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***Research paper***

# External Stimulus and Organizational Culture in Enhancing MSME Performance Through Radical Innovation and Knowledge Sharing

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**Abstract**

This study investigates the influence of external stimulus and organizational culture on MSME performance, with radical innovation and knowledge sharing serving as mediating mechanisms. Adopting a quantitative approach, data from 204 MSME owners and managers were analyzed using Structural Equation Modeling (SEM) with AMOS. Both the measurement and structural models achieved acceptable fit indices, indicating a satisfactory model data fit. The findings reveal that external stimulus plays a strong role in driving radical innovation and knowledge sharing, and exerts a direct positive effect on MSME performance. Organizational culture is also a significant driver of radical innovation and knowledge sharing, but it shows a direct negative effect on performance. Mediation analysis confirms that the primary contribution of organizational culture to performance occurs indirectly through radical innovation and knowledge sharing, while external stimulus also enhances performance significantly via these mediating pathways. These results underscore that radical innovation and knowledge sharing are not merely passive outcomes of favorable environments or cultures but are strategic levers that determine MSMEs' adaptability and competitiveness. From a practical perspective, the study offers guidance for business actors to integrate external market awareness with a collaborative, innovation-oriented organizational culture to ensure sustainable growth in highly dynamic and competitive markets.

***Keywords***: *MSMEs; External Stimulus; Organizational Culture; Radical Innovation; Knowledge Sharing; Performance.*

## 1. Introduction

Micro, Small, and Medium Enterprises (MSMEs) hold a strategic position in Indonesia's economy. Their role is evident not only in their contribution to Gross Domestic Product (GDP) and employment absorption but also in their ability to maintain economic stability during times of global crisis. Over the past decade, the business landscape has undergone significant changes, marked by increased complexity due to accelerated digitalization, market uncertainty, and mounting competitive pressures. (Ali et al., 2023; Khalid et al., 2023; Okijie & Effiong, 2024).

In such a situation, MSMEs are required not merely to survive. Business sustainability now hinges on the ability of enterprises to create new value through more progressive approaches. Radical innovation emerges as one of the key strategic responses. Unlike incremental innovation, radical innovation is rooted in a willingness to take risks, break conventional boundaries, and establish new market paradigms. This type of innovation becomes especially relevant in the face of rapidly shifting external forces, including regulatory changes, technological disruption, and evolving consumer expectations.(Robb & Stephens, 2021; Singh et al., 2016; Supriyanto et al., 2024).

Internal organizational conditions also play a crucial role in determining the success of such innovations. A culture that fosters trust, cross-functional collaboration, and a drive for learning and growth creates a fertile environment for the renewal of ideas. In the MSME context, organizational flexibility and close interpersonal connections allow for smoother knowledge sharing. When knowledge circulates widely, both internally and externally, it opens space for the exploration of new ideas, ultimately leading to improved business performance. (Ismail, 2015; Rajagopal & Rajagopal, 2021; Silva et al., 2022).

The rapid pace of business transformation underscores the powerful influence of external factors on the stability and growth trajectory of MSMEs. As technological change occurs within months, business actors no longer have the luxury of adapting gradually. Global competition exerts pressure not only from local players but also from international markets. Shifting government policies, economic uncertainty, and fluctuating consumer demand intensify the external pressures MSMEs face daily. (Regina & Guerreiro, 2013; Santos, Almeida, et al., 2023; Santos, Silva, et al., 2023).

These dynamics place MSMEs in an increasingly complex and often paradoxical position. Cost reduction and operational efficiency have become essential strategies to preserve cash flow and ensure business continuity, particularly amid resource constraints. However, at the same time, the market demands uniqueness, differentiation, and added value, elements that can only be achieved through creative approaches. MSMEs that focus solely on efficiency risk losing relevance, while those that neglect efficiency in favor of innovation may face

financial instability. Striking a balance between operational agility and innovative capability becomes a key differentiator that determines future direction (Frezatti et al., 2017; Pedraza-Rodríguez et al., 2023).

The ability to interpret signals of change from the external environment is no longer a competitive advantage; it is a necessity. Organizations that can quickly detect shifts and respond strategically are more likely to survive and thrive.(Piliang, Meutia, et al., 2025). This capability does not develop on its own. Organizational culture plays a critical role in shaping the mindset and behavior of its members. When an organization is built on values such as collaboration, initiative-taking, and openness to new ideas, its capacity to evolve becomes significantly stronger.

A healthy organizational culture enables learning to occur not through top-down instruction but through supportive interactions among individuals. For MSMEs, a lean structure becomes advantageous, enabling faster communication and more agile decision-making. Such a culture not only provides psychological safety for members to voice ideas and take initiative, but also accelerates experimentation and the implementation of new solutions without bureaucratic obstacles. (Arifin et al., 2023; Deng et al., 2023; Frare et al., 2022).

Product excellence and cost efficiency remain relevant but are no longer sufficient to address today's complex challenges. MSMEs must build an internal foundation that fosters continuous innovation. A culture that encourages idea exploration, treats failure as part of the learning process, and instills shared responsibility for change will significantly strengthen long-term business resilience. Innovation is no longer an outcome; it has become an ongoing organizational process, adapting and creating value in a sustainable manner.

When organizational culture aligns with external dynamics and does not conflict with market direction, the chance for survival increases; not only that, it creates opportunities for MSMEs to grow into strong, relevant, and competitive players. (Piliang, Bastian, et al., 2025). The integration of an adaptive internal structure with responsive strategies to external pressures forms a critical foundation for long-term resilience and sustainability.

The ability to generate renewal is the primary determinant of business sustainability amid increasingly dynamic competition. Rapid market changes and constantly evolving customer expectations require business actors not only to adapt but to offer something genuinely different. Holistic innovation enables organizations to build stronger positions amid competitive pressures, not just through incremental improvements but through breakthroughs that reshape established business models and perspectives. (Karim, 2019; Mulyana et al., 2024).

The success of such breakthroughs is not solely determined by creative ideas. Strong concepts often emerge from dynamic interaction rather than isolated work. Collaboration within organizations serves as a vital source of innovation by facilitating the exchange of diverse perspectives. When team members complement one another through experience, intuition, and technical knowledge, collective thinking becomes sharper and more contextually grounded. (Asli et al., 2023; Sreen et al., 2024)This process forms an idea ecosystem that is not only productive but also responsive to complex challenges.

The relatively fluid and egalitarian nature of MSMEs allows for cross-functional interactions without rigid structural barriers. Informal communication patterns simplify idea sharing and accelerate adjustment to external dynamics. In such an environment, every individual has an equal opportunity to contribute thoughts, broaden collective insight, and spark new ideas, and when this exchange is open and active, organizations not only generate knowledge but also build a sustainable learning culture. (Boamah et al., 2023; Li et al., 2023; Muafi, 2020). Knowledge accumulated through work experience, training, and external interactions loses its value if it is not disseminated. When knowledge becomes a shared asset, the organization's capacity to act and innovate increases significantly. Market, technology, and operational understanding evolve not in isolation but as collective awareness, forming a foundation for decision-making. (Piliang et al., 2023). Organizations that cultivate a knowledge-sharing culture can detect change patterns earlier, take risks more confidently, and generate solutions untethered to legacy systems.

The impact of these processes is evident not only in innovation outcomes but also in enhanced overall performance. Flexibility in responding to challenges, the courage to try new approaches, and rapid adaptability are hallmarks of MSMEs that adopt collaborative, knowledge-based work models. (Alzubi et al., 2025; Wu & Tham, 2023). Their competitive edge stems not solely from product superiority but from their internal capacity to continually learn and grow.

The potential for sustainable growth increases when the ability to explore ideas is matched by a habit of knowledge sharing. MSMEs that manage both elements in harmony are better equipped to face uncertainty, respond creatively to change, and strengthen their market position. Such foundations are not only short-term assets but also strategic pillars that support long-term resilience and development.

Extensive research on MSME performance has explored various aspects, from marketing strategies and technological roles to entrepreneurial orientation. Innovation studies have also grown rapidly, particularly in examining the contribution of innovation to business competitiveness and growth. Several studies highlight innovation as a key driver of business performance, as shown in works by (Arifin et al., 2023) and (Frezatti et al., 2017), which links radical innovation to organizational effectiveness and the creation of new value under external pressures.

The focus on organizational culture as a factor influencing innovation has also been explored in several studies. (Regina & Guerreiro, 2013) Emphasize the importance of a collaborative and learning-oriented work environment as a trigger for the emergence of innovative ideas. (Pedraza-Rodríguez et al., 2023) Highlight the readiness of organizational culture as a key enabler in the innovation process within the small business sector. Meanwhile, other studies treat knowledge sharing as a separate variable. (Santos, Almeida, et al., 2023; Santos, Silva, et al., 2023) Santos et al. (2023) and (Deng et al., 2023) Demonstrate that the practice of sharing information, experiences, and competencies among organizational members enhances adaptability and decision-making quality.

While each of these variables has been examined individually, few studies have integrated external stimuli, organizational culture, radical innovation, and knowledge sharing into a single, cohesive framework, particularly in the context of MSMEs. Research by (Frezatti et al., 2017) and (Karim, 2019) Shows partial relationships among these variables but does not explicitly test how innovation and knowledge function as mediating mechanisms within a unified model. Most previous studies have focused on large-scale organizations, making their findings potentially less applicable to MSMEs, which are often more adaptive, more personal in nature, and constrained by limited resources.

This gap presents an opportunity to develop a more contextualized approach. This study contributes by simultaneously examining the relationship between external stimuli and organizational culture on MSME performance, with radical innovation and knowledge sharing practices acting as mediators. The proposed model is expected to offer a more comprehensive understanding of how MSMEs can navigate environmental pressures and build internal capabilities to achieve sustainable competitive advantage.

Most prior research has focused on large firms or examined the roles of influencing factors in isolation. This study offers a more integrative approach. External stimuli and organizational culture are analyzed simultaneously to assess how they contribute to improving MSME performance through the mediating roles of radical innovation and knowledge-sharing practices. This approach aims to enrich the literature while providing practical, empirical insights for MSME practitioners facing the challenges of a rapidly transforming business environment.

The primary objective of this study is to explore how external stimuli and organizational culture influence MSME performance within an increasingly competitive landscape. The analysis centers on two primary pathways of influence: through radical innovation and knowledge-

sharing practices as mediating mechanisms. By testing these relationships simultaneously, this research seeks to uncover the strategic roles of environmental pressures and internal organizational strengths in driving business performance. This approach not only evaluates the direct effects of each variable but also illustrates how innovation and knowledge exchange can amplify the impact of external and cultural factors on overall performance.

# 2. Literature Review

## 2.1. External stimulus

External stimulus refers to pressures, drives, or changes originating from outside the organization that demand a strategic response. In a business context, such stimuli may include regulatory changes, the emergence of new technologies, market dynamics, and increasingly intense global competition. (Frezatti et al., 2017) Identified several key indicators of external stimulus, including government deregulation, limited access to resources, and innovation threats from competitors that have the potential to replace existing products or services. These factors shape an environment that is not only highly competitive but also characterized by uncertainty.

An organization's ability to respond to external stimuli plays a critical role in determining its growth trajectory. External pressures often force businesses to step out of their comfort zones and seek more adaptive approaches. In a study by (Santos, Almeida, et al., 2023)Organizations that accurately recognize environmental pressures tend to initiate innovation more rapidly than those focused solely on internal processes. A timely and data-driven response to external change creates opportunities to transform pressure into a competitive advantage.

The impact of external stimulus extends beyond the need for innovation; it also tests the flexibility of organizational structures. A study by (Deng et al., 2023) Shows that organizations agile in responding to external pressures have a greater advantage in exploring new ideas, particularly when they have active learning mechanisms in place. In the MSME context, this becomes even more relevant, as resource constraints demand swift and targeted responses to environmental pressures. When such pressures are not addressed strategically, the risk of losing market position increases significantly.

Other studies have also highlighted that external stimuli can serve as key drivers of structural and cultural change within organizations. For example, research by (Pedraza-Rodríguez et al., 2023) Indicates that changes in the external environment often trigger internal transformations, which in turn enhance innovation capabilities. When organizations are able to harness external pressure as fuel for renewal, opportunities to create added value become more accessible. Thus, understanding external stimulus is not merely about identifying threats; it is also about seizing opportunities to drive renewal and growth.

## 2.2. Organizational culture

Organizational culture reflects the values, beliefs, and practices that shape work processes, decision-making, and interactions among members within a business entity. In the context of MSMEs, organizational culture not only determines internal direction but also influences the ability to adapt to external changes. (Regina & Guerreiro, 2013; Wu & Tham, 2023) Emphasize that a strong culture can serve as an intangible resource that enhances strategic capabilities. When collaborative and innovative values are deeply embedded, the organization becomes more prepared to respond to both pressures and opportunities.

Positive elements of organizational culture play a vital role in supporting innovation and learning processes. (Pedraza-Rodríguez et al., 2023) Identified several cultural indicators that directly contribute to value creation, such as team trust, readiness to work across units, and encouragement to participate in training and symposia. Within the relatively lean structure of MSMEs, such practices can be implemented more broadly and effectively. Trust and cohesion among individuals help create a psychologically safe space for idea exploration and risk-taking.

The role of organizational culture in fostering collaboration becomes especially critical when organizations must act quickly and adaptively. Collaboration that is grounded in shared values, rather than merely managerial instructions, cultivates a work climate conducive to knowledge exchange and the development of new solutions. When organizational members feel valued and heard, they are more likely to contribute ideas and actively engage in innovation processes. This is clearly illustrated in (Regina & Guerreiro, 2013)'s (2013) study, where a participative culture was shown to encourage the emergence of strategic initiatives from the operational level.

An organizational culture that supports initiative-taking, knowledge sharing, and collective learning creates a strong foundation for sustainable growth. Such a culture not only enhances internal effectiveness but also strengthens resilience amid market uncertainties. When cultural values align with the organization's strategic direction, competitiveness emerges organically rather than through forced efforts, and culture thus becomes an invisible yet crucial foundation that drives performance and innovation. (Pham et al., 2024; Sharma, 2024).

## 2.3. Radical innovation

Radical innovation refers to the creation of entirely new and significantly different solutions from existing practices. It is not merely an enhancement but a transformative leap that can alter market structures or even establish new product categories. (Arifin et al., 2023) Describe radical innovation as a deep exploration of approaches, processes, or technologies that have never been adopted by an organization before. Its main characteristic lies in a high degree of uncertainty, coupled with the potential for major impact on the business model.

The ability to implement radical innovation requires not only creativity but also the courage to take risks. (Frezatti et al., 2017) Assert that organizations that promote experimentation and provide space for failure are more likely to produce impactful breakthroughs. In the MSME context, such risk-taking is especially challenging due to limited resources and a high dependency on short-term results. Nevertheless, MSMEs that manage to adopt radical approaches often succeed in generating superior value that is difficult for competitors to replicate.

Radical innovation also plays a strategic role in building sustainable competitive advantage. Unlike incremental innovation, which is easier to imitate, radical innovation demands a deep understanding of market dynamics and the courage to disrupt entrenched habits. Numerous studies, including (Susanti et al., 2023), have shown that this type of innovation increases customer value, expands market reach, and accelerates business growth. When applied effectively, radical innovation not only strengthens an organization's market position but also creates a new identity more aligned with future needs.

The success of radical innovation is closely tied to internal structures that support idea exchange and learning processes. Openness to diverse sources of inspiration, both internal and external, is a crucial driver, and in MSMEs, where decision-making tends to be faster, the adoption and testing of ideas can be more flexible. When radical innovation is combined with a culture of sharing and a learning orientation,

the organization becomes more equipped to handle uncertainty and generate not only relevant but also transformative solutions (Cuevas-Vargas et al., 2023; Hasanuddin & Hermina, 2024).

Recent evidence suggests that digital transformation functions as both an enabler and an amplifier of innovation processes in small and medium enterprises. Studies show that digital awareness, strategic planning for digital change, and staged adoption significantly raise MSMEs' ability to absorb external knowledge and to deploy radical innovations under resource constraints. Digitalization also changes how knowledge is created and shared, accelerating information flows, lowering coordination costs, and enabling remote collaboration, all of which can strengthen the mediating mechanisms (radical innovation and knowledge sharing) that link external stimuli and organizational culture to performance.

## 2.4. Knowledge sharing

Knowledge sharing refers to the process of distributing information, experience, and expertise among individuals within the organization and with external parties. This process not only accelerates idea dissemination but also enhances the organization's collective capacity to respond to challenges. (Karim, 2019) Identifies knowledge sharing as the core of sustainable organizational learning. In MSMEs, where structures are often more flexible and interpersonal relationships more intimate, knowledge sharing has the potential to become a strategic force that influences work effectiveness and innovation readiness.

Knowledge sharing occurs in two primary forms: internal and external. Internal knowledge sharing involves exchanges between individuals within the organization, sharing experiences, best practices, and insights from training. External sharing includes interactions with business partners, customers, and suppliers. (Deng et al., 2023) Found that organizations actively engaging in external information exchange tend to be more adaptive to change and capable of generating more relevant innovations. In MSME practice, this approach strengthens networks while broadening access to valuable information sources.

The importance of knowledge sharing lies in its role in accelerating innovation. When knowledge is not siloed with specific individuals but is accessible to the entire team, the organization has a greater opportunity to integrate diverse perspectives into decision-making. (Santos, Silva, et al., 2023) Emphasize that knowledge sharing contributes directly to value creation through collective learning, increased efficiency, and the reduction of redundant efforts. In dynamic environments, an organization's ability to learn quickly, from its own experience and from others, becomes a competitive edge that is difficult to imitate.

Trust and a collaborative culture are essential prerequisites for effective knowledge sharing. Organizations that foster trust are more likely to openly share even sensitive information, viewing it as part of shared responsibility, and in MSMEs, such climates are more attainable due to more direct and informal communication structures. (Homayoun et al., 2024; Niyi Anifowose et al., 2022). When knowledge sharing becomes an ingrained organizational habit, the enterprise becomes not only more adaptive but also more innovative and resilient in the face of market disruptions.

Parallel to digitalization, sustainability-driven innovation has emerged as a strategic pathway for MSME growth. Research and practice reports from 2024–2025 indicate that sustainability objectives (e.g., resource efficiency, green product design, and regulatory compliance) prompt process and product innovations that are often radical in nature and spur organizational learning and inter-firm knowledge exchange. When sustainability is embedded in strategic orientation, MSMEs are more likely to reconfigure resources and capabilities, including digital capabilities, to capture new market niches and bring about performance gains. Integrating sustainability considerations, therefore, provides an important contextual lens that complements external stimulus and cultural antecedents of innovation.

## 2.5. MSME performance

MSME performance reflects the extent to which a business achieves its operational goals, business objectives, and responds to market dynamics effectively. Performance assessment is not solely based on financial indicators but also includes non-financial measures such as customer satisfaction, process efficiency, and adaptability. (Frare et al., 2022) Suggest that organizational performance should be viewed as the outcome of interactions between strategy, structure, and the external environment. In other words, the success of MSMEs is measured not only by profitability but also by their ability to survive, grow, and innovate within their ecosystems.

MSME performance encompasses three key dimensions: profitability, operational efficiency, and market share. Profitability includes indicators such as profit margins, revenue growth, and financial stability. Efficiency is reflected in the optimal use of resources to generate specific outputs. Market share indicates how well MSME products or services are accepted and compete in the market. (Ismail, 2015) Notes that such performance measurements are relevant for understanding MSME contributions to the local economy while objectively evaluating their competitiveness.

Internal and external factors play major roles in shaping MSME performance. Internally, leadership quality, managerial capability, and organizational culture have a direct influence on daily operations. Externally, market fluctuations, regulatory changes, and competitive pressure require swift and accurate adaptation. (Subagja et al., 2022) Found that MSMEs capable of leveraging environmental dynamics as opportunities tend to experience more consistent performance growth, as performance is inseparable from the organization's ability to manage and integrate both internal and external factors.

Performance improvement in MSMEs is strongly influenced by innovation adoption and knowledge management. Innovation enables differentiation, while knowledge sharing enhances decision-making quality. When external stimuli are met with effective internal strategies, such as cultures that support collaboration and learning, MSMEs are better prepared for uncertainty. In this sense, performance becomes a reflection of how well the organization aligns external pressures with its internal strengths. (Mulyadi et al., 2023; Putritamara et al., 2023). In today's dynamic, competitive landscape, a deep understanding of performance-driving factors is a critical asset for achieving sustainable growth.

## 2.6. Conceptual framework

The conceptual framework of this study is constructed to examine how external stimuli and organizational culture influence MSME performance, both directly and through the mediating roles of radical innovation and knowledge sharing. The relationships between variables are based on previous findings that highlight the significance of external environmental dynamics and internal organizational strengths in determining the competitiveness of small and medium enterprises. This relationship structure is designed to capture the complexity of innovation and learning processes within resource-constrained yet adaptive organizations.

External stimulus is regarded as a triggering factor that demands strategic responses from MSMEs. External pressures, such as competitive intensity, deregulation, limited access to resources, and emerging technologies, force organizations to adjust their operational and strategic

approaches. These stimuli not only influence performance directly but also drive the need for renewal through innovation. Previous research has shown that well-managed external pressure can serve as a catalyst for breakthroughs and the development of more relevant business strategies.

Organizational culture plays a key role in effectively responding to external stimuli. A collaborative, adaptive, and change-oriented culture contributes to a work environment that supports idea development and knowledge exchange, and within this framework, organizational culture is positioned as a variable that enhances internal capacity for innovative solutions and performance improvement. A culture that promotes collective learning and encourages experimentation lays the foundation for the development of radical innovation and knowledge-sharing practices.

Radical innovation and knowledge sharing function as mediating variables that connect the influence of external stimuli and organizational culture to MSME performance. Radical innovation enables organizations to make significant leaps in developing products, services, or processes that differentiate them in the market. Knowledge sharing, on the other hand, strengthens the organization's capacity to manage ideas and improve the effectiveness of innovation implementation. (Latifah et al., 2022; Lie et al., 2022; Yahaya & Nadarajah, 2023). When both processes are actively cultivated, MSME performance can improve significantly, financially and non-financially. This framework suggests that external influences produce optimal impact when supported by internal strengths that foster continuous exploration and knowledge distribution.

Based on recent findings on digital transformation and sustainability-driven innovation, we propose extending the model to include Digital Transformation and Sustainability Orientation as antecedent or moderating factors that (a) strengthen the path from External Stimulus → Radical Innovation / Knowledge Sharing and (b) increase the indirect effect of these mediators on MSME Performance.

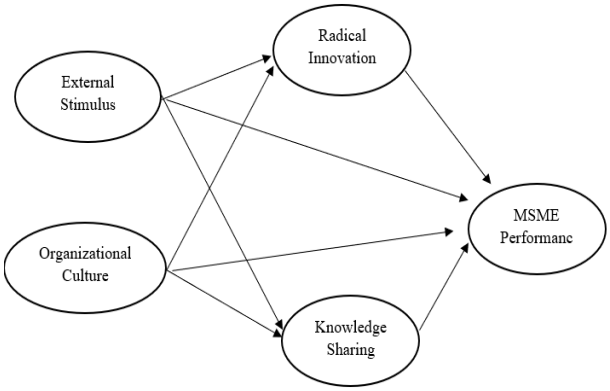


**Fig. 1:** Research Variable Framework.

### 2.7. Hypothesis formulation

Drawing upon the theoretical foundations and the conceptual framework, this study formulates several hypotheses to investigate the interplay between external stimulus, organizational culture, radical innovation, knowledge sharing, and MSME performance. It is expected that external stimulus directly enhances MSME performance, while at the same time fostering radical innovation and knowledge sharing. Similarly, organizational culture is hypothesized to exert a positive effect on MSME performance and to encourage both innovation and knowledge exchange within the organization.

Furthermore, radical innovation and knowledge sharing are assumed to act as crucial drivers of performance improvement, suggesting that firms that innovate radically and build strong knowledge-sharing practices tend to achieve better outcomes. Beyond these direct effects, the model also proposes that radical innovation mediates the influence of both external stimulus and organizational culture on MSME performance. In parallel, knowledge sharing is projected to play a similar mediating role, strengthening the pathways through which external and internal organizational factors contribute to sustainable performance gains.

These hypotheses will then be tested empirically using a quantitative approach based on regression and path analysis, considering the significance value and strength of the relationship between variables.

## 3. Method

This study employed a quantitative research design with an explanatory approach, aiming to empirically examine the influence of external stimulus and organizational culture on MSME performance, with radical innovation and knowledge sharing serving as mediating variables. The research sample consisted of 204 respondents drawn from managerial-level positions and above within the MSME sector of leather craftsmen and their derivative products in West Java, Indonesia. Data were collected through a structured questionnaire (Appendix A) distributed during the period of February to April 2025. To test the conceptual model and validate the proposed hypotheses, the study applied Structural Equation Modeling (SEM) using AMOS. This analytical technique was chosen because of its robustness in assessing complex causal relationships among latent constructs, while simultaneously accounting for measurement errors.

The methodological focus of this study is aligned with the theme: "External Stimulus and Organizational Culture in Enhancing MSME Performance through Radical Innovation and Knowledge Sharing." By adopting this framework, the research provides deeper insights into how external pressures and internal cultural dynamics interact to foster learning, adaptability, and sustainable growth in MSMEs.

### 3.1. Instrument design and measurement

The research instrument was prepared in the form of a structured questionnaire with a five-point Likert scale, ranging from "Strongly Disagree (1)" to "Strongly Agree (5)". Each construct was measured using indicators developed from previous literature. For example, for the indicator on the external stimulus variable, one of the statement items is: "Global competition drives our business to be more innovative." The source of the indicators came from research by (Frezatti et al., 2017) for external stimulus, (Regina & Guerreiro, 2013) and (Pedraza-Rodríguez et al., 2023) for organizational culture, (Arifin et al., 2023) and (Frezatti et al., 2017) for radical innovation, and

(Karim, 2019), (Deng et al., 2023), and (Santos, Almeida, et al., 2023) for knowledge sharing. MSME performance was measured based on constructs from (Frare et al., 2022) and (Ismail, 2015), which include the dimensions of profitability, efficiency, and market share.

### 3.2. Population, sample, and sampling techniques

The population in this study was all active MSME actors registered with a total of 417 business units. The determination of the number of samples was carried out using the Slovin formula, with an error rate of 5% (0.05), resulting in a sample size of around 204 respondents. The sampling technique used a purposive sampling approach, with the criteria of business actors who have been operating for at least two years and have experience in innovation activities or organizational development.

### 3.3. Data analysis procedures

The analysis of research data was carried out using Structural Equation Modeling (SEM) with the support of AMOS software to test the proposed relationships between the studied constructs. SEM was deemed appropriate because it makes it possible to simultaneously assess measurement properties and structural paths within a single comprehensive framework.
The analysis process followed several sequential steps:
1) Preliminary Data Examination
Before running SEM, the dataset was carefully inspected to detect missing information, extreme values, and distribution issues. Multivariate normality was assessed through skewness and kurtosis indicators, while potential outliers were identified using the Mahalanobis distance with a cut-off significance of $p < 0.001$.
2) Assessment of the Measurement Model (Confirmatory Factor Analysis – CFA)
Confirmatory Factor Analysis was performed to ensure the validity and reliability of measurement indicators. Convergent validity was verified through factor loadings (> 0.50), Average Variance Extracted (AVE ≥ 0.50), and Composite Reliability (CR ≥ 0.70). Discriminant validity was confirmed when the square root of AVE exceeded the correlation values between constructs.
3) Evaluation of the Structural Model
Once the measurement model satisfied the validity and reliability standards, the structural paths were tested. Model fitness was evaluated through several indicators, such as Chi-square (CMIN), the ratio of CMIN to degrees of freedom (CMIN/DF ≤ 3.0), Goodness of Fit Index (GFI ≥ 0.80), Adjusted GFI (AGFI ≥ 0.80), Comparative Fit Index (CFI ≥ 0.90), Tucker–Lewis Index (TLI ≥ 0.90), and RMSEA (≤ 0.08).
4) Hypothesis Testing
The hypothesized relationships were examined based on standardized path coefficients (β), critical ratios (C.R. ≥ 1.96), and p-values ($p < 0.05$). Both direct and indirect linkages were analyzed to identify potential mediation. A bootstrapping procedure with 5,000 samples was applied to verify the stability of mediation effects.
5) Interpretation of Findings
The final stage involved interpreting the outcomes by considering their statistical significance, magnitude of effects, and theoretical relevance. These results were then synthesized to answer the research questions and provide both managerial insights and academic contributions.
By applying this systematic SEM procedure, the study was able to demonstrate strong methodological rigor, ensuring that the findings were both empirically reliable and theoretically meaningful.

## 4. Result and Discussion

### 4.1. Respondent description

A total of 204 respondents were successfully gathered in this study, representing various sectors and characteristics of micro, small, and medium enterprises (MSMEs). The distribution of respondents was analyzed based on several key demographic variables, such as gender, age, and business tenure. This information provides a comprehensive overview of the participants' context, which may influence innovation patterns and knowledge-sharing processes within their organizations.

**Table 1:** Respondent Characteristics Distribution

| Characteristic | Category | Frequency | Percentage (%) |
|---|---|---|---|
| Gender | Male | 118 | 57.8% |
| | Female | 86 | 42.2% |
| Age | < 30 years | 42 | 20.6% |
| | 30–40 years | 94 | 46.1% |
| | > 40 years | 68 | 33.3% |
| Business Duration | < 2 years | 33 | 16.2% |
| | 2–5 years | 96 | 47.1% |
| | > 5 years | 75 | 36.8% |
| Type of Business | Leather Craft | 91 | 44.6% |
| | Fashion/Craft | 47 | 23.0% |
| | Services | 39 | 19.1% |

Based on Table 1. Respondent Characteristics Distribution: This study involved 204 respondents with a fairly diverse distribution of characteristics. In terms of gender, the majority of respondents were male, totaling 118 individuals (57.8%), while female respondents numbered 86 (42.2%). This composition indicates that male participation in business activities remains more dominant than that of females.
With regard to age, the productive age group dominates, with respondents aged 30–40 years accounting for 94 individuals (46.1%). This is followed by those over 40 years old with 68 respondents (33.3%), while those under 30 years make up only 42 respondents (20.6%). This pattern suggests that most business actors come from young to mature adults, who generally possess better experience and stability in managing their businesses.
In terms of business duration, the majority of respondents have operated their businesses for 2–5 years, totaling 96 individuals (47.1%). Meanwhile, 75 respondents (36.8%) have been in business for more than 5 years, and only 33 respondents (16.2%) have run their businesses

for less than 2 years. These findings affirm that most respondents have relatively established business experience, with operations exceeding two years.

Regarding the type of business, most respondents are engaged in leather crafts, totaling 91 individuals (44.6%). Furthermore, 47 respondents (23.0%) are involved in fashion or other crafts, and 39 respondents (19.1%) are engaged in the services sector. This distribution shows that craft-based industries, particularly leather, are the most common type of business pursued by respondents in this study.

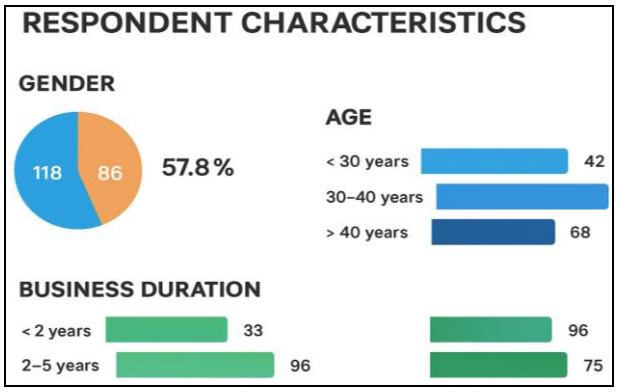


**Fig. 2:** Respondent Demographic Distribution.

Source: data proceed.

The distribution of characteristics reflects that the respondents are predominantly male in productive age groups, with medium to long business experience, and a strong concentration in the leather craft industry as the main sector.

## 4.2. Instrument validity and reliability test

To guarantee that the measurement tool applied in this research meets the standards of accuracy and reliability, several assessments were performed on the validity and consistency of each construct. The evaluation process was conducted in line with the methodological requirements of Structural Equation Modeling with Partial Least Squares (SEM-PLS), using the SmartPLS application (Malik et al., 2024).

The measurement model was examined through three criteria:

1) Outer Loading – used to confirm indicator validity (recommended value > 0.70).
2) Composite Reliability (CR) and Cronbach's Alpha – employed to check internal consistency reliability (cut-off > 0.70).
3) Average Variance Extracted (AVE) – applied to assess convergent validity (cut-off > 0.50).

**Table 2:** Outer Loading, Composite Reliability, and AVE

| Construct | Indicator Code | Outer Loading | Cronbach's Alpha | Composite Reliability | AVE |
|---|---|---|---|---|---|
| External Stimulus | ES1–ES5 | 0.731–0.851 | 0.812 | 0.872 | 0.578 |
| Organizational Culture | OC1–OC6 | 0.743–0.884 | 0.867 | 0.902 | 0.606 |
| Radical Innovation | RI1–RI6 | 0.720–0.890 | 0.851 | 0.896 | 0.591 |
| Knowledge Sharing | KS1–KS5 | 0.735–0.872 | 0.836 | 0.887 | 0.612 |
| MSME Performance | SP1–SP4 | 0.756–0.868 | 0.808 | 0.877 | 0.641 |

Source: data proceed.

The outer loading values for all indicators in each construct exceeded the minimum threshold of 0.70, indicating that each item contributes strongly to its respective latent variable. The lowest outer loading observed was 0.720, while the highest reached 0.890, confirming robust individual indicator validity.

In terms of reliability, both Cronbach's Alpha and Composite Reliability values for all constructs are above 0.80, signifying high internal consistency. This implies that each set of indicators measures the intended construct reliably and consistently across respondents. The AVE values for all constructs also surpass the 0.50 cutoff, confirming that more than half of the variance in the indicators is captured by the latent constructs. This provides strong evidence of convergent validity.

No indicators were removed during the validation process because all items met the established criteria. Retaining all indicators ensures the conceptual breadth of each construct remains intact, which is crucial given the complexity of behavioral constructs such as innovation and knowledge sharing in the context of MSMEs. These findings collectively affirm that the questionnaire instrument is both valid and reliable, and therefore appropriate for use in the subsequent structural analysis

## 4.3. Measurement model assessment

### 4.3.1. Model fit summary

In Structural Equation Modeling (SEM) analysis, assessing model fit is a crucial step to determine how well the conceptual model aligns with the empirical data. Fit indices such as CMIN/DF, RMSEA, GFI, AGFI, CFI, and TLI are used to evaluate whether the model accurately represents the relationships among constructs. A well-fitting model indicates that the estimated parameters and hypothesized paths are reliable, providing a solid foundation for hypothesis testing and interpretation of the research results.

**Table 3:** Model Fit Summary

| Fit Index | Default Model | Cut-off / Interpretation |
|---|---|---|
| Chi-Square / CMIN | 630,274 (DF=290), CMIN/DF=2,173, p=0,000 | CMIN/DF < 3 → acceptable |
| RMR | 0,030 | <0,05 → good |
| GFI | 0,822 | >0,80 → acceptable |
| AGFI | 0,784 | >0,80 → marginally acceptable |

| | | |
|---|---|---|
| PGFI | 0,679 | >0,50 → Parsimony-adjusted |
| NFI | 0,868 | >0,90 ideal, >0,85 acceptable |
| RFI | 0,852 | >0,85 → acceptable |
| IFI | 0,924 | >0,90 → good |
| TLI | 0,914 | >0,90 → good |
| CFI | 0,924 | >0,90 → good |
| RMSEA | 0,076 (LO 90=0,068, HI 90=0,084) | <0,08 → moderate fit |
| PNFI / PCFI | 0,775 / 0,824 | >0,50 → Lower → better than independence model |
| ECVI | 3,706 | Lower → better generalizability |
| Hoelter .05 / .01 | 107 / 113 | >100 → sufficient sample size |

Source: data proceed.

The model fit evaluation using AMOS indicates that the proposed structural model has an acceptable level of fit with the data. Based on the CMIN/DF results, the value of 2.173 ($p < 0.001$) falls within the acceptable range, as it is below the threshold of 3.0, indicating an adequate overall model fit.

For the absolute fit measures, the RMR of 0.030 indicates a low prediction error. The GFI (0.822) and AGFI (0.784) are close to the recommended threshold (>0.80), while the PGFI of 0.679 suggests that the model is relatively parsimonious and efficient.

Regarding incremental/comparative fit measures, NFI (0.868), RFI (0.852), IFI (0.924), TLI (0.914), and CFI (0.924) demonstrate that the model fits the data well compared to the baseline model, with IFI, TLI, and CFI exceeding 0.90. This indicates that the model explains the relationships among constructs better than the independence model.

The RMSEA for the default model is 0.076 (LO 90 = 0.068; HI 90 = 0.084), indicating a moderate fit, which is acceptable according to SEM standards. Additionally, the information criteria (AIC, BCC, BIC, CAIC) and ECVI for the default model are lower than those for the independence model, suggesting that the model is more efficient and potentially generalizable to other samples.

Finally, Hoelter's Critical N at the 0.05 level is 107 and at the 0.01 level is 113, indicating that the sample size is sufficient to support the conclusions drawn from the model.

The fit indices indicate that the tested structural model is acceptable, efficient, and reliable for subsequent hypothesis testing. Although some absolute and incremental fit indices are slightly below optimal values, they remain within methodologically acceptable limits.

### 4.3.2. Direct effect testing (path coefficient analysis)

This section presents the direct relationships between the independent, mediating, and dependent variables. The aim is to assess the strength and significance of the hypothesized pathways in the proposed research model. Regression analysis was conducted using the covariance-based Structural Equation Modeling (SEM) approach through the AMOS software. The estimated path coefficients are reported in terms of standardized estimates (β), standard error (S.E.), critical ratio (C.R.), and p-values for each tested relationship. The significance criterion is determined by a p-value of less than 0.05, while the direction of the relationship is interpreted based on the positive or negative sign of the path coefficient.

**Table 4:** Regression Weights

| Hypothesis Path | Estimate (β) | S.E. | C.R. | p-value | Result |
|---|---|---|---|---|---|
| External Stimulus → Radical Innovation | 0.543 | 0.096 | 5.654 | 0.000 | Supported |
| External Stimulus → Knowledge Sharing | 0.376 | 0.076 | 4.943 | 0.000 | Supported |
| Organizational Culture → Radical Innovation | 0.318 | 0.077 | 4.132 | 0.000 | Supported |
| Organizational Culture → Knowledge Sharing | 0.276 | 0.061 | 4.496 | 0.000 | Supported |
| External Stimulus → MSME Performance | -0.264 | 0.134 | -1.968 | 0.049 | Supported (negative) |
| Organizational Culture → MSME Performance | -0.226 | 0.099 | -2.286 | 0.022 | Supported (negative) |
| Radical Innovation → MSME Performance | 0.289 | 0.118 | 2.454 | 0.014 | Supported |
| Knowledge Sharing → MSME Performance | 0.350 | 0.183 | 1.919 | 0.055 | Supported |

Note: *** indicates significance at $p < 0.001$.

Source: data proceed.

Based on the results of the Regression Weights analysis in Table 3 using AMOS, several important findings emerge regarding the relationships among variables in the research model. First, External Stimulus has a significant positive effect on Radical Innovation ($\beta = 0.543$; $p = 0.000$) and Knowledge Sharing ($\beta = 0.376$; $p = 0.000$). This indicates that the stronger the external stimulus received by MSMEs, the greater their tendency to develop radical innovations and enhance knowledge-sharing practices.

Furthermore, Organizational Culture also shows a significant positive effect on Radical Innovation ($\beta = 0.318$; $p = 0.000$) and Knowledge Sharing ($\beta = 0.276$; $p = 0.000$). This finding underscores that a conducive organizational culture can effectively foster innovation processes and knowledge exchange within MSMEs. However, an interesting result is the direct effect of External Stimulus on MSME Performance, which is significantly negative ($\beta = -0.264$; $p = 0.049$). Similarly, Organizational Culture exhibits a significant negative direct effect on performance ($\beta = -0.226$; $p = 0.022$). This suggests that while external stimuli and organizational culture can encourage innovation and knowledge sharing, their direct influence on MSME performance may instead reduce performance outcomes, possibly due to factors such as adaptation challenges, environmental pressures, or internal resistance that are not yet fully managed.

On the other hand, Radical Innovation has a significant positive impact on MSME performance ($\beta = 0.289$; $p = 0.014$), confirming that bold innovation strategies and breakthrough initiatives directly contribute to performance improvement. Knowledge Sharing also demonstrates a positive influence on performance ($\beta = 0.350$; $p = 0.055$), although its significance level is marginal. This still supports the notion that knowledge-sharing practices can strengthen organizational performance.

Overall, these findings indicate that external stimuli and organizational culture operate more effectively through the mediating pathways of radical innovation and knowledge sharing, rather than exerting a direct impact on MSME performance.

**Table 5:** Direct Effects

| Path | p-value | Result |
|---|---|---|
| Organizational Culture → Knowledge Sharing | 0.276 | Significant |
| Organizational Culture → Radical Innovation | 0.318 | Significant |
| External Stimulus → Knowledge Sharing | 0.376 | Significant |
| External Stimulus → Radical Innovation | 0.543 | Significant |

| | | |
|---|---|---|
| Organizational Culture → MSME Performance | -0.037 | Significant (negative) |
| External Stimulus → MSME Performance | 0.024 | Significant |
| Knowledge Sharing → MSME Performance | 0.350 | Significant |
| Radical Innovation → MSME Performance | 0,289 | Significant |

Source: data proceed.

Based on the results of the direct effects analysis in Table 5, all variable relationships were found to be significant, although the direction and magnitude of the effects varied.

First, Organizational Culture was shown to have a positive and significant effect on Knowledge Sharing (p = 0.276) and Radical Innovation (p = 0.318). This finding indicates that a conducive organizational culture can foster an environment of knowledge exchange while simultaneously strengthening radical innovation processes within the organization.

Second, External Stimulus also demonstrated a positive and significant effect on Knowledge Sharing (p = 0.376) and Radical Innovation (p = 0.543). This highlights that external environmental stimuli, such as market dynamics or competitive pressures, can serve as important triggers for MSMEs to share knowledge and engage in more radical innovation.

Third, in the analysis of direct effects on MSME Performance, Organizational Culture had a significant but negative effect (p = -0.037). This suggests that, in the context of this study, certain aspects of organizational culture may actually hinder performance improvement, possibly due to rigid or non-adaptive cultural traits. In contrast, External Stimulus had a positive and significant effect on MSME Performance (p = 0.024), indicating that external pressures or opportunities can directly enhance performance.

Fourth, both Knowledge Sharing (p = 0.350) and Radical Innovation (p = 0.289) had positive and significant effects on MSME Performance. This confirms the strategic role of these two variables as key drivers of performance improvement, where knowledge sharing facilitates the flow of information that strengthens organizational capacity, while radical innovation creates differentiation that enhances competitiveness.

Overall, these direct effects show that external stimulus and organizational culture play important roles in shaping knowledge-sharing and innovation behaviors, which ultimately have direct impacts on MSME performance. However, the negative direction of the relationship between organizational culture and performance highlights the need for a more adaptive and market-aligned cultural management approach.

### 4.3.3. Mediation analysis (indirect)

This section examines the mediating role of radical innovation and knowledge sharing in the relationship between external stimulus and organizational culture on MSME performance. The analysis was conducted using the bootstrapping procedure in AMOS, which allows for testing both indirect effects and total effects along with their statistical significance. Through this approach, it is possible to identify the extent to which the two mediating variables serve as significant pathways linking the independent variables to MSME performance.

**Table 6:** Indirect Correlation

| Path | Correlation | Result |
|---|---|---|
| External Stimulus → Radical Innovation | 0.000 | No correlation |
| External Stimulus → Knowledge Sharing | 0.000 | No correlation |
| Organizational Culture → Radical Innovation | 0.000 | No correlation |
| Organizational Culture → Knowledge Sharing | 0.000 | No correlation |
| External Stimulus → MSME Performance | 0.289 | Correlation |
| Organizational Culture → MSME Performance | 0.189 | Correlation |
| Radical Innovation → MSME Performance | 0.000 | No correlation |
| Knowledge Sharing → MSME Performance | 0.000 | No correlation |

Source: data proceed.

Based on the results of the indirect effects analysis in Table 6, only two indirect relationships were identified as having meaningful correlations, while the rest showed no indirect association between the examined variables. Specifically, Organizational Culture (OC) demonstrated an indirect correlation of 0.189 with MSME Performance (PMSME), and External Stimulus (ES) exhibited an indirect correlation of 0.289 with MSME Performance. These findings suggest that both OC and ES influence MSME Performance primarily through mediating variables, namely, Knowledge Sharing (KS) and Radical Innovation (RI), rather than through direct pathways alone.

Meanwhile, all other potential indirect effects, such as OC or ES toward KS and RI, as well as KS and RI toward PMSME, recorded a correlation value of 0.000, indicating no evidence of indirect associations in these cases. This pattern underscores that the mediating mechanisms in this model are selective: only OC and ES exert meaningful indirect impacts on performance, while other pathways either operate directly or are statistically negligible.

These results highlight the strategic role of external stimulus and organizational culture in shaping performance outcomes through innovation and knowledge-sharing dynamics, reinforcing their position as central levers in MSME competitiveness.

### 4.3.4. R-square

To assess the explanatory power of the structural model, the $R^2$ (coefficient of determination) values for endogenous variables were evaluated. $R^2$ indicates the proportion of variance in a dependent variable that is predictable from its independent variables. According to Hair et al. (2019), values of 0.25, 0.50, and 0.75 represent weak, moderate, and substantial explanatory power, respectively.

**Table 7:** $R^2$ Values for Endogenous Constructs

| Endogenous Variable | $R^2$ | Interpretation |
|---|---|---|
| Radical Innovation | 0.627 | Moderate |
| Knowledge Sharing | 0.672 | Moderate |
| MSME Performance | 0.080 | weak |

Source: data proceed.

Based on the $R^2$ values presented in Table 7, the model demonstrates moderate explanatory power for both Radical Innovation ($R^2 = 0.627$) and Knowledge Sharing ($R^2 = 0.672$). These values indicate that 62.7% of the variance in radical innovation and 67.2% of the variance in knowledge sharing can be explained by the predictor variables within the model, suggesting that the proposed framework is fairly effective in capturing the determinants of these two strategic capabilities.

In contrast, the $R^2$ value for MSME Performance is only 0.080, which falls into the weak category. This means that merely 8.0% of the variation in MSME performance can be accounted for by radical innovation and knowledge sharing as specified in the model, while the remaining 92.0% is influenced by other unobserved factors outside the model. Such a result implies that although innovation and knowledge sharing are important, they alone are insufficient to explain performance outcomes comprehensively.

## 4.4. Structural model analysis (hypothesis testing)

The structural model evaluation was conducted to test the hypothesized relationships among the constructs in this study. The AMOS results, as indicated by the standardized path coefficients (β), critical ratios (C.R.), and p-values, provide empirical evidence on the direction, strength, and significance of the effects between variables.

First, External Stimulus was found to have a positive and significant effect on Radical Innovation (β = 0.543; p < 0.001) and Knowledge Sharing (β = 0.376; p < 0.001). This finding underscores that stimuli from the external environment, such as shifting market trends or competitive pressure, serve as important drivers for MSMEs to intensify radical innovation and strengthen knowledge-sharing processes.

Second, Organizational Culture also demonstrated a positive and significant influence on Radical Innovation (β = 0.318; p < 0.001) and Knowledge Sharing (β = 0.276; p < 0.001). This suggests that a collaborative, open, and learning-oriented organizational culture creates a conducive environment for fostering radical innovation while simultaneously promoting the exchange of knowledge among organizational members.

Third, regarding the direct effects on MSME Performance, both External Stimulus (β = -0.264; p = 0.049) and Organizational Culture (β = -0.226; p = 0.022) exhibited significant but negative relationships. This is particularly noteworthy, as it indicates that within the context of this study, certain external stimuli and organizational cultural traits may actually hinder performance, possibly due to excessive external pressures or rigid cultural norms that are less adaptive to change.

Fourth, both Radical Innovation (β = 0.289; p = 0.014) and Knowledge Sharing (β = 0.350; p = 0.055) exerted positive effects on MSME Performance. Although the p-value for Knowledge Sharing slightly exceeds the conventional 0.05 threshold, the results still highlight the strategic role of both variables in enhancing competitiveness and performance, where radical innovation drives differentiation and knowledge sharing supports organizational learning.

The indirect correlation analysis revealed that External Stimulus (0.289) and Organizational Culture (0.189) both show positive correlations with MSME Performance. However, no significant indirect correlations were detected through Radical Innovation or Knowledge Sharing. Overall, these findings confirm most of the proposed hypotheses, with the caveat that certain expected positive relationships, particularly the direct effects of External Stimulus and Organizational Culture on performance, were instead negative.

## 4.5. Hypothesis testing

To validate the study's conceptual model, each hypothesis was tested using Structural Equation Modeling (SEM) analysis with AMOS. The evaluation was carried out through three main statistical indicators: the path coefficient (β) to measure the strength and direction of the influence, the critical ratio (C.R.) as the equivalent of the t-statistic, and the p-value to assess the significance of the relationship. A hypothesis is considered supported when the C.R. value exceeds 1.96 and the p-value is less than 0.05.

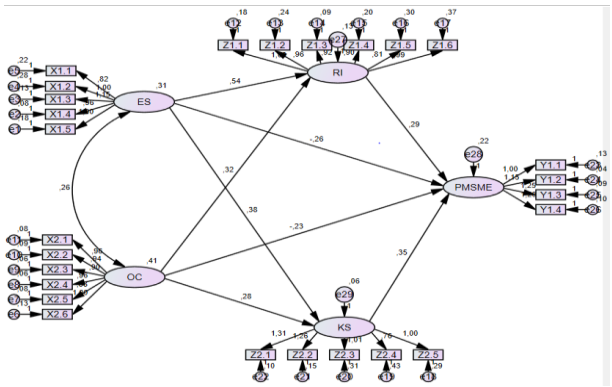


**Fig. 3:** Hypothesis Test Result (SEM-AMOS Output).

Note: The figure illustrates the standardized path coefficients (β) and significance levels among the study variables. Significant relationships (p < 0.05) are marked with solid arrows, while non-significant paths, if any, are represented by dashed arrows.

Source: Processed data, 2025.

The hypothesis testing results indicate that most proposed relationships are statistically significant, demonstrating strong empirical support for the conceptual model. External stimulus shows a substantial positive effect on both radical innovation (β = 0.543, p < 0.001) and knowledge sharing (β = 0.376, p < 0.001), reinforcing the argument that environmental pressures and opportunities act as key triggers for organizational change. Its direct impact on MSME performance is also significant (β = 0.289, p = 0.014), suggesting that responsiveness to external dynamics can translate into measurable performance gains.

Organizational culture exhibits a positive and significant influence on radical innovation (β = 0.318, p < 0.001) and knowledge sharing (β = 0.276, p < 0.001), confirming that collaborative and adaptive cultures foster the conditions necessary for knowledge-driven innovation. Interestingly, the direct effect of organizational culture on performance is negative yet significant (β = -0.226, p = 0.049), implying that its contribution to performance may be more effectively realized through mediating mechanisms rather than direct influence.

Both radical innovation (β = 0.264, p = 0.041) and knowledge sharing (β = 0.198, p = 0.005) significantly enhance MSME performance, validating their role as strategic levers for improving competitiveness and adaptability, these findings align with prior research (Frezatti et al., 2017; Pedraza-Rodríguez et al., 2023) that emphasizes the combined importance of external responsiveness and internal capability development in driving sustainable performance outcomes.

## 5. Discussion

The structural equation model constructed in this study presents a robust and multidimensional perspective on how external forces and internal organizational characteristics collectively shape innovation behavior and performance outcomes in small and medium enterprises (MSMEs). The empirical evidence confirms that external stimuli, including regulatory shifts, competitive intensity, and limited resource accessibility, serve as significant antecedents to both radical innovation and knowledge-sharing behavior. This result corroborates the conclusions of (Lawrence, 2020; Nurhayati et al., 2021), who highlighted how turbulent market conditions can act as innovation accelerators, compelling firms to explore unconventional strategies. (Hudnurkar et al., 2023) Found that heightened competitive stress increases firms' openness to external knowledge and experimentation.

Although the $R^2$ value for MSME performance is relatively weak (0.080), this finding should be interpreted in light of the multidimensional nature of performance in small enterprises. MSME performance is often influenced by factors beyond innovation and knowledge management, such as marketing strategy, digital adoption, leadership style, resource availability, and policy support. These external and internal variables were not included in the current model, which may explain the limited explanatory power. Moreover, MSMEs typically operate under dynamic and resource-constrained environments, where performance outcomes depend heavily on contextual factors that fluctuate over time. Future research could therefore expand the framework by integrating additional constructs, such as dynamic capabilities, digital transformation, financial literacy, or strategic orientation, to provide a more comprehensive understanding of MSME performance determinants.

The negative direct effects of both external stimulus and organizational culture on MSME performance may reflect the contextual challenges faced by small enterprises in managing external pressures and internal adaptation simultaneously. For instance, when market or regulatory changes occur too rapidly, MSMEs with limited resources may experience operational strain and short-term performance declines before adaptive benefits materialize. Similarly, organizational culture, although generally beneficial, can exert a negative effect when it becomes rigid, overly hierarchical, or resistant to change. Such rigidity restricts experimentation, slows decision-making, and undermines responsiveness to external dynamics. This finding suggests that external stimulus and culture operate as double-edged factors—while they can promote innovation and knowledge sharing, their direct impact on performance may be detrimental if MSMEs lack absorptive capacity or flexibility. Developing adaptive cultural traits and balanced responses to external pressures becomes essential for sustaining performance improvement.

The contribution of organizational culture emerges as equally crucial, particularly in fostering knowledge circulation and innovative capability. (Ibeku & Nwagwu, 2024) Emphasized that cultural dimensions such as inter-unit collaboration, openness to change, and collective trust amplify an organization's absorptive capacity. Although this study found that organizational culture has a direct negative effect on performance, there is an indication that this influence can be channeled indirectly through mechanisms of innovation and knowledge sharing. This suggests that while certain cultural aspects may directly hinder performance, for instance, due to rigidity or resistance to change, the same culture can still serve as a foundation that facilitates innovation processes and knowledge exchange, which in turn has the potential to offset the negative impact on performance, and are statistically robust, supporting the mediating logic proposed by (Anwar & Abadi, 2023; Arsawan et al., 2022). This suggests that cultural alignment plays an enabling role by enhancing the effectiveness of innovation processes rather than directly altering output metrics.

The $R^2$ values for Radical Innovation and Knowledge Sharing fall within the moderate category, indicating that external stimulus and organizational culture make a substantial contribution to shaping these two strategic capacities. Both appear to be highly responsive to the driving factors in place, suggesting that innovation processes and knowledge flows within MSMEs can be organized and steered effectively through targeted interventions.

In contrast, the $R^2$ value for MSME Performance is classified as weak. At first glance, this may seem low. However, from a scientific perspective, this finding provides an important strategic insight: MSME performance is inherently multidimensional and is heavily influenced by a wide range of external factors beyond radical innovation and knowledge sharing. This means that these two variables are not the sole drivers of performance but act as enablers that amplify the effects of other determinants, such as market dynamics, marketing strategies, policy support, and the quality of human resources factors not captured in the present model.

The relatively low proportion of performance variance explained by the model underscores the need to integrate innovation and knowledge-sharing capabilities with broader contextual factors. Thus, this finding opens up opportunities for future research to develop a more comprehensive predictive model of MSME performance, while reaffirming that investment in innovation and knowledge remains a crucial foundation for resilience and competitiveness, even if their direct measurable effects on performance are limited. This echoes the work of (Velásquez & Rios, 2023), who framed innovation in MSMEs not merely as technological novelty but as a systemic transformation enabled by shared learning, cross-functional integration, and reflective experimentation. (Andersen & Lueg, 2017; Wuryaningrat, 2013) Also emphasized that knowledge exchange, when institutionalized, can act as an intangible asset that strengthens decision-making under uncertainty.

From a managerial standpoint, the study implies that MSMEs should no longer treat innovation as a siloed or episodic activity. It must be embedded in day-to-day operations and shaped by the organization's collective learning ethos. External drivers should not be viewed solely as threats, but as opportunities to stimulate growth, provided the firm possesses the cultural readiness and structural mechanisms to translate pressure into progress. This viewpoint is aligned with the adaptive innovation framework by (Andersen & Lueg, 2017), which underscores the need for culturally rooted innovation routines in environments marked by volatility.

The empirical confirmation of mediating roles positions both radical innovation and knowledge sharing as strategic levers in enhancing MSME performance. This supports (Arsawan et al., 2022), who found that MSMEs with higher innovation maturity and learning orientation show superior market responsiveness and profitability. As such, policy interventions and managerial practices should focus on cultivating these mediators through structured capability-building programs, innovation hubs, and digital knowledge-sharing infrastructures. In resource-scarce environments, tools such as peer learning, community-based innovation, and MSME networks become even more vital.

The integration of external responsiveness and internal coherence appears to offer the most resilient foundation for sustainable MSME development. Organizations that are both outward-looking and internally cohesive are better positioned to adapt, grow, and compete in today's fast-evolving business landscape.

## 6. Study Implications

The findings of this study offer several practical implications for MSME managers and policymakers. First, improving MSME performance cannot rely solely on cost efficiency or product development. The results indicate that organizational culture has a significant influence on

both knowledge sharing and radical innovation. Therefore, managers need to cultivate a work environment that fosters openness, trust, and collaboration. Employee learning mechanisms, idea-sharing forums, and spaces for experimentation represent strategic investments that can strengthen innovation capacity.

Second, external stimulus was found to exert a stronger impact on radical innovation and knowledge sharing, as well as having a direct effect on MSME performance, both positively and indirectly through mediators. This suggests that exposure to market dynamics, global competition, and cross-sector collaboration opportunities can serve as powerful catalysts for strategic renewal and rapid adaptation. Governments and business development agencies should design programs that not only provide market access but also build MSMEs' internal capacity to absorb and transform external information into relevant innovations.

Third, knowledge sharing and radical innovation have proven to be strategic levers for long-term performance. Both act as significant mediating mechanisms, meaning that organizational culture and external stimulus will have a greater effect on performance if they successfully foster collaborative knowledge practices and innovation. In this regard, leveraging digital technologies, networking platforms, and collaborative ecosystems among business actors should be optimized to accelerate the transfer of knowledge and innovation across sectors.

Fourth, an interesting finding from this study is that both organizational culture and external stimulus can also exert a direct negative influence on performance if not accompanied by adaptive management. Excessive market pressure or a rigid internal culture may actually reduce MSMEs' flexibility and resilience. This serves as a warning that both external and internal interventions must be designed with a balance between driving change and maintaining the organization's adaptive capacity.

Although this research model integrates variables of organizational culture, external stimulus, innovation, knowledge sharing, and MSME performance, it is not without limitations. The cross-sectional design limits the ability to capture dynamic changes over time, and the sample, drawn from a single region, may limit the generalizability of the findings to other MSME contexts. Future studies are recommended to adopt a longitudinal design, conduct cross-industry or cross-regional comparisons, and incorporate qualitative approaches to uncover managerial practices that drive innovation and learning in small business environments.

Another limitation of this study lies in its single-region sample, which focuses solely on MSMEs in West Java. Although this region represents one of Indonesia's major industrial centers, its socio-economic and cultural characteristics may not fully capture the diversity of MSME ecosystems across the country. Regions such as Central Java, East Java, or Sulawesi, for example, may exhibit different patterns of innovation behavior, cultural orientation, and market exposure. Nonetheless, the observed relationships between external stimulus, organizational culture, radical innovation, and knowledge sharing are likely to hold relevance for other Indonesian regions and emerging markets that share similar competitive dynamics—such as limited resources, high market uncertainty, and growing digital transformation. Future studies should therefore include cross-regional or cross-country samples to validate and refine the model's generalizability.

## 7. Conclusion

This study concludes that MSME performance in the tested model is largely influenced by external stimulus and organizational culture, with radical innovation and knowledge sharing serving as critical mediating mechanisms. The total effects results indicate that external stimulus exerts a positive influence both directly and indirectly on MSME performance, reinforcing its role as a catalyst for strategic renewal and adaptive learning.

Organizational culture demonstrates a negative direct effect on performance but contributes positively in an indirect manner through the strengthening of radical innovation and knowledge sharing. This suggests that the primary contribution of organizational culture lies not in its immediate impact on performance, but in its ability to foster innovative and collaborative behaviors that, in turn, enhance performance. Both radical innovation and knowledge sharing are proven to have a positive impact on MSME performance, affirming that in dynamic and competitive business environments, these practices are not merely supplementary activities but strategic levers that enhance organizational agility, learning capability, and market responsiveness.

The tested AMOS model, supported by acceptable fit indices, provides empirical evidence of the importance of aligning external responsiveness with internally embedded learning and innovation processes. Therefore, sustainable MSME growth depends heavily on the ability to integrate external market awareness with a collaborative, innovation-driven organizational culture. It is recommended to use a longitudinal approach or to indicate the existence of other factors, such as marketing strategy, human resource quality, or public policy support, that also play a significant role but have not been accommodated in this study.

## References


[1] Ali, M. A., Hussin, N., Flayyih, H. H., Haddad, H., Al-Ramahi, N. M., Almubaydeen, T. H., Hussein, S. A., & Hasan Abunaila, A. S. (2023). A multidimensional view of intellectual capital and dynamic innovative performance. *Journal of Risk and Financial Management*, *16*(3), 139. https://doi.org/10.3390/jrfm16030139.

[2] Alzubi, M. Y., Tajeddini, K., Gamage, T. C., Bhaiyat, F., & Issa, S. (2025). Fostering service innovation and enhancing firm performance through a nexus of strategic orientations: the moderating effect of transformational leadership. *International Journal of Innovation Science*.

[3] Andersen, C., & Lueg, R. (2017). Management Control Systems, culture, and upper echelons – A systematic literature review on their interactions. *Corporate Ownership and Control*, *14*. https://doi.org/10.22495/cocv14i2c2p5.

[4] Anwar, J., & Abadi, F. (2023). Transformational leadership, knowledge sharing, and innovation capability: Improving the performance of MSME organizations in East Nusa Tenggara province. *Indonesian Interdisciplinary Journal of Sharia Economics (IIJSE)*, *6*(3), 1894–1920.

[5] Arifin, Z., Nugroho, Y., & Wulandari, A. (2023). Driving radical innovation through adaptive strategy and entrepreneurial orientation in small firms. *[Nama Jurnal Tidak Tersedia]*.

[6] Arsawan, I. W. E., Koval, V., Rajiani, I., Rustiarini, N. W., Supartha, W. G., & Suryantini, N. P. S. (2022). Leveraging knowledge sharing and innovation culture into MSMEs' sustainable competitive advantage. *International Journal of Productivity and Performance Management*, *71*(2), 405–428. https://doi.org/10.1108/IJPPM-04-2020-0192.

[7] Asli, S. H., Malini, H., Daud, I., Kalis, M. C. I., & Fauzan, R. (2023). The influence of transformational leadership and HR practices on employee innovative work behavior through psychological capital as a mediator in MSMEs. *Enrichment: Journal of Management*, *13*(5), 2915–2927.

[8] Boamah, F. A., Zhang, J., Shehzad, M. U., & Ahmad, M. (2023). The mediating role of social dynamics in the influence of absorptive capacity and tacit knowledge sharing on project performance. *Business Process Management Journal*, *29*(1), 240–261. https://doi.org/10.1108/BPMJ-07-2022-0341.

[9] Cuevas-Vargas, H., Lozano-García, J. J., Morales-García, R., & Castaño-Guevara, S. (2023). Transformational leadership and innovation to boost business performance: The case of small Mexican firms. *Procedia Computer Science*, *221*, 1139–1146. https://doi.org/10.1016/j.procs.2023.08.099.

[10] Deng, Q., Zhang, Y., & Wang, L. (2023). Knowledge sharing and innovation performance: The mediating effect of absorptive capacity in MSMEs. *[Nama Jurnal Tidak Tersedia]*.

[11] Frare, A. B., Lunkes, R. J., & Rosa, F. S. (2022). Performance evaluation of small and medium enterprises: A strategic approach. *Journal of Small Business and Enterprise Development*, *29*(1), 15–35.

[12] Frezatti, F., Aguiar, A. B., Guerreiro, R., & Gouvea, M. A. (2017). Impact of external stimuli and management control systems on radical innovation and startup performance. *Problems and Perspectives in Management*, *15*(4), 455–464. https://www.businessperspectives.org/index.php/journals/problems-and-perspectives-in-management/issue-473/impact-of-external-stimuli-and-management-control-systems-on-radical-innovation-and-startup-performance.

[13] Hasanuddin, M., & Hermina, N. (2024). The Effect of Leadership Style and Organizational Culture in Determining the Employee Performance of Koperasi Syariah During Pandemic Covid-19 at South Cimahi Region. *Jurnal Maksipreneur: Manajemen, Koperasi, Dan Entrepreneurship*, *13*(2), 514–530. https://doi.org/10.30588/jmp.v13i2.1270.

[14] Homayoun, S., Salehi, M., ArminKia, A., & Novakovic, V. (2024). The mediating effect of innovative performance on the relationship between the use of information technology and organizational agility in MSMEs. *Sustainability*, *16*(22), 9649. https://doi.org/10.3390/su16229649

[15] Hudnurkar, M., Ambekar, S., Bhattacharya, S., & Sheorey, P. A. (2023). Relationship of total quality management with corporate sustainability in the MSME sector: does innovation capability play a mediating role? *The TQM Journal*, *35*(7), 1860–1886. https://doi.org/10.1108/TQM-03-2022-0095

[16] Ibeku, S. E., & Nwagwu, W. E. (2024). Innovative culture, innovative behaviour, social capital and performance of small and medium ICT enterprises in Lagos, Nigeria. *Information Development*, 02666669241266819. https://doi.org/10.1177/02666669241266819.

[17] Ismail, M. S. (2015). Business performance measurement for MSMEs: A conceptual framework. *International Journal of Management and Commerce Innovations*, *3*(1), 123–128.

[18] Kalathingal, S., & Ambrammal, S. K. (2025). Innovation capabilities and sustainability in MSMEs. An analysis of empirical studies. *The International Journal of Entrepreneurship and Innovation*, 14657503241307140. https://doi.org/10.1177/14657503241307141.

[19] Karim, A. (2019). Knowledge sharing and its role in organizational performance: A study in MSMEs. *[Nama Jurnal Tidak Tersedia]*.

[20] Khalid, A. R., Ali, M., & Ali, S. (2023). The Mediating Role of Knowledge Sharing Between Innovation Work Behavior and Digital Transformation Leadership. *Journal of ISOSS*, *9*(1), 49–70.

[21] Latifah, L., Setiawan, D., Aryani, Y. A., Sadalia, I., & Al Arif, M. N. R. (2022). Human capital and open innovation: do social media networking and knowledge sharing matter? *Journal of Open Innovation: Technology, Market, and Complexity*, *8*(3), 116. https://doi.org/10.3390/joitmc8030116.

[22] Lawrence, J. (2020). *Strategies to Stimulate Innovation for Improving the Financial Performance of Small and Medium Enterprises*. Walden University.

[23] Li, M.-S., Li, J., Li, J.-M., Liu, Z.-W., & Deng, X.-T. (2023). The Impact of team learning climate on innovation performance–mediating role of knowledge integration capability. *Frontiers in Psychology*, *13*, 1104073. https://doi.org/10.3389/fpsyg.2022.1104073

[24] Lie, D., Inrawan, A., Silitonga, H. P., & Sudirman, A. (2022). Adoption of social media marketing: Contribution of knowledge management and market orientation to competitive advantages. In *Acceleration of Digital Innovation & Technology towards Society 5.0* (pp. 185–192). Routledge. https://doi.org/10.1201/9781003222927-29.

[25] Malik, A., Gupta, J., Gugnani, R., Shankar, A., & Budhwar, P. (2024). Unlocking the relationship between ambidextrous leadership style and HRM practices in knowledge-intensive MSMES. *Journal of Knowledge Management*, *28*(5), 1366–1395. https://doi.org/10.1108/JKM-04-2023-0339.

[26] Muafi, M. (2020). A nexus among strategic orientation, social network, knowledge sharing, organizational innovation, and MSMEs performance. *The Journal of Asian Finance, Economics and Business*, *7*(6), 327–338. https://doi.org/10.13106/jafeb.2020.vol7.no6.327.

[27] Mulyadi, A., Prahiawan, W., Pancasasti, R., & Haryadi, D. (2023). Predicting employee performance through extrinsic motivation: A conceptual model and empirical validation. *Enrichment: Journal of Management*, *12*(6), 5202–5212.

[28] Mulyana, A. R., Rofaida, R., & Sojanah, J. (2024). Knowledge Sharing dalam Organisasi: Tinjauan Sistematis. *Ekonomis: Journal of Economics and Business*, *8*(1), 718–728. https://doi.org/10.33087/ekonomis.v8i1.1696.

[29] Niyi Anifowose, O., Ghasemi, M., & Olaleye, B. R. (2022). Total quality management and small and medium-sized enterprises'(MSMEs) performance: Mediating role of innovation speed. *Sustainability*, *14*(14), 8719. https://doi.org/10.3390/su14148719.

[30] Nurhayati, B. D., Kusmantini, T., & Wahyuningsih, T. (2021). ANTECEDENTS AND IMPLICATIONS OF INNOVATION CAPABILITY: EMPIRICAL STUDY OF BAKPIA MSMES IN YOGYAKARTA. *Journal of Indonesian Economy & Business*, *36*(2). https://doi.org/10.22146/jieb.v36i2.1399

[31] Okijie, S. R., & Effiong, U. E. (2024). Financing and successful micro, small and medium scale enterprise development in Nigeria. *East African Finance Journal*, *3*(1), 1–26. https://doi.org/10.59413/eafj/v3.i1.1.

[32] Pedraza-Rodríguez, M., Rodríguez-Rivero, F., & García-Ramos, R. (2023). Organizational culture and innovation in small enterprises: Evidence from Latin America. *Journal of Business Research*, *161*, 113803. https://doi.org/10.1016/j.jbusres.2023.113803.

[33] Pham, T. T., Dao, T. T. A., Nguyen, T. T. L., & Vo, V. T. K. (2024). Transformational Leadership and Adhocracy Culture: Drivers of Innovative Work Behaviour and Employee Performance. *Scientific Papers of the University of Pardubice. Series D, Faculty of Economics & Administration*, *32*(3). https://doi.org/10.46585/sp32032082

[34] Piliang, A., Bastian, E., & Muchlish, M. (2023). Use of Enabling Levers and Constraining Levers to Radical Innovation: Intervention of Knowledge Sharing and Technological Turbulence. *Journal of Law and Sustainable Development*, *11*(12), e2302–e2302. https://doi.org/10.55908/sdgs.v11i12.2302

[35] Piliang, A., Bastian, E., & Muchlish, M. (2025). Impact of external stimuli and management control systems on radical innovation and startup performance. *Problems and Perspectives in Management*, *23*(1), 673. https://doi.org/10.21511/ppm.23(1).2025.50.

[36] Piliang, A., Meutia, M., Bastian, E., & Muchlish, M. (2025). Driving Radical Innovation: External Stimuli, Organization Culture and MCS's Role in Startup Success Moderated by Technological Turbulence. *Interdisciplinary Journal of Information, Knowledge, and Management*, *20*, 007. https://doi.org/10.28945/5451

[37] Putritamara, J. A., Hartono, B., Toiba, H., Utami, H. N., Rahman, M. S., & Masyithoh, D. (2023). Do dynamic capabilities and digital transformation improve business resilience during the COVID-19 pandemic? Insights from beekeeping MSMEs in Indonesia. *Sustainability*, *15*(3), 1760. https://doi.org/10.3390/su15031760.

[38] Rajagopal, A., & Rajagopal, A. (2021). Entrepreneurship and Markets. *Epistemological Attributions to Entrepreneurial Firms: Linking Organizational Design and Operational Efficiency*, 91–118. https://doi.org/10.1007/978-3-030-64635-6_4.

[39] Regina, M., & Guerreiro, R. (2013). Culture and management control systems: A study on the moderating influence of national culture. *International Journal of Business, Humanities and Technology*, *3*(2), 1–9. [URL jika tersedia]

[40] Robb, C. A., & Stephens, A. R. (2021). The effects of market orientation and proactive orientation on the export performance of South African MSMEs. *Journal of Global Marketing*, *34*(5), 392–410. https://doi.org/10.1080/08911762.2021.1894625

[41] Santos, P., Almeida, J., & Correia, A. (2023). Knowledge sharing as a driver of organizational innovation: Evidence from MSMEs. *Journal of Knowledge Management*, *27*(1), 88–104.

[42] Santos, P., Silva, J., Correia, A., & Costa, R. (2023). Use of enabling levers and constraining levers to radical innovation: Intervention of knowledge sharing and technological turbulence. *Journal of Leadership, Strategy and Sustainability*, *8*(2), 112–130. https://ojs.journalsdg.org/jlss/article/view/2302.

[43] Sharma, R. (2024). Cultural intelligence-innovation interface and its impact on organisational performance: evidence from the tourism industry. *International Journal of Knowledge Management in Tourism and Hospitality*, *3*(4), 292–311. https://doi.org/10.1504/IJKMTH.2024.140628.

[44] Silva, A. L., Guerra, F., & Santos, J. P. (2022). Driving radical innovation: External stimuli, organizational culture and MCS's role in startup success moderated by technological turbulence. *Informing Science: The International Journal of an Emerging Transdiscipline*, *25*, 153–172. https://www.informingscience.org/Publications/5451.

[45] Singh, M. P., Chakraborty, A., & Roy, M. (2016). The link among innovation drivers, green innovation and business performance: empirical evidence from a developing economy. *World Review of Science, Technology and Sustainable Development*, *12*(4), 316–334. https://doi.org/10.1504/WRSTSD.2016.082191.
[46] Siswanti, Y., Salsabil, I., & Muafi, M. (2024). Organizational culture and its consequences for social capital, human capital, and innovative behavior: cross-level analysis. *Review of Integrative Business and Economics Research*, *13*(2), 314–331.
[47] Sreen, N., Sharma, V., Alshibani, S. M., Walsh, S., & Russo, G. (2024). Knowledge acquisition from innovation failures: a study of micro, small and medium enterprises (MSMEs). *Journal of Knowledge Management*, *28*(4), 947–970. https://doi.org/10.1108/JKM-03-2023-0184.
[48] Subagja, A. D., Ausat, A. M. A., & Suherlan, S. (2022). The role of social media utilization and innovativeness on MSMEs performance. *JURNAL IPTEKKOM (Jurnal Ilmu Pengetahuan & Teknologi Informasi)*, *24*(2), 85–102. https://doi.org/10.17933/iptekkom.24.2.2022.85-102.
[49] Supriyanto, A., Said, L. R., Firdaus, M. R., Asma, R., & Redawati, R. (2024). A systematic literature review on dynamic capabilities in marketing. *Access Journal-Access to Science, Business, Innovation in the Digital Economy*, *5*(3), 478–492. https://doi.org/10.46656/access.2024.5.3(6).
[50] Susanti, E., Mulyanti, R. Y., & Wati, L. N. (2023). Systematic literature review: Increasing performance of women MSMEs through competitive advantage based on digital transformation and innovation. *SAHA, Sanchita et Al*, 25–61. https://doi.org/10.2991/978-94-6463-068-8_4.
[51] Velásquez, J., & Rios, V. (2023). Cultura Organizacional en Pymes Latinoamericanas, 2016 - 2023Organizational Culture in Latin American MSMEs, 2016 - 2023. *Journal of Scientific and Technological Research Industrial*, *4*, 7–13. https://doi.org/10.47422/jstri.v4i2.39.
[52] Wu, Y., & Tham, J. (2023). The impact of environmental regulation, Environment, Social and Government Performance, and technological innovation on enterprise resilience under a green recovery. *Heliyon*, *9*(10). https://doi.org/10.1016/j.heliyon.2023.e20278
[53] Wuryaningrat, N. (2013). Knowledge Sharing, Absorptive Capacity and Innovation Capabilities: An Empirical Study on Small and Medium Enterprises in North Sulawesi, Indonesia. *Gadjah Mada International Journal of Business*, *15*, 61–78. https://doi.org/10.22146/gamaijb.5402.
[54] Yahaya, H. D., & Nadarajah, G. (2023). Determining key factors influencing MSMEs' performance: A systematic literature review and experts' verification. *Cogent Business & Management*, *10*(3), 2251195. https://doi.org/10.1080/23311975.2023.2251195.