

## **Exploring the Role of Sustainable Management and Technological Innovation on SME Business Performance in Ponorogo, East Java.**

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### **ABSTRACT**

This study explores the role of sustainable management and technological innovation in influencing the business performance of small and medium enterprises (SMEs) in Ponorogo, East Java. Using a quantitative approach with multiple regression analysis, data were collected from 120 SME respondents through structured questionnaires. The independent variables include sustainable management and technological innovation, while business performance serves as the dependent variable. The results reveal that both sustainable management and technological innovation have a significant positive influence on SME business performance. The adoption of sustainable practices combined with technological innovation improves operational efficiency, enhances market competitiveness, and strengthens corporate reputation. The coefficient of determination ( $R^2 = 0.654$ ) indicates that 65.4% of the variation in business performance is explained by the two independent variables. These findings support the Resource-Based View theory, emphasizing that sustainability and innovation are strategic capabilities essential for long-term business success. The study provides practical implications for policymakers and SME stakeholders to promote sustainable digital transformation aligned with the Sustainable Development Goals (SDGs).

**Keywords:** Sustainable Management, Technological Innovation, Business Performance, SMEs, Ponorogo

### **INTRODUCTION**

MSMEs play a crucial role in the Indonesian economy, contributing significantly to Gross Domestic Product (GDP) and employment. According to data from the Ministry of Cooperatives and SMEs (2024), the MSME sector contributes approximately 61.1% to national GDP and employs over 97% of the workforce. In Ponorogo Regency, the number of MSMEs continues to increase, with various leading sectors such as culinary, crafts, and trade. However, the main challenges faced by MSMEs are the low level of sustainable management implementation and delays in adopting technological innovation (BPS Ponorogo, 2024).

In the context of global competition and demands for sustainability, MSMEs need to implement sustainable management strategies to ensure business continuity while contributing to regional economic development. Sustainable management refers to an organization's ability to integrate economic (Surya et al., 2025) social, and environmental dimensions into its business strategy. Meanwhile, technological innovation plays a crucial role in increasing efficiency, expanding market access, and accelerating adaptation to changes in the business environment (Martini et al., 2023; Siregar et al., 2025).

Several previous studies have shown that sustainable management and technological innovation have a positive relationship with business performance (Dong et al., 2023; Mitra, 2022). However, most of this research was conducted in developed countries or in large

industrial sectors. Research examining the integration of sustainable management and technological innovation on the performance of MSMEs in developing regions like Ponorogo is still limited.

Furthermore, awareness of sustainability principles remains relatively low. Most MSMEs focus on short-term targets, such as increasing sales and production, without considering energy efficiency, waste management, or the social aspects of the surrounding community. This situation indicates the need to strengthen sustainability-based business strategies and technological innovation so that Ponorogo's MSMEs can survive and thrive in the face of global market competition. Nevertheless, some emerging initiatives indicate positive shifts. Several SMEs in Ponorogo—particularly in the food and craft sectors—have begun implementing eco-friendly packaging, renewable energy solutions, and digital marketing strategies through social media and e-commerce platforms. These cases demonstrate that integrating sustainable management and innovation can generate tangible business benefits. However, such initiatives remain sporadic and require stronger institutional support, capacity building, and policy alignment with regional sustainability goals.

This research gap underscores the need for empirical studies focusing on how these two factors contribute to MSME performance at the regional level. Based on this description, the research questions in this study are: (1) does sustainable management affect the performance of MSMEs in Ponorogo? and (2) does technological innovation affect the performance of MSMEs in Ponorogo. The purpose of this study is to analyze the influence of sustainable management and technological innovation on the performance of MSMEs in Ponorogo.

## **LITERATURE REVIEW AND HYPOTHESIS DEVELOPMENT**

### **Institutional setting**

#### **1. Grand Theory: Resource-Based View (RBV)**

The Resource-Based View (RBV) theory was introduced by (Barney, 1991) and further developed by (Barney, 1991). RBV emphasizes that an organization's competitive advantage depends on resources that are valuable, rare, inimitable, and non-substitutable. In the context of MSMEs, sustainable management and technological innovation are strategic capabilities capable of increasing competitiveness and business performance sustainably (Barney, 1991; Peteraf & Bergen, 2003).

(Bansal & DesJardine, 2014) expanded the RBV through the Natural Resource-Based View (NRBV), which added an environmental dimension as a strategic resource. From this perspective, sustainable business practices serve not only as a social responsibility but also as a strategic capability that directly contributes to improving business performance and reputation. Therefore, in this study, sustainable management and technological innovation are viewed as two key internal capabilities that determine the long-term performance of MSMEs in Ponorogo.

## **2. Sustainable Management and MSME Performance**

Sustainable management encompasses the integration of economic, social, and environmental aspects into business strategy (Elkington, 1998). According to (Bansal & DesJardine, 2014), implementing sustainability principles increases organizational legitimacy and operational efficiency through waste reduction and resource optimization. Several previous studies have shown a positive relationship between sustainable management and business performance (Dangelico & Vocalelli, 2017; Munck & Tomiotto, 2019; Ortiz-de-Mandojana & Bansal, 2025). In the local context of Ponorogo, sustainability practices are still relatively low, but they are starting to develop in the culinary and craft sectors, which use environmentally friendly materials and biodegradable packaging. These efforts demonstrate significant potential for improving performance through broader implementation of sustainability principles. Therefore, the first hypothesis is formulated:

**H1:** Sustainable management has a positive effect on the performance of MSMEs in Ponorogo.

## **3. Technological Innovation and MSME Performance**

Technological innovation is defined as the process of applying new knowledge to products, services, or business processes to improve efficiency and competitiveness (Hamdouna & Khmelyarchuk, 2025; Kallmuenzer et al., 2025). MSMEs that are able to adapt to digital technology will experience higher productivity, faster market response, and stronger customer relationships (Faiz et al., 2024). Research (Soomro et al., 2024) shows that the adoption of digital technology has a significant impact on improving business performance. In the context of Ponorogo, the adoption of technological innovation is still limited to 30% of MSMEs (Perdagkum Kabupaten Ponorogo, 2025), mostly in the culinary and craft sectors, which have utilized social media for online promotions and transactions. Key barriers include low digital literacy, limited capital, and minimal training. However, for MSMEs that have embraced digital technology, increases in turnover and work efficiency have been demonstrably evident.

**H2:** Technological innovation has a positive effect on the performance of MSMEs in Ponorogo.

## **4. Sustainable Management, Technological Innovation, and Business Performance**

The integration of sustainability practices and technological innovation can generate sustainable strategic advantages (Dangelico & Vocalelli, 2017). Sustainable management creates social and environmental value, while technological innovation strengthens efficiency and market access. These two factors simultaneously improve business performance (Dangelico & Vocalelli, 2017).

In the context of Ponorogo's MSMEs, the simultaneous application of sustainability and technology can be a catalyst for increasing production efficiency, expanding market access, and strengthening the reputation of local products in both national and international markets.

These two factors complement each other: sustainability provides long-term strategic direction, while technological innovation accelerates its implementation in operational activities.

**H3:** Sustainable management and technological innovation simultaneously have a positive effect on MSME performance.

## METHODS

This study used a quantitative approach with an associative approach. The study population included all MSMEs operating in Ponorogo. East Java. A sample of 120 respondents was selected using a purposive sampling technique, with the criteria being MSME owners or managers who had been operating for at least 12 months.

Data collection was conducted using a closed-ended questionnaire measured using a Likert scale. The research instrument included three main variables: (1) sustainable management, (2) technological innovation, and (3) MSME performance. Data analysis was performed using multiple linear regression with SPSS version 25. Before the regression test, validity, reliability, normality, multicollinearity, and heteroscedasticity were tested to ensure data quality.

The regression model used was:

$$Y=60+61X1+62X2+e$$

where:

Y = MSME Performance

X1 = Sustainable Management

X2 = Technological Innovation

E = error term

## RESULTS

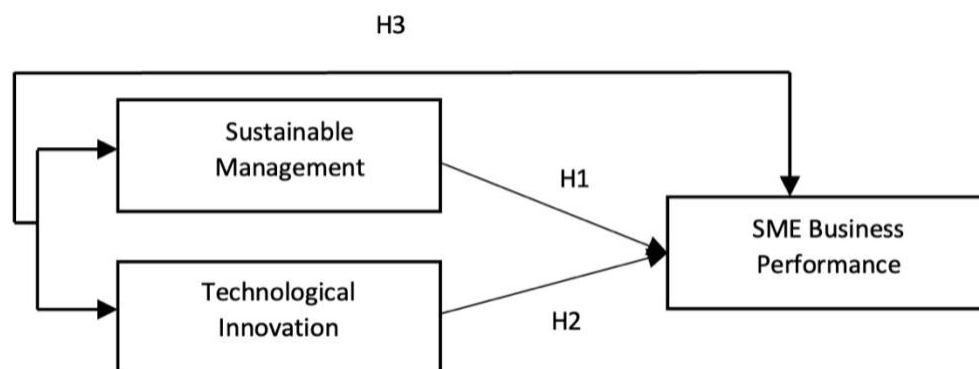
### 1. Regression Analysis Results

**Tabel 1. Regression analysis results**

Variables	Beta Coefficient	t-test	Sig.	Description
Sustainable Management (X <sub>1</sub> )	0.418	4.986	0.000	Significant
Technological Innovation (X <sub>2</sub> )	0.372	4.521	0.000	Significant
<b>R<sup>2</sup></b>	<b>0.654</b>			<b>Model is suitable</b>

Source: Primary data processed, 2025

The regression test results indicate that sustainable management and technological innovation have a positive and significant effect on MSME performance. The R<sup>2</sup> value of 0.654 indicates that 65.4% of the variation in MSME performance can be explained by the two independent variables, while the remainder is influenced by factors outside the model.



**Figure 1.** Model analysis

## DISCUSSION

### Explanation of Discussion 1 (H1)

The interpretation of the analysis results shows that sustainable management has a positive and significant effect on MSME performance, which conceptually confirms the role of sustainability practices as a strategic capability in accordance with the Resource-Based View theory (Barney, 1991). Management based on energy efficiency, use of local raw materials, and waste reduction strengthens the reputation and legitimacy of businesses, as emphasized (Bansal & DesJardine, 2014). In the context of Ponorogo MSMEs, sustainability practices have been implemented through improved production hygiene, simple waste management, and optimization of local resources, particularly in the culinary and handicraft sectors. This implementation not only reduces operational costs but also increases consumer confidence, which is increasingly sensitive to issues of quality and the environment. Thus, sustainable management is a key strategy that strengthens the competitiveness and sustainability of MSMEs in Ponorogo.

### Explanation of Discussion 2 (H2)

The results of the analysis show that technological innovation has a positive and significant effect on MSME performance, illustrating that the digitization of business processes is a strategic capability that improves efficiency and competitiveness, as emphasized by (Hamdouna & Khmelyarchuk, 2025). In Ponorogo MSMEs, technological innovation is evident through the use of social media, digital cashier applications, simple accounting systems, and the adoption of QRIS, which speeds up transactions and reduces operational errors. The use of this technology also expands market access, improves service quality, and strengthens customer interaction. Thus, technological innovation plays an important role in supporting the adaptation of Ponorogo MSMEs to the increasingly digital and competitive market dynamics.

### Explanation of Discussion 3 (H3)

The interpretation of the analysis results shows that sustainable management and technological innovation simultaneously contribute significantly to MSME performance, as evidenced by the model's ability to explain 65.4% of performance variation. The synergy between these two variables creates strategic value, where technology strengthens the

effectiveness of sustainability practices and sustainability increases the added value of technology, in line with the findings of (Dangelico & Vocalelli, 2017). In Ponorogo MSMEs, this integration is evident in the implementation of sustainable hygiene-based production supported by a digital system for recording and marketing. This simultaneous approach improves efficiency, expands market reach, and strengthens business image. Therefore, the combination of sustainability and technological innovation is the most effective strategy to drive the competitive advantage of Ponorogo MSMEs.

## CONCLUSION

Sustainable management and technological innovation have been proven to improve the performance of MSMEs in Ponorogo through efficiency, market expansion, and strengthened competitiveness, although their implementation is still limited and requires stronger ecosystem support. The government and supporting institutions need to expand training related to sustainability and digitalization, while MSMEs are encouraged to be more active in adopting technology. This research provides a strategic basis for the development of sustainability- and technology-based MSMEs and is expected to serve as a reference in efforts to improve the competitiveness of MSMEs in Ponorogo.

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