-Value	Confidence Interval		Conclusion
					Lower Bound (2.5%)	Upper Bound (97.5%)	
H3a	Strategic Agility → Green Innovation → Org. Performance	0.256	6.851	0.000	0.172	0.324	Significant
H5a	Strategic Agility → Digital Transformation → Org. Performance	0.218	3.287	0.001	0.098	0.347	Significant

SmartPLS Output, 2024

Table 10 shows that green innovation (B = 0.256; p < 0.001; CI: [0.172 – 0.324]) and digital transformation (B = 0.218; p = 0.001; CI: [0.098 – 0.347]) act as significant mediators in the relation between strategic agility and organizational performance in craft SMEs in the Special Region of Yogyakarta. The greater mediation effect of green innovation compared to digital transformation indicates that, in the context of SMEs, environmental sustainability-based strategies have a more substantial influence on improving organizational performance compared to the adoption of digital technology alone. This might be because, as Priyono et al. (2020) pointed out, not all MSMEs go through digital transformation in the same way; some move faster than others, depending on their situation, which can make their impact on performance less consistent.

In a theoretical context, these findings can be explained through two main approaches. First, according to the resource-based view (RBV) theory, strategic agility is a valuable internal capability that allows organizations to adaptively realign resources, including in driving the success of digital transformation (Barney et al., 2001; Teece, 2007). Digital transformation serves as an extension of these internal capabilities, linking strategic agility to business process efficiency, flexibility, and innovation.

Second, from the perspective of the natural resource-based view (NRBV), green innovation becomes a strategic intermediary in transforming agility into performance by addressing sustainability issues. NRBV places environmental-based innovation as a source of competitive advantage that is rare, difficult to imitate, and highly valuable (Hart, 1995; Hart & Dowell, 2011). Thus, the existence of this mediation effect is not only supported by statistical data (because the confidence interval does not include the value of zero) but also reinforced by a strong conceptual foundation in the strategic management literature.

Interestingly, the dominance of the mediation effect of green innovation indicates that post-pandemic market preferences tend to be more responsive to environmentally friendly and ethical products than mere technological modernization. This is in line with the global trends that show increasing consumer awareness of sustainability and social responsibility (Frempong et al., 2021; Rahmatullah et al., 2024; Siswanto et al., 2025).

In conditions of uncertainty and rapid market dynamics, strategic agility plays a vital role as a foundation that enables organizations not only to survive, but also to thrive through two main mechanisms: digitalization and green innovation. This reinforces the statement (Drucker, 1993) that in times of turmoil, the superior organization is not the strongest, but the most adaptive to new realities.

Therefore, these results provide an important contribution, not only in filling the literature gap related to dual mediation in the context of craft MSMEs in developing countries, but also in providing practical direction that business actors need to build a hybrid strategy that balances the digital transformation and environmentally friendly innovation in order to achieve superior and sustainable organizational performance.

Implication and Conclusion

This study makes notable theoretical contributions by broadening the use of the resource-based view (RBV) and natural resource-based view (NRBV) through a dual mediation framework that connects strategic agility, digital transformation, and green innovation to organizational performance. It also introduces a fresh perspective to the literature by evaluating two mediation pathways simultaneously, particularly in the context of craft SMEs in developing nations dealing with digital disruption and sustainability demands. The combined use of these two theories demonstrates that competitive advantage arises not only from internal efficiency but also from the capacity to respond effectively to environmental pressures. Accordingly, this research proposes a new conceptual model for examining resource-based strategic management and ecological responsiveness. The insights gained here are expected to serve as a reference for shaping a dynamic capability framework that aligns more closely with the SME context.

From a practical perspective, the research results provide a direction for MSMEs and policymakers to develop hybrid strategies that balance the adoption of digital technology with green innovation initiatives, for example, through digital skills training based on the needs of the creative industry, as well as incentives for the use of environmentally friendly raw materials. However, this study has limitations in terms of a cross-sectional design that cannot capture long-term changes, as well as the potential for perception bias due to the use of self-administered questionnaire instruments. Therefore, further studies are recommended using a longitudinal and mixed-method approach, as well as exploring contextual factors such as organizational culture and leadership style. This approach is believed to strengthen the validity of the findings and expand generalization to other industrial sectors in the future.

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