

# Entrepreneurial Technology Resilience Mediates Entrepreneurial Marketing on Business Performance in Batik MSMEs

Rahma Wahdiniwaty<sup>1</sup> , Sudadi Pranata<sup>2\*</sup> , Nandang Komara<sup>3</sup> 

<sup>1</sup>Faculty of Postgraduate, Universitas Komputer Indonesia, Indonesia

<sup>2,3</sup>Faculty of Management, Universitas Komputer Indonesia, Indonesia

<sup>1</sup>rahma@email.unkom.ac.id, <sup>2</sup>sudadi.75423009@mahasiswa.unkom.ac.id, <sup>3</sup>nandang.75423003@mahasiswa.unkom.ac.id

\*Corresponding Author

## Article Info

### Article history:

Submission July 25, 2024  
Revised December 23, 2024  
Accepted October 28, 2025  
Published November 12, 2025

### Keywords:

Entrepreneurial Marketing  
Entrepreneurial Technology  
Resilience  
Business Performance  
MSMEs



## ABSTRACT

In the digital transformation era, technological resilience has become essential for Micro, Small, and Medium Enterprises (MSMEs), including Indonesia's Batik industry, which must integrate technology to maintain competitiveness. However, many Batik MSMEs still face limited adoption of digital tools, resulting in declining performance and market reach. **This study aims** to analyze how entrepreneurial technology resilience mediates the relationship between entrepreneurial marketing and business performance in Batik MSMEs. **A quantitative approach** was used by distributing structured questionnaires to 383 Batik MSME owners in Indonesia. The study employed Partial Least Squares Structural Equation Modeling (PLS-SEM) to evaluate measurement validity and test hypotheses among three constructs, entrepreneurial marketing, entrepreneurial technology resilience, and business performance. **Findings** reveal that entrepreneurial marketing significantly influences both entrepreneurial technology resilience and business performance. Furthermore, entrepreneurial technology resilience also positively affects business performance and partially mediates the relationship between entrepreneurial marketing and business performance, explaining 80.2% of the variance in the model. The **results** confirm that technological resilience is a crucial mechanism that strengthens the effectiveness of entrepreneurial marketing strategies. Strengthening digital capabilities and adaptive innovation allows Batik MSMEs to enhance operational efficiency, market expansion, and overall performance. Therefore, improving technological resilience should be prioritized as a strategic policy for sustaining the Batik industry's competitiveness.

*This is an open access article under the [CC BY 4.0](#) license.*



DOI: <https://doi.org/10.34306/att.v7i3.469>

This is an open-access article under the CC-BY license (<https://creativecommons.org/licenses/by/4.0/>)

©Authors retain all copyrights

## 1. INTRODUCTION

In the digital transformation era, technological advancement has profoundly reshaped business ecosystems, compelling Micro, Small, and Medium Enterprises (MSMEs) to continuously adapt in order to remain competitive. Within Indonesia's creative industry, Batik MSMEs play a vital role as both economic drivers and cultural heritage preservers. However, to sustain their competitiveness in the modern marketplace, Batik entrepreneurs must integrate digital technology into daily operations and marketing activities [1, 2]. The adoption

of technological tools enables efficiency improvement, broader market reach, and product differentiation that directly enhance business performance and resilience in a dynamic business environment. This direction is in line with Sustainable Development Goal (SDG) 8, which promotes inclusive and sustainable economic growth, and SDG 9, which emphasizes innovation and technological advancement to strengthen industrial capacity.

Despite the growing awareness of digital transformation, many Batik MSMEs continue to rely on conventional marketing methods and exhibit limited technological capability. Data indicate a 20% decline in Batik MSME turnover during 2023 [3, 4], primarily due to inadequate adaptation to digital marketing strategies and increasing market competition [5]. Previous studies also reveal inconsistent findings regarding the impact of technology adoption on MSME performance. Some studies confirm its positive contribution, while others report insignificant effects due to limited digital literacy and poor implementation skills. These mixed results highlight a research gap concerning the mechanisms through which technology adoption contributes to improved performance, especially when mediated by entrepreneurial behavior and adaptive technological capability [6].

Addressing this gap, the present study introduces Entrepreneurial Technology Resilience as a new construct that captures MSMEs ability to adapt, adopt, and manage technology to support sustainable marketing activities. Drawing upon Innovation Diffusion Theory, the study conceptualizes technological resilience as a mediating factor that links Entrepreneurial Marketing, a proactive, innovative, and customer-focused approach, to Business Performance [7, 8]. This approach provides a deeper understanding of how Batik MSMEs can leverage digital tools not only to survive market turbulence but also to thrive through creative value creation and adaptive learning, which contributes to the realization of SDG 9 through innovation-driven business transformation.

The novelty of this research lies in proposing and empirically validating the mediating role of Entrepreneurial Technology Resilience, which has not been extensively explored in the Batik MSME context [9, 10]. By integrating entrepreneurial marketing and digital resilience under the framework of Innovation Diffusion Theory, this study contributes both theoretically and practically to the field of digital entrepreneurship [11, 12]. The findings are expected to provide actionable insights for policymakers and entrepreneurs to develop strategies that strengthen digital capability, foster technological adaptability, and ultimately improve Batik MSME performance and competitiveness in the global market, thereby supporting Indonesia's progress toward achieving SDG 8 and SDG 9.

## 2. LITERATURE REVIEW

### 2.1. Innovation Diffusion Theory

Innovation Diffusion Theory, introduced by Everett Rogers, is a framework that explains how new innovations or technologies spread and are adopted within a society or group [12]. This theory states that the adoption of innovation follows a process consisting of five stages: knowledge, persuasion, decision, implementation, and confirmation. At the knowledge stage, individuals or organizations acquire information about innovation. At the persuasion stage, they begin to consider the advantages and disadvantages of adopting the innovation, at the decision stage, they decide to adopt or reject the innovation, at the implementation stage, innovation is applied in practice, and at the confirmation stage, the user evaluates the results and decides whether to continue using the innovation [13, 14].

Innovation Diffusion Theory identifies several key factors influencing the adoption of innovations, including the characteristics of the innovation itself, the communication channels used, and the social dynamics within the group of innovation recipients [15]. Innovation characteristics include relative advantage, compatibility, complexity, trialability, and observability, all of which affect how quickly and widely an innovation is accepted. Communication channels and social dynamics, such as the social influence of individuals or groups that have already adopted innovations, also play an important role in the diffusion process [16, 17].

In the context of this research, Innovation Diffusion Theory is relevant because it provides a framework to understand how entrepreneurial technology resilience can be adopted by Batik MSMEs and how it affects their business performance. This study utilizes this theory to explain the process of marketing technology adoption by Batik MSMEs, starting from knowledge of technology to implementation and evaluation of results [18, 19]. By analyzing how Batik MSMEs go through each stage of innovation diffusion, this study aims to provide insight into how technology resilience can function as a mediator in improving the marketing effectiveness and business performance of Batik MSMEs.

## 2.2. Entrepreneurial Marketing

Entrepreneurial marketing is a marketing approach applied by entrepreneurs to develop, market, and sell their products or services in an innovative and creative way [20, 21]. In contrast to traditional marketing, which often relies on conventional methods, entrepreneurial marketing prioritizes flexible and adaptive strategies, and focuses on utilizing untapped market opportunities and creating new value [22, 23]. This approach often involves utilizing digital technology, social media, and results-oriented marketing techniques to reach a wider market and increase brand visibility [24, 25].

In entrepreneurial marketing, entrepreneurs not only focus on standard marketing techniques but also on developing product innovation, market differentiation, and creating unique customer experiences [26]. This approach requires the ability to quickly adapt to market changes and utilize the latest technologies to achieve a competitive advantage. Entrepreneurial marketing often involves developing creative and integrated marketing strategies, as well as the use of data and analytics to better understand customer needs and preferences [27, 28].

In this study, entrepreneurial marketing is linked to the resilience of entrepreneurial technology to analyze how the application of digital technology in marketing strategies can affect the business performance of Batik MSMEs [29]. This study explores how batik entrepreneurs can leverage digital technology to strengthen their marketing strategies, improve operational efficiency, and achieve better business outcomes [30]. By understanding the relationship between entrepreneurial marketing and technological resilience, this study aims to identify innovative ways to improve the competitiveness of Batik MSMEs through the use of more effective technology and adaptive marketing strategies [31, 32].

Several studies have shown how entrepreneurial marketing and technology adoption can significantly affect business performance. Research by [33] found that the use of digital technology in marketing strategies increases the effectiveness of promotions and market reach, which contributes to increased turnover and profitability of MSMEs. Furthermore, research by [34] shows that the integration of digital marketing tools, such as social media and data analytics, can improve business performance by improving customer interaction and satisfaction. Research by [35] identifies that technological resilience in entrepreneurial marketing allows companies to be more adaptive to market changes and consumer trends, which positively impacts business growth. A study by [36] revealed that companies that successfully adopt innovative technologies in marketing experienced significant improvements in business performance, including increased sales and market share. These studies support the importance of technology integration in marketing strategies to improve business performance and provide a foundation for this research to explore the role of technology resilience in the context of Batik MSMEs.

### H1: Entrepreneurial marketing affects business performance

## 2.3. Entrepreneurial Technology Resilience

Entrepreneurial technology resilience is the ability of a business, especially MSMEs, to continue to adapt, adopt, and implement technology in daily operations to support business growth and sustainability [37]. This resilience includes several aspects, such as understanding and knowledge of the latest technologies, the ability to integrate those technologies into business strategies, and the flexibility to adapt to rapid technological changes. Technology resilience also involves aspects of human resource management and finance to support the adoption and implementation of technology in a sustainable manner [38].

In the context of entrepreneurial marketing, technological resilience plays an important role in determining how effectively a business can use digital tools and platforms to reach and engage customers [39]. This resilience allows MSMEs to leverage technology in their marketing strategies, such as using social media, data analytics, and e-commerce, to increase visibility, reach a wider market, and strengthen relationships with customers. Thus, technological resilience is one of the key factors that can increase the competitiveness and business performance of MSMEs [40, 41]. This study aims to explore how entrepreneurial technology resilience can mediate the relationship between entrepreneurial marketing and business performance in Batik MSMEs [42]. In this study, technological resilience is seen as a new construct that plays an important role in overcoming the challenges faced by Batik MSMEs in adopting and integrating digital technology into their marketing strategies. By understanding and improving technological resilience [43]. Batik MSMEs are expected to be more effective in using technology to improve their business performance, both in terms of sales, operational efficiency, and customer satisfaction [38, 44].

Several studies have supported the importance of technological resilience in improving business performance. Research by [42] shows that the use of digital technology in marketing strategies can increase the

effectiveness of promotions and market reach, which has a positive impact on the turnover and profitability of MSMEs. [7] found that the integration of digital marketing tools, such as social media and data analytics, can improve customer interaction and satisfaction, leading to improved business performance. According to [18] identified that technological resilience allows companies to be more adaptive to market changes and consumer trends, which has a positive impact on business growth. Finally, a study by [6] revealed that companies that successfully adopted innovative technologies in marketing experienced significant increases in sales and market share. These studies provide a strong foundation for this research to explore the role of technology resilience in the context of Batik MSMEs and their relationship with business performance.

**H2: Entrepreneurial marketing affects the resilience of entrepreneurial technology.**

**H3: Entrepreneurial technology resilience affects business performance.**

**H4: Resilience of entrepreneurial technology mediates entrepreneurial marketing relationships affecting business performance.**

#### 2.4. Business Performance

Business performance is a measure of how effectively a company achieves its goals and objectives, which includes various aspects such as profitability, revenue growth, operational efficiency, customer satisfaction, and market share [45, 46]. Business performance is often evaluated through various financial and non-financial indicators, such as net profit, Return on Investment (ROI), sales growth rate, productivity, and customer retention and loyalty rates. Business performance assessment is important to understand the health and sustainability of a company as well as its ability to compete in the market [47].

In the context of MSMEs, business performance can be influenced by various factors, including marketing strategy, product innovation, resource management, and technology adoption. Improving business performance is often related to a company's ability to adapt to market changes, develop products or services that meet customer needs, and apply technology to increase operational efficiency and effectiveness [48]. Therefore, measuring and improving business performance is a key focus for entrepreneurs who want to ensure the growth and sustainability of their businesses.

This research examines how entrepreneurial technology resilience can mediate the relationship between entrepreneurial marketing and business performance in Batik MSMEs. By introducing a new construct in the form of technological resilience, this research aims to show that the ability of Batik MSMEs to adopt and integrate technology in their marketing strategy can have a positive impact on their business performance. Technological resilience is expected to help Batik MSMEs overcome the various challenges faced in implementing digital technology, so as to increase marketing effectiveness and, ultimately, business performance [49–51].

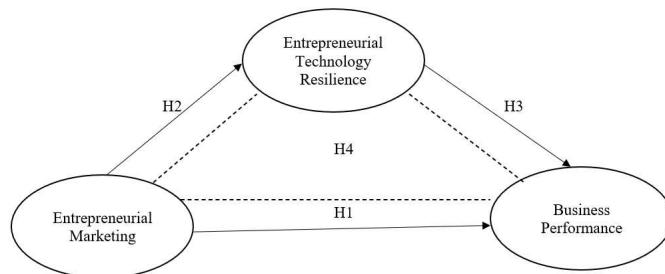


Figure 1. Research Model

Several studies support the importance of technology adoption and entrepreneurial marketing in improving business performance. Research by [52] shows that the use of digital technology in marketing strategies can increase promotional effectiveness and market reach, which has a positive impact on the turnover and profitability of MSMEs. According to [34] found that the integration of digital marketing tools, such as social media and data analytics, can increase customer interaction and satisfaction, which leads to improved business performance. [22] identified that technological resilience allows companies to be more adaptive to market changes and consumer trends, which has a positive impact on business growth. Lastly, a study by [42] revealed that companies that successfully adopted innovative technology in marketing experienced significant increases in sales and market share. These studies provide a strong foundation for this research to explore the role of technological resilience in the context of Batik MSMEs and its relationship with business performance [53].

### 3. METHOD

The research questionnaire consists of 3 variables, namely entrepreneurial marketing as an independent variable, business performance as a dependent variable, and entrepreneurial technology resilience as a mediating variable. The measurement of entrepreneurial marketing uses the opinion of [12] in which there are 5 indicators, namely product innovation, use of digital technology, adaptation, value-oriented approach to customers and creative marketing strategies. The business performance variable uses an adaptation from [7] which contains 5 indicators, namely profitability, revenue growth, operational efficiency, customer satisfaction and market share. Then measuring entrepreneurial technology resilience uses the opinion by taking 6 indicators, namely technology adoption, digital competence, technology investment, technology flexibility, technology security and technology integration.

#### 3.1. Sampling and Data Collection

This research analyzes entrepreneurial technology resilience mediates entrepreneurial marketing on business performance in batik MSMEs. This research is a quantitative study that distributed questionnaires to Batik MSMEs in Indonesia with a total of 383 respondents. Respondents filled out a questionnaire with a Likert scale measurement from point 1 which means strongly disagree to point 5 which means strongly agree. Sampling technique means a way of selecting participants in a study with their respective objectives.

#### 3.2. Evaluation of Data

The research in this study made use of PLS model analysis. In order to learn things like the respondent's age, gender, and degree of education, descriptive statistics are applied to the collected data. Using the loading factor and the Average Variance Extracted (AVE) as success criteria, conduct a validity test. Reliability tests are considered effective when their composite reliability parameters are more than 0.6. We put this theory to the test using the PLS SEM technique. To examine the connection between latent variables, one can use inner models, R-squared values, and path coefficients. Statistical bootstrapping tests follow. The results seem to address all research issues after processing the data.

## 4. RESULT AND DISCUSSION

In order to determine the validity and reliability of the indicators, the outer model is measured first. Indicators are eliminated if the correlation value is less than 0.7 and the loading factor value is higher than 0.7. According to the findings, every single indicator is higher than 0.7. This indicates that the construct is highly valid for convergent use.

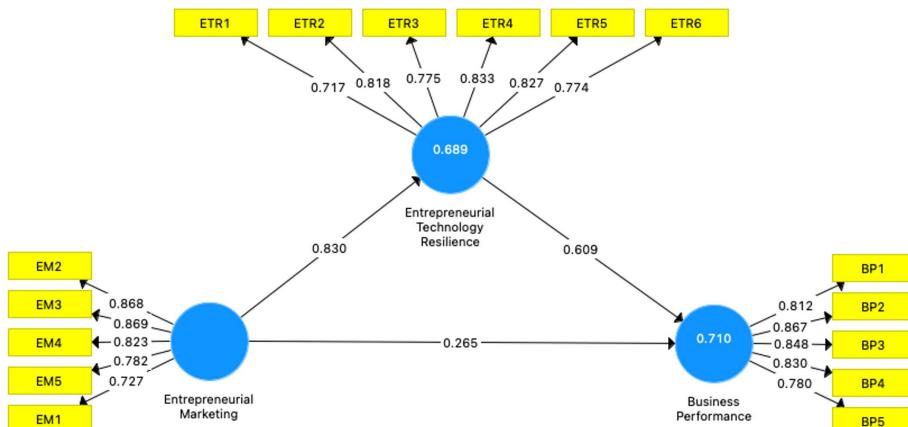


Figure 2. Loading Factor

The Figure 1 illustrates the measurement model, showing the relationships between latent variables and their respective indicators based on loading factors. Entrepreneurial Marketing, represented by EM1 through EM5, demonstrates strong indicator reliability with loading factor values ranging from 0.727 to 0.868, indicating the indicators significant contribution to the construct. Entrepreneurial Technology Resilience (ETR) is measured through six indicators (ETR1 to ETR6), with loading factors ranging from 0.717 to 0.833, reflecting

moderate to strong contributions. Lastly, Business Performance (BP), comprising BP1 through BP5, exhibits loading factors between 0.780 and 0.867, indicating robust construct reliability. These values collectively indicate that all indicators are reliable in representing their respective latent constructs, as all exceed the common threshold of 0.7 for validity in structural equation modeling.

Table 1. Variables, Indicators, Loading Factor, AVEs and Composite Reliability

Variables	Indicators	Loading Factors Running	Cronbach's Alpha	AVE	Composite Reliability
Entrepreneurial Marketing	EM1	0.822	0.935	0.721	0.948
	EM2	0.888			
	EM3	0.851			
	EM4	0.897			
	EM5	0.808			
Entrepreneurial Technology Resilience	ETR1	0.772	0.916	0.800	0.941
	ETR2	0.899			
	ETR3	0.830			
	ETR4	0.946			
	ETR5	0.885			
	ETR6	0.913			
Business Performance	BP1	0.864	0.916	0.800	0.941
	BP2	0.940			
	BP3	0.936			
	BP4	0.887			
	BP5	0.920			

Source: Processed data, 2024

The following step was to use the coefficient of correlation to assess the projected association between hidden variables or structural models. Figure 3 depicts the structural model. The R-square value for company success is 0.802, indicating that the entrepreneurial marketing and entrepreneurial technology resilience factors will clarify 80.2%.

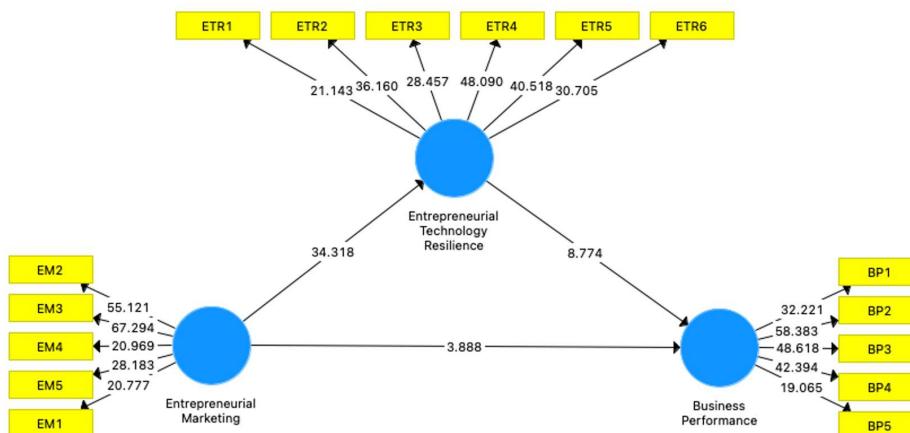


Figure 3. Structural Equation Model

Figure 3 represents the structural model with t-statistics values indicating the significance of the relationships between constructs and their indicators. For Entrepreneurial Marketing, the t-statistics of its indicators (EM1 to EM5) range from 20.777 to 67.294, all exceeding the threshold of 1.96, confirming their

significant contribution. Entrepreneurial Technology Resilience indicators (ETR1 to ETR6) also show significant t-statistics values, ranging from 21.143 to 48.090, indicating that these indicators reliably measure the construct. For Business Performance (BP1 to BP5), the t-statistics range from 19.065 to 58.383, reinforcing their strong representation of the construct. Furthermore, the t-statistics for the relationships among the latent variables Entrepreneurial Marketing, Entrepreneurial Technology Resilience, and Business Performance are significant (e.g., 34.318, 8.774, and 3.888), indicating meaningful and validated pathways in the model. This supports the hypothesis that these constructs are interrelated and contribute to the overall model's explanatory power.

Table 2. Hypothesis Test

Hypothesis	Relationships	Original Sample	T Statistics	P-Value	Result
1	Entrepreneurial Marketing → Business Performance	0.265	3.888	0.000	Accepted
2	Entrepreneurial Marketing → Entrepreneurial Technology Resilience	0.830	34.318	0.000	Accepted
3	Entrepreneurial Technology Resilience → Business Performance	0.609	8.774	0.000	Accepted
4	Entrepreneurial Marketing → Entrepreneurial Technology Resilience → Business Performance	0.506	8.417	0.000	Accepted

Source: Processed data, 2024

Table 2 presents the results of hypothesis testing, showing that all proposed relationships are statistically significant with p-values below 0.05. Entrepreneurial marketing has a positive and significant effect on business performance ( $\beta = 0.265$ ,  $t = 3.888$ ), indicating that innovative and adaptive marketing strategies directly enhance MSME outcomes. Additionally, entrepreneurial marketing strongly influences entrepreneurial technology resilience ( $\beta = 0.830$ ,  $t = 34.318$ ), suggesting that proactive marketing behavior encourages digital adaptation. Entrepreneurial technology resilience also significantly improves business performance ( $\beta = 0.609$ ,  $t = 8.774$ ), confirming its role as a key driver of operational efficiency and competitiveness. Moreover, the mediation test reveals that entrepreneurial technology resilience partially mediates the relationship between entrepreneurial marketing and business performance ( $\beta = 0.506$ ,  $t = 8.417$ ). These findings collectively demonstrate that Batik MSMEs achieve better performance when entrepreneurial marketing is supported by strong technological resilience.

#### 4.1. Discussion

The primary hypothesis, which asserts that entrepreneurial marketing has an influence on business performance, is supported since the significance level of 0.000 is less than the alpha value of 0.05, indicating thus the hypothesis has been approved.

The research results show that entrepreneurial marketing has a significant influence on the business performance of Batik MSMEs in Indonesia. Entrepreneurial marketing, which includes product innovation, use of digital technology, flexibility, value-oriented customer approach, and creative marketing strategies, has been proven to improve various aspects of business performance. Batik MSMEs that implement entrepreneurial marketing strategies effectively experience increased sales, operational efficiency and customer satisfaction. Product innovation allows Batik MSMEs to offer unique goods and meet specific market needs, while the use of digital technology such as social media and e-commerce significantly expands their market reach.

This study also supports previous findings which show that the integration of digital technology in marketing is very important for the success of MSMEs. Research by [52] confirms that the use of digital technology in marketing strategies can increase promotional effectiveness and market reach, which has a positive impact on the turnover and profitability of MSMEs. Furthermore, [54] found that digital marketing tools such as social media and data analytics can increase customer engagement and satisfaction, ultimately improving business performance. Research by [22] identified that technological resilience allows companies to be more adaptive to market changes and consumer trends, which has a positive impact on business growth.

This research reveals that flexibility and adaptability in entrepreneurial marketing enable Batik MSMEs to respond to market changes quickly and efficiently. This is in line with the findings of [54], who stated that companies that successfully adopted innovative technology in marketing experienced significant increases in sales and market share. Flexibility in marketing strategies also allows Batik MSMEs to adapt their products and services to continuously evolving customer needs, increasing customer satisfaction and loyalty. A value-oriented customer approach, which is one of the indicators of entrepreneurial marketing, helps Batik MSMEs create a superior customer experience, which contributes to customer retention and a positive reputation in the market.

The findings of this research indicate that entrepreneurial marketing plays an important role in improving the business performance of Batik MSMEs in Indonesia. By utilizing digital technology, developing innovative products, and implementing flexible and creative marketing strategies, Batik MSMEs can increase their operational effectiveness, expand market reach, and increase customer satisfaction. Support from previous research strengthens the argument that entrepreneurial marketing is the key to achieving competitive advantage and sustainable growth for MSMEs in the batik sector.

### **H1: Entrepreneurial marketing affects business performance**

The next hypothesis, whose asserts that entrepreneurial marketing has an influence on the robustness of entrepreneurial technology, is supported since the significance level of 0.000 is less above the alpha value of 0.05, indicating that the hypothesis has been approved. The research results show that entrepreneurial marketing has a significant effect on the resilience of entrepreneurial technology in Batik MSMEs in Indonesia. Entrepreneurial marketing, which includes product innovation, utilization of digital technology, flexibility, value-oriented customer approach, and creative marketing strategies, not only improves business performance but also strengthens the ability of Batik MSMEs to adapt and integrate technology in their operations. The application of entrepreneurial marketing encourages Batik MSMEs to continue to follow technological developments and utilize them in marketing strategies, thereby increasing their technological resilience.

This research is in line with previous findings showing that technology adoption in marketing is key to building entrepreneurial technological resilience. For example, research by [54] reveals that the use of digital technology in marketing strategies not only increases promotional effectiveness and market reach, but also strengthens a company's ability to manage and adapt technology. [54] found that the integration of digital marketing tools, such as social media and data analytics, helps companies develop technological resilience by providing better insights into customer behavior and market trends.

This research highlights the importance of flexibility and adaptability in entrepreneurial marketing to build technological resilience. [22] identified that companies that have the ability to quickly adapt their marketing strategies to technological and market changes tend to have higher technological resilience. A customer value-oriented approach also plays an important role, because a deep understanding of customer needs can encourage Batik MSMEs to continuously update and optimize the technology they use in marketing.

The findings of this research confirm that entrepreneurial marketing plays an important role in increasing the resilience of entrepreneurial technology in Batik MSMEs in Indonesia. The use of digital technology, product innovation, and a flexible and creative approach to marketing not only improves business performance but also strengthens the ability of MSMEs to adapt to technological developments. Support from previous research strengthens the argument that entrepreneurial marketing is a key factor in building the technological resilience necessary to compete in dynamic and changing markets.

### **H2: Entrepreneurial marketing affects the resilience of entrepreneurial technology**

The third hypothesis, whose argues that the resilience of entrepreneurial technology effects company performance, is supported since the significance level value of 0.000 is less than the alpha value of 0.05, indicating that the hypothesis has been approved.

The research results show that the resilience of entrepreneurial technology has a significant influence on the business performance of Batik MSMEs in Indonesia. Entrepreneurial technological resilience, which includes technology adoption, digital competence, investment in technology, flexibility, security, and technology integration, enables Batik MSMEs to increase operational efficiency, expand market reach, and provide better customer service. This resilience helps Batik MSMEs face challenges that come from rapid technological change and intense market competition, thereby contributing to improved business performance.

This research supports previous findings showing that the ability to adopt and manage technology effectively is an important factor in improving business performance. [52] found that the use of digital technology in operations and marketing strategies can increase promotional effectiveness and market reach, which

has a positive impact on the turnover and profitability of MSMEs. [54] show that digital marketing tools, such as social media and data analytics, not only improve customer interactions and satisfaction but also enable companies to be more responsive to market changes and customer needs, ultimately improving business performance. This research highlights the importance of flexibility and adaptability in technological resilience to face market dynamics. [22] identified that companies that can quickly adapt their technology strategies to market developments and consumer trends tend to have better business performance. Technological resilience allows Batik MSMEs to continue to update and optimize the technology they use in operations and marketing, thereby reducing operational costs and increasing productivity.

The findings of this research indicate that the resilience of entrepreneurial technology plays an important role in improving the business performance of Batik MSMEs in Indonesia. With the ability to adopt and integrate technology effectively, Batik MSMEs can increase operational efficiency, expand market reach, and increase customer satisfaction. Support from previous research strengthens the argument that technological resilience is a key factor in achieving competitive advantage and sustainable growth for MSMEs in the batik sector. Research by [20] reveals that companies that successfully adopt innovative technologies in marketing experience significant increases in sales and market share, which shows how important technological resilience is in the context of business performance.

### **H3: Entrepreneurial technology resilience affects business performance**

The fourth hypothesis, which proposes that entrepreneurial technology resilience mediates the relationship between entrepreneurial marketing and business performance, is supported by the statistical results, with a significance value of 0.000 being lower than the alpha level of 0.05. This indicates that entrepreneurial technology resilience serves as a crucial intermediary that strengthens the influence of entrepreneurial marketing on business performance among Batik MSMEs in Indonesia. The ability to adopt, integrate, and manage technology effectively enhances the positive effects of marketing innovation, digital engagement, and customer-centric strategies. Entrepreneurial marketing not only increases visibility and market reach but also encourages digital transformation, resulting in greater operational efficiency and responsiveness to dynamic market conditions.

These findings align with prior studies showing that technology adoption plays a pivotal role in improving business outcomes. The integration of digital marketing tools such as social media platforms and data analytics enables firms to develop technological resilience by providing better insight into customer behavior and market trends, leading to improved performance. The results also emphasize the need for flexibility and adaptability in marketing strategies, as organizations that quickly adjust to technological and market shifts tend to achieve stronger performance. For Batik MSMEs, this implies that building technological resilience through continuous innovation and customer oriented approaches is key to sustaining competitiveness. Ultimately, the synergy between entrepreneurial marketing and technological resilience enables Batik MSMEs to strengthen their market position, foster innovation, and ensure long-term business sustainability in an evolving digital economy.

### **H4: Resilience of entrepreneurial technology mediates entrepreneurial marketing relationships affecting business performance**

## **5. MANAGERIAL IMPLICATIONS**

The results of this study emphasize that Batik MSME managers must strengthen their entrepreneurial marketing strategies through innovation, creativity, and customer orientation supported by digital technology. Managers should leverage online platforms such as social media, e-commerce, and data-driven marketing tools to expand their market reach, increase customer engagement, and enhance brand competitiveness. Digital integration allows MSMEs to transform traditional marketing approaches into more measurable and adaptive strategies, leading to improved performance and sustainable growth. Therefore, Batik entrepreneurs are encouraged to adopt proactive marketing behavior and continuously innovate in responding to evolving consumer preferences and market trends.

In addition, the mediating role of entrepreneurial technology resilience highlights the importance of developing digital adaptability and competence within Batik MSMEs. Managers should invest in human resource development through digital literacy programs, training, and collaborative learning with academic or industry partners. Strengthening technological resilience will not only increase operational efficiency and productivity but also help MSMEs withstand external shocks such as technological disruption and market volatil-

ity. Policymakers and support institutions are also expected to facilitate this process by providing incentives, mentoring, and access to digital infrastructure. Through the synergy between marketing innovation and technological resilience, Batik MSMEs can achieve sustainable business excellence while preserving Indonesia's cultural heritage in a modern and competitive digital landscape.

## 6. CONCLUSION

The goal of this investigation is to investigate the function of entrepreneurial technology resilience in mediating the link between entrepreneurial marketing and business success in Batik MSMEs. The purpose of this study is to determine how Batik MSMEs capacity to embrace and manage technology affects the success of their marketing strategies and, as a result, company performance. The study confirms that entrepreneurial marketing directly improves business performance, and entrepreneurial technology resilience both enhances performance and mediates this relationship. Strengthening technological adaptability allows Batik MSMEs to maximize the impact of digital marketing strategies and sustain competitive growth.

The results of this research have important implications for the development of Batik MSME business strategies in Indonesia. By showing that entrepreneurial marketing directly positively influences business performance and entrepreneurial technological resilience, this research emphasizes the importance of technology adoption and innovation in marketing strategy. Entrepreneurial technological resilience is proven to mediate the relationship between entrepreneurial marketing and business performance, which means that Batik MSMEs must focus on building technological resilience to maximize the impact of entrepreneurial marketing. The practical implication is that Batik MSMEs need to invest more resources in digital technology and digital competency training to improve their business performance.

However, this research has several limitations that need to be considered. First, this research is limited to Batik MSMEs in Indonesia, so the results may not be generalizable to other sectors or regions. Second, the data used may have limitations in terms of variability and representation that may influence the research results. For future research, it is recommended to expand the research scope to include various industrial sectors and different geographical regions to obtain a more comprehensive picture. The use of Partial Least Squares (PLS) in this research, while effective for analyzing complex models and small sample sizes, has its limitations. PLS is primarily designed for predictive rather than confirmatory analysis, which may restrict its ability to fully validate the theoretical framework. Additionally, PLS does not provide global goodness-of-fit indices, which can limit the comprehensive assessment of the model's fit. Future studies could consider alternative methods, such as Covariance-Based Structural Equation Modeling (CB-SEM), to address these limitations and provide a more robust confirmation of the proposed model. In addition, further research could explore other factors that may influence the relationship between entrepreneurial marketing, entrepreneurial technological resilience, and business performance, such as organizational culture, government policy, and market dynamics.

## 7. DECLARATIONS

### 7.1. About Authors

Rahma Wahdiniwaty (RW)  <https://orcid.org/0000-0003-1149-7414>

Sudadi Pranata (SP)  <https://orcid.org/0009-0000-8271-9585>

Nandang Komara (NK)  <https://orcid.org/0009-0006-4525-2617>

### 7.2. Author Contributions

Conceptualization: RW; Methodology: RW; Software: SP; Validation: SP and NK; Formal Analysis: SP and NK; Investigation: RW; Resources: RW; Data Curation: RW; Writing Original Draft Preparation: RW, SP, and NK; Writing Review and Editing: SP; Visualization: LK; All authors, RW, SP, and NK, have read and agreed to the published version of the manuscript.

### 7.3. Data Availability Statement

The data presented in this study are available on request from the corresponding author.

### 7.4. Funding

The authors received no financial support for the research, authorship, and/or publication of this article.

### 7.5. Declaration of Conflicting Interest

The authors declare that they have no conflicts of interest, known competing financial interests, or personal relationships that could have influenced the work reported in this paper.

## REFERENCES

- [1] M. J. Akhtar, M. Azhar, N. A. Khan, and M. N. Rahman, "Conceptualizing social media analytics in digital economy: An evidence from bibliometric analysis," *Journal of Digital Economy*, vol. 2, pp. 1–15, 2023.
- [2] A. Taylor, J. Carlson, Y.-C. Liao, and M. M. Rahman, "Customer engagement and sharing behaviors: Toward a contingent curvilinear perspective," *Journal of Business Research*, vol. 154, p. 113284, 2023.
- [3] Antara News. (2024) Indonesia's msme turnover falls, govt to reassess procurement policy. Accessed: Nov. 7, 2025. [Online]. Available: <https://en.antaranews.com/news/361673/indonesia-msme-turnover-falls-govt-to-reassess-procurement-policy>
- [4] ASEAN Secretariat and OECD, "Sme policy index: Asean 2024 – enabling sustainable and inclusive growth," Association of Southeast Asian Nations (ASEAN), Tech. Rep., 2024, accessed: Nov. 7, 2025. [Online]. Available: [https://asean.org/wp-content/uploads/2024/09/Full-Report-ASEAN-SME-Policy-Index-2024\\_20-Sept-2024.pdf](https://asean.org/wp-content/uploads/2024/09/Full-Report-ASEAN-SME-Policy-Index-2024_20-Sept-2024.pdf)
- [5] W. M. Lim and T. Rasul, "Customer engagement and social media: Revisiting the past to inform the future," *Journal of Business Research*, vol. 148, pp. 325–342, 2022.
- [6] S. Ren, S. Karimi, A. B. Velázquez, and J. Cai, "Endorsement effectiveness of different social media influencers: The moderating effect of brand competence and warmth," *Journal of Business Research*, vol. 156, p. 113476, 2023.
- [7] N. Di Paola, O. Meglio, and R. Vona, "Entrepreneurship education in entrepreneurship laboratories," *The International Journal of Management Education*, vol. 21, no. 2, p. 100793, 2023.
- [8] S. Modgil, Y. K. Dwivedi, N. P. Rana, S. Gupta, and S. Kamble, "Has covid-19 accelerated opportunities for digital entrepreneurship? an indian perspective," *Technological Forecasting and Social Change*, vol. 175, p. 121415, 2022.
- [9] Z. Luo, J. Guo, J. Benitez, L. Scaringella, and J. Lin, "How do organizations leverage social media to enhance marketing performance? unveiling the power of social crm capability and guanxi," *Decision Support Systems*, vol. 178, p. 114123, 2024.
- [10] I. Shaferi, R. P. Setyanto, and A. T. Nawarini, "Development of a transformative relational management model to improve batik msme marketing performance," *Quality-Access to Success*, vol. 25, no. 200, 2024.
- [11] N. K. Tiwary, R. K. Kumar, S. Sarraf, P. Kumar, and N. P. Rana, "Impact assessment of social media usage in b2b marketing: A review of the literature and a way forward," *Journal of Business Research*, vol. 131, pp. 121–139, 2021.
- [12] G. Gliga and N. Evers, "Marketing capability development through networking—an entrepreneurial marketing perspective," *Journal of Business Research*, vol. 156, p. 113472, 2023.
- [13] M. Wahyudi, T. A. A. Sandi, W. Bismi, U. Rahardja, L. Pujiastuti *et al.*, "Performance analysis of open shortest path first multiarea using virtual link method," in *2023 11th International Conference on Cyber and IT Service Management (CITSM)*. IEEE, 2023, pp. 1–5.
- [14] K. Kusnadi, M. Hatta, G. Brotosaputro, A. Amri, and S. Harris, "Information technology and its impact on modern classroom dynamics: A computer science perspective," *Aptisi Transactions on Technopreneurship (ATT)*, vol. 7, no. 1, pp. 282–293, 2025.
- [15] A. Felix, D. Y. Bernanda, A. S. Kembau, F. Effendy, and R. Nathaniel, "Application-based elementary schools interactive education platform analysis and design," *IAIC Transactions on Sustainable Digital Innovation (ITSDI)*, vol. 6, no. 2, pp. 114–128, 2025.
- [16] M. Rakhmansyah, M. S. Hadi, S. R. P. Junaidi, F. A. Ramahdan, and S. N. W. Putra, "Integrating blockchain and ai in business operations to enhance transparency and efficiency within decentralized ecosystems," *ADI Journal on Recent Innovation*, vol. 6, no. 2, pp. 157–167, 2025.
- [17] C. A. Malarvizhi, A. Al Mamun, S. Jayashree, F. Naznen, and T. Abir, "Modelling the significance of social media marketing activities, brand equity and loyalty to predict consumers' willingness to pay premium price for portable tech gadgets," *Heliyon*, vol. 8, no. 8, 2022.
- [18] P. Finn, "Organising for entrepreneurship: How individuals negotiate power relations to make themselves

entrepreneurial,” *Technological Forecasting and Social Change*, vol. 166, p. 120610, 2021.

[19] T. Pujiati, H. Setiyowati, B. Rawat, N. P. L. Santoso, and M. G. Ilham, “Exploring the role of artificial intelligence in enhancing environmental health: Utaut2 analysis,” *Sundara Advanced Research on Artificial Intelligence*, vol. 1, no. 1, pp. 37–46, 2025.

[20] J. Gartner, M. Fink, A. Floh, and F. Eggers, “Service quality in social media communication of npos: The moderating effect of channel choice,” *Journal of Business Research*, vol. 137, pp. 579–587, 2021.

[21] S. Sonaji and T. S. Agustina, “Msmes performance of indonesian textile reviewed from social capital, psychological capital and entrepreneurial orientation,” *EKOMBIS REVIEW: Jurnal Ilmiah Ekonomi dan Bisnis*, vol. 13, no. 1, pp. 815–830, 2025.

[22] A. M. Dy, “Levelling the playing field? towards a critical-social perspective on digital entrepreneurship,” *Futures*, vol. 135, p. 102438, 2022.

[23] A. M. Ghouri, V. Mani, M. A. ul Haq, and S. S. Kamble, “The micro foundations of social media use: Artificial intelligence integrated routine model,” *Journal of Business Research*, vol. 144, pp. 80–92, 2022.

[24] C.-W. Wu, D. Botella-Carrubi, and C. Blanco-González-Tejero, “The empirical study of digital marketing strategy and performance in small and medium-sized enterprises (smes),” *Technological Forecasting and Social Change*, vol. 200, p. 123142, 2024.

[25] S. Margita, E. Sediyyono, S. Y. J. Prasetyo, A. Iriani, K. D. Hartomo, I. Sembiring, and H. D. Purnomo, “Valuation of software cost and time estimation methods: Asystematic review of the literature,” in *AIP Conference Proceedings*, vol. 3234, no. 1. AIP Publishing LLC, 2025, p. 050010.

[26] T. Bastrygina, W. M. Lim, R. Jopp, and M. A. Weissmann, “Unraveling the power of social media influencers: Qualitative insights into the role of instagram influencers in the hospitality and tourism industry,” *Journal of Hospitality and Tourism Management*, vol. 58, pp. 214–243, 2024.

[27] M. Budiarto, A. Asmawati, and M. Kurniawan, “Digital transformation of local government: Design and development of the pakuhaji district community service information system website,” *International Journal of Cyber and IT Service Management*, vol. 4, no. 1, pp. 11–18, 2024.

[28] A. M. Ali Muhajir, S. Sukes, L. R. R. Liosten Rianna Roosida Ully Tampubolon *et al.*, “Determinants of innovation strategy on business performance with competitiveness as an intervening variable in batik msmes in east java,” *DETERMINANTS OF INNOVATION STRATEGY ON BUSINESS PERFORMANCE WITH COMPETITIVENESS AS AN INTERVENING VARIABLE IN BATIK MSMES IN EAST JAVA*, vol. 3, no. 1, pp. 16–24, 2025.

[29] G. Silva, G. Godwin, and O. Jayanagara, “The impact of ai on personalized learning and educational analytics,” *International Transactions on Education Technology (ITEE)*, vol. 3, no. 1, pp. 36–46, 2024.

[30] A. Delhi and A. Sijabat, “The role of technology adoption in scaling startupreneur business models in the digital economy,” *Startupreneur Business Digital (SABDA Journal)*, vol. 3, no. 2, pp. 141–147, 2024.

[31] T. Hongsuchon, U. Rahardja, A. Khan, T.-H. Wu, C.-W. Hung, R.-H. Chang, C.-H. Hsu, and S.-C. Chen, “Brand experience on brand attachment: The role of interpersonal interaction, feedback, and advocacy,” *Emerging Science Journal*, vol. 7, no. 4, pp. 1232–1246, 2023.

[32] H. Yuliastuti, J. E. Putra, and B. Utomo, “Digital marketing, entrepreneurial orientation, and business capital on the financial performance of msmes in indonesia,” *International Journal of Business, Law, and Education*, vol. 5, no. 2, pp. 1633–1645, 2024.

[33] D. Buccieri and J. Park, “Entrepreneurial marketing and reconfiguration towards post-entry performance: Moderating effects of market dynamism and entry mode,” *Journal of Business Research*, vol. 148, pp. 89–100, 2022.

[34] A. Mahdi, D. Crick, J. M. Crick, W. Lamine, and M. Spence, “Entrepreneurial marketing practices and rural wine producers’ performance: The moderating role of competitive intensity in an immediate post crisis period,” *Journal of Rural Studies*, vol. 108, p. 103277, 2024.

[35] M. E. Al-Shaikh and J. R. Hanaysha, “A conceptual review on entrepreneurial marketing and business sustainability in small and medium enterprises,” *World Development Sustainability*, vol. 2, p. 100039, 2023.

[36] G. N. Nguyen and T. K. Nguyen, “Entrepreneurial passion of business and technical students: The roles of subjective norms, entrepreneurial education, entrepreneurial self-efficacy, and risk propensity,” *The International Journal of Management Education*, vol. 22, no. 3, p. 101012, 2024.

[37] B. E. Maryono, V. R. Handoko, A. Maduwinarti, and C. Gusmao, “Analysis of npm based public policy to enhance sustainability performance: A grounded theory,” *Aptisi Transactions on Technopreneurship*

(ATT), vol. 7, no. 1, pp. 97–108, 2025.

[38] B. P. C. Utomo, I. Sentosa, S. Osman, and T. D. Santosa, “The influence of intellectual capital, learning capability, and technological orientation on the innovation capability and sustainable competitive advantage of batik smes in indonesia,” *JINAV: Journal of Information and Visualization*, vol. 5, no. 2, pp. 240–249, 2024.

[39] C. Lukita, M. H. R. Chakim, R. Supriati, N. P. L. Santoso, and M. F. Kamil, “Exploration of perceived use of technology using a digital business perspective,” *ADI Journal on Recent Innovation*, vol. 5, no. 1Sp, pp. 87–96, 2023.

[40] A. Jufri and I. Hadiwibowo, “The impact of strategic agility on msmses innovation driven by digital entrepreneurial leadership,” in *E3S Web of Conferences*, vol. 622. EDP Sciences, 2025, p. 04001.

[41] L. H. A. P. Prawira, A. F. Ummah, M. R. Aditiya, and D. W. Nugroho, “Knowledge management: Efforts to create an excellent digital creative industry,” *Startpreneur Business Digital (SABDA Journal)*, vol. 2, no. 2, pp. 172–181, 2023.

[42] C. Schreier, N. Udomkit, J. Frommelt, and M. Zemp, “Entrepreneurial approaches: A comparative study of thai and swiss business founders,” *Asia Pacific Management Review*, vol. 29, no. 2, pp. 226–240, 2024.

[43] A. Alwiyah, S. N. Husin, P. Padeli, M. Anggaraeni, and S. Sulistiawati, “Alignment of science and technology with islamic principles using quantum theory,” *International Journal of Cyber and IT Service Management*, vol. 1, no. 1, pp. 115–120, 2021.

[44] L.-Y. Li, A. M. Syah, M. Syukur, R. Limkanchanapa, and C. Srisurat, “Sustainable micro, small, and medium enterprises: A developed model of entrepreneurial marketing behaviors for thailand’s msmses,” *Sustainability*, vol. 15, no. 17, p. 13135, 2023.

[45] S. Sahid, N. S. Norhisham, and B. S. Narmaditya, “Interconnectedness between entrepreneurial self-efficacy, attitude, and business creation: A serial mediation of entrepreneurial intention and environmental factor,” *Heliyon*, vol. 10, no. 9, 2024.

[46] A. D. Santosa, R. Sugiarti, P. S. Rahayuningrat, G. T. Ardiani *et al.*, “Thriving in uncertainty: How entrepreneurial orientation, online marketing, and product innovation drive rural msme performance in vuca times,” *Jurnal Bisnis dan Manajemen*, vol. 12, no. 1, pp. 01–13, 2025.

[47] K. D. Hartomo and C. Arthur, “Enhanced msme support allocation with integrated k-means and tukey’s outlier detection,” in *Intelligent Systems Conference*. Springer, 2024, pp. 241–257.

[48] V. A. Srimulyani, S. Rustianingsih, F. A. Farida, and Y. B. Hermanto, “Mediation of “akhlak” corporate culture and affective commitment on the effect of inclusive leadership on employee performance,” *Sustainable Futures*, vol. 6, p. 100138, 2023.

[49] R.-J. B. Jean, D. Kim, R. R. Sinkovics, and E. Cavusgil, “The effect of business model innovation on smes’ international performance: The contingent roles of foreign institutional voids and entrepreneurial orientation,” *Journal of Business Research*, vol. 175, p. 114449, 2024.

[50] O. Candra, N. B. Kumar, N. K. A. Dwijendra, I. Patra, A. Majdi, U. Rahardja, M. Kosov, J. W. G. Guerrero, and R. Sivaraman, “Energy simulation and parametric analysis of water cooled thermal photovoltaic systems: energy and exergy analysis of photovoltaic systems,” *Sustainability*, vol. 14, no. 22, p. 15074, 2022.

[51] U. Rusilowati, F. P. Oganda, R. Rahardja, T. Nurtino, and E. Aimee, “Innovation in smart marketing: The role of technopreneurs in driving educational improvement,” *Aptisi Transactions on Technopreneurship (ATT)*, vol. 5, no. 3, pp. 305–318, 2023.

[52] I. Ouragini and L. Lakhral, “The effect of entrepreneurial marketing education on the determinants of students’ entrepreneurial intention,” *The International Journal of Management Education*, vol. 22, no. 1, p. 100903, 2024.

[53] T. S. Goh, D. Jonas, B. Tjahjono, V. Agarwal, and M. Abbas, “Impact of ai on air quality monitoring systems: A structural equation modeling approach using utaut,” *Sundara Advanced Research on Artificial Intelligence*, vol. 1, no. 1, pp. 9–19, 2025.

[54] L. Zhang and E. Erturk, “Potential lessons from chinese businesses and platforms for online networking and marketing: An exploratory study,” *Social Sciences & Humanities Open*, vol. 6, no. 1, p. 100274, 2022.