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Building a knowledge-based innovation ecosystem for MSME independence in Indonesia

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ABSTRACT

MSMEs in Indonesia play a vital role in driving national economic growth, yet many continue to struggle with business independence, limiting their ability to survive and compete. This study aims to analyze how the business knowledge ecosystem, competitive advantage, and knowledge sharing interact in influencing MSME independence within a knowledge-based innovation ecosystem. Conducted in East Java Province, the region with the highest number of MSMEs in Indonesia, this study involved 400 MSME respondents selected using the Slovin formula. Data were collected through questionnaires and brief interviews and analyzed using Structural Equation Modeling with SmartPLS. The results show that the business knowledge ecosystem directly strengthens MSME independence and also indirectly enhances it through competitive advantage. Knowledge sharing likewise exerts a direct positive influence on MSME independence and moderates the relationship between the business knowledge ecosystem and MSME independence. However, knowledge sharing does not strengthen the influence of competitive advantage on MSME independence. These findings highlight the importance of integrated knowledge mastery covering production, marketing, finance, digital literacy, and competitive strategies in building sustainable MSME independence. This study contributes to business management knowledge by providing a comprehensive model that integrates multiple knowledge domains and knowledge-sharing activities. Practically, it offers insights for policymakers in designing strategies to develop knowledge-based innovation ecosystems that support MSME independence.

Contribution/Originality: This research describes the importance of knowledge in realizing the independence of MSMEs. Unlike previous studies that partially discuss knowledge, this research comprehensively examines various types of knowledge within the framework of an innovation ecosystem. The research design is refined with the variable of knowledge sharing, which illustrates the activity of sharing knowledge by various elements of society.

1. INTRODUCTION

In the current global economy, an era where global economic stability is quite uncertain, Indonesia is one of the countries capable of achieving an economic growth rate of 5% per year and boldly targeting a per capita income of $30,000 by 2045. To realize this goal, there are specific actions that the Indonesian government must take, namely by understanding and optimizing the performance of financial institutions and business units that serve as the main drivers of the nation's economy and have proven to contribute significantly to improving people's welfare. Empirical studies have shown that MSMEs (Micro, Small, and Medium Enterprises) are business units capable of providing broad economic and social benefits and can significantly reduce unemployment rates, thereby offering higher economic value for Indonesia (Setyaningrum, Norisanti, Fahlevi, Aljuaid, & Grabowska, 2023). The substantial contribution of MSMEs to the national economy serves as a benchmark indicating that Indonesia's economy will advance if MSMEs also progress, and vice versa.

The phenomenon of MSMEs in Indonesia presents a very interesting aspect for study. The significant role of MSMEs, as reported by the Coordinating Ministry for Economic Affairs of the Republic of Indonesia, is actually balanced by a large number of MSMEs going bankrupt. As of 2024, MSMEs contribute 61% to the national Gross Domestic Product (GDP) and absorb 97% of the national workforce (Limanseto, 2023). However, those who went bankrupt within the first two years of their business accounted for 25%, after five years it increased to 45%, while those who went bankrupt after more than 10 years of operation reached 65% (Muslimawati, 2024). This phenomenon shows that the growth of MSMEs in Indonesia is indeed very rapid, but it is not followed by adequate business capabilities (Horváth, 2022), making them unable to compete with other business units in the same industry and unable to achieve business sustainability (Horváth, 2022; Oliveira & Rua, 2025). MSME actors are proven to lack the knowledge to create business plans, organize, operate, and evaluate their businesses in the long term. Marinelli, Crupi, Del Sarto, and Lepore (2024) define MSME behavior as behavior that lacks business independence.

The independence of MSMEs (Micro, Small, and Medium Enterprises) reflects their ability to operate flexibly and adaptively to changes (Marinelli et al., 2024), as well as their capacity to achieve higher profitability than their competitors (Calvin, Kusumawati, & Radhitanti, 2024). Referring to the theory of independent business planning (Alka, Sreenivasan, & Suresh, 2024) business independence is achieved by companies that possess high competitiveness (Alka et al., 2024; Marinelli et al., 2024) meaning they can create product differentiation while still aligning with consumer preferences (Horváth, 2022; Oliveira & Rua, 2025) implement cost leadership to gain greater profits compared to competitors, supported by industry factors, and have clear and measurable marketing targets. Porter (1990) argues that the level of competitive advantage is not something that can be inherited but must be created through innovation based on scientific knowledge. Therefore, the independence of MSMEs will be formed if the company has competitiveness connected within a science-based innovation ecosystem (Manotti, Sanasi, & Ghezzi, 2025; Oliveira & Rua, 2025).

The innovation ecosystem is a fundamental element in building value, knowledge, resources, and shared capabilities for micro and small business actors (Musiello-Neto, Rua, Arias-Oliva, & Silva, 2021; Oliveira & Rua, 2025). Empirical data show that most MSME actors operate their businesses based on intuition and a market-oriented approach (Wahyono & Hutahayan, 2021), but they lack efforts to improve the quality of human resources through mastery of knowledge (Istikhoroh, Afkar, & Ardhiani, 2024; Vedhathiri, 2020). This condition causes MSME actors to tend not to focus on a single business field and to easily give up when facing obstacles (Kharub & Sharma, 2017). Unlike previous studies that offered partial solutions to MSME problems, this research assumes that the interconnectedness of various disciplines within an ecosystem and knowledge-sharing activities among community elements are the main factors in creating competitiveness in building an innovation ecosystem and realizing business independence.

This research offers ideas for establishing an innovation ecosystem based on scientific knowledge for MSMEs, even though this sector still faces challenges in human resource management across all activities within the innovation ecosystem (Munsamy, Telukdarie, & Manenzhe, 2024). An innovation ecosystem functions to strengthen collaboration between companies and their supporting elements in mutually beneficial relationships (Horváth, 2022). All resources are directed to equip MSME actors to survive in the digital era through the development of digital leadership, digital-based financial management, and digital human resource management (Begen & Atasoy, 2024), as well as connecting them with business partners (Alka et al., 2024; Horváth, 2022). To enhance the role of the innovation ecosystem in realizing business independence, more open and theoretical knowledge-sharing activities are needed from various community elements to equip companies with knowledge, partnerships, cost efficiency, and more optimal risk management (Noerchoidah, Suhardiyah, Nurcahyanie, & Sawitri, 2025). The targeted business independence, according to this research, is reflected in the ability of MSMEs to achieve long-term profits, build public trust, make strategic decisions, and be adaptive to various changes (Marinelli et al., 2024).

Based on the above description, the conceptual framework of this study is:

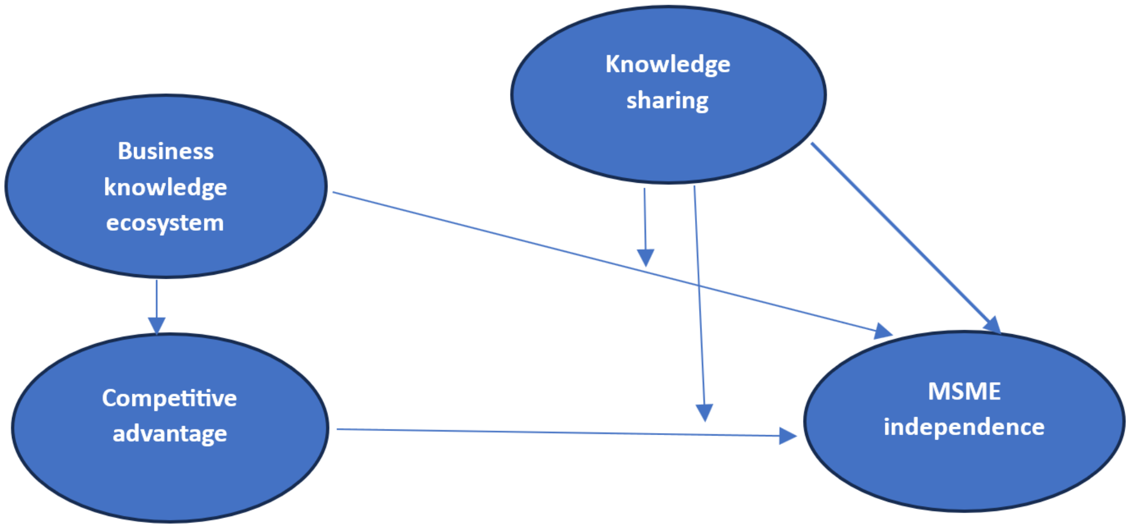

Figure 1. Conceptual framework.

Figure 1 illustrates the conceptual framework that outlines the functional relationships among the core variables of this study. The model shows that the business knowledge ecosystem influences MSME independence both directly and indirectly through competitive advantage as a mediating variable. It also depicts knowledge sharing as a moderating variable that strengthens (or weakens) the effects of the business knowledge ecosystem and competitive advantage on MSME independence. This framework visually represents how interconnected knowledge domains, competitive capabilities, and knowledge-sharing activities collectively shape the formation of a knowledge-based innovation ecosystem for MSMEs.

Based on the conceptual framework, the study problems are formulated as follows: 1) Does the business knowledge ecosystem have a significant effect on MSME independence? 2) Does the business knowledge ecosystem have a significant effect on competitive advantage? 3) Does competitive advantage have a significant effect on MSME independence? 4) Does competitive advantage mediate the effect of the business knowledge ecosystem on MSME independence? 5) Does knowledge sharing have a significant effect on MSME independence? 6) Does knowledge sharing moderate the relationship between the business knowledge ecosystem and MSME independence? 7) Does knowledge sharing moderate the relationship between competitive advantage and MSME independence?

The results of this research provide benefits for MSME actors in determining the direction of business independence. The interconnectedness of various disciplines within the innovation ecosystem shows that each piece of knowledge complements the others in achieving common goals. MSME actors can strengthen this knowledge by forming business communities that serve as platforms for sharing information and seeking solutions to various business challenges. As the main drivers of the national economy, MSMEs should be given priority in the formulation of national economic policies. Theoretically, this research also contributes to the development of business management science, particularly in identifying and formulating the factors that influence the independence of MSMEs. The results of this study provide benefits for MSME actors in setting the direction of business independence. The interconnectedness of various disciplines within the innovation ecosystem shows that each field of knowledge complements the others in achieving common goals. Micro, Small, and Medium Enterprises (MSMEs) can strengthen their knowledge by forming business communities that serve as platforms for sharing information and seeking solutions to various business challenges. As the main drivers of the national economy, MSMEs should be prioritized in the formulation of the country's economic policies. Theoretically, this research also contributes to the development of business management science, particularly in identifying and formulating the factors that influence MSME independence.

2. LITERATURE REVIEW AND HYPOTHESIS DEVELOPMENT

The concept of a business innovation ecosystem provides a valuable metaphor for understanding the dynamics of the business environment within the scope of knowledge (Manotti et al., 2025; Oliveira & Rua, 2025). The paradigm of a single actor competing in an external market has shifted; companies are now integrated into networks of professional and social relationships and exchanges with other actors. Business actors are increasingly aware that they cannot succeed alone but must be connected within an interconnected business network. This ecosystem comprises various entities such as customers, lead producers, competitors, stakeholders, and leading companies, all of which influence the process of business success (Dormeier, Mindt, Niemeyer, Asghari, & Mennenga, 2024; Istikhoroh et al., 2024). The concept of innovation ecosystems has gained popularity in recent years, both in the business world and in organizational policy. It is generally used to refer to new types of industries and business networks that emerge due to changes in existing, more linear value chains, and when a new business transcends the boundaries of existing value chains or industries (Marinelli et al., 2024). Although the spectrum of members in a business innovation ecosystem is highly diverse, most studies only consider companies participating in the innovation ecosystem as strategic subjects (Alka et al., 2024; Musiello-Neto et al., 2021; Wahyono & Hutahayan, 2021).

Along with the transformation of interconnected economic activities forming a network economy, the study of business strategy has expanded to include more dimensions to better understand the interactions and sustainable relationships among various stakeholders (Marinelli et al., 2024). To achieve sustainability, an innovation ecosystem must be based on supporting knowledge, becoming a business knowledge ecosystem that can serve as a manageable competitive resource for achieving a competitive advantage (Harjanti, Fatimah, Mahmudah, & Widowati, 2024; Marinelli et al., 2024; Noerchoidah et al., 2025). As knowledge partners, customers can be considered central economic agents in the business knowledge ecosystem. Based on ecosystem theory, the contribution of customers as knowledge partners to MSMEs is typical behavior in co-creating value. This is the novelty of the present study, where all business activities in a knowledge-based business ecosystem are intended to create customer satisfaction with these indicators, 1) possessing business knowledge acquired through formal and non-formal means (Marinelli et al., 2024; Wang, 2024; Zuhroh et al., 2025) Understanding business ethics (Ardhiani & Latif, 2023; Marinelli et al., 2024) Using digital platforms, particularly in finance and human resources (Lin, Yang, Li, & Zhang, 2022; Picón, Alonzo, Dávila, & Cabarcas, 2024) Implementing social media practices, including competitor social media analysis (Navas, Suarez, Montañez, & Quintero, 2025; Nurcahyanie, Singgih, & Dewi, 2022; Zentner, Spremic, & Zentner, 2021).

Furthermore, knowledge can be withheld by actors to enhance their bargaining power against other actors within the organization, as they compete for the same resources, such as those from headquarters (Marinelli et al., 2024). As an economic community supported by interactions with diverse stakeholders with varied backgrounds and motivations, knowledge sharing is essential for both core and non-core actors in the business community to achieve local embeddedness and generate an innovation ecosystem (Horváth, 2022; Vedhathiri, 2020). Empirical studies show that managers value external knowledge more highly because it brings them better status, promotions, and salary increases than accessing internal knowledge to achieve business independence and sustainable competitive advantage (Dormeier et al., 2024). External knowledge can be obtained by MSME actors through the role of agents in knowledge-sharing activities according to their respective fields of expertise and providing it to MSME actors (Lin et al., 2022; Wahyono & Hutahayan, 2021).

Based on those theoretical reviews, the hypotheses developed in this study are: 1) H1: The business knowledge ecosystem has a significant effect on MSME independence. 2) H2: The business knowledge ecosystem has a significant effect on competitive advantage. 3) H3: Competitive advantage has a significant effect on MSME independence. 4)

H4: Competitive advantage mediates the effect of the business knowledge ecosystem on MSME independence. 5) H5: Knowledge sharing has a significant effect on MSME independence. 6) H6: Knowledge sharing moderates the relationship between the business knowledge ecosystem and MSME independence. 7) H7: Knowledge sharing moderates the relationship between competitive advantage and MSME independence.

3. STUDY METHODOLOGY

This study aims to identify and analyze the functional relationships among several factors that influence the independence of MSMEs, namely the business knowledge ecosystem, competitive advantage, and knowledge sharing, which are interconnected within a knowledge-based innovation ecosystem. This ecosystem plays a role in strengthening synergy among companies and supporting elements through a symbiotic relationship with a theoretical approach. As the backbone of the national economy, employing around 97% of the workforce, MSME independence is a tangible reflection of the nation's independence.

This research was conducted in East Java Province with a population of 977,471 MSME business units, consisting of 862,057 micro businesses and 115,414 small businesses (Central Bureau of Statistics, 2024). East Java is a province with the highest number of MSMEs in Indonesia, contributing 14.52% to the national GDP and 25.55% to the GDP of Java Island in 2024. This province has great potential to continue developing as a New Nusantara Gateway *(Gerbang Nusantara Baru)*, playing an important role in supporting the economies of more than 20 provinces in central and eastern Indonesia (BPR Jatim, 2025a) but facing similar challenges as MSMEs in other regions of Indonesia, such as difficulties in financing, low digital literacy levels, and limitations in penetrating the global market (BPR Jatim, 2025b).

This research is explanatory in nature, aiming to analyze the functional relationships among several variables that influence the independence of MSMEs. The sample was determined using the Slovin technique with a margin of error of 5%, totaling 400 respondents. Data were collected through distributing questionnaires to all respondents and conducting interviews with some respondents encountered randomly. The description of the research results is based on data processing using statistical analysis with Structural Equation Models – Partial Least Squares (SEM-PLS) tools, specifically using Smart-PLS. The types of variables and their indicators are presented in Table 1.

Table 1. Variables and indicators.

No.	Variable type and name	Operational definition	Indicators
1	Independent: business knowledge ecosystem	The integration of various knowledge domains to advance business (Kulkarni, Joseph, & Patil, 2024; Marinelli et al., 2024; Navas et al., 2025; Noerchoidah et al., 2025; Wang, 2024; Zuhroh et al., 2025)	1. Possesses a strong foundation of business knowledge 2. Understands business ethics 3. Uses digital platforms, particularly in finance and human resources 4. Implements social media practices, especially in marketing 5. Understands market competition
2	Intervening: competitive advantage	The ability of MSMEs to achieve product differentiation, cost leadership, and a clear target market (Barney, 1991; Dormeier et al., 2024; Istikhoroh et al., 2024; Marinelli et al., 2024; Wang, 2024)	1. Offers unique, irreplaceable products that are difficult for competitors to imitate 2. Produces at low cost 3. Has a well-defined target market
3	Moderating: knowledge sharing	Business mentoring provided by the government, industry, and academia according to their capacity (Horváth, 2022; Navas et al., 2025)	1. Digital marketing mentoring 2. Digital finance mentoring 3. Digital human resources management mentoring 4. Connecting with business partners
4	Dependent: MSMEs independence	The ability of MSMEs to implement dynamic and adaptive business planning in response to changes, achieving sustainably higher profits than competitors (Calvin et al., 2024; Feuer, 2001)	1. Focuses on a specific business 2. Has dynamic business planning and strategies 3. Gains public trust 4. Achieves higher profitability

4. ANALYSIS AND DISCUSSION

4.1. Instrument Validity Test (Outer Model)

This research is an explanatory study with a quantitative approach, and data were collected through the distribution of questionnaires. Ethical approval for data collection was granted by the Department of Cooperatives, Small and Medium Enterprises of the East Java Provincial Government, Number 500.3/12122/115.1/2025, on July 14, 2025. Data collection was conducted in August 2025, and the results were tabulated using a Likert scale with the following criteria: 1 point for strongly disagree, 2 points for disagree, 3 points for uncertain, 4 points for agree, and 5 points for strongly agree. Meanwhile, interviews were conducted with several randomly selected MSME actors on August 14, 2025, concurrent with the MSME development activities carried out by the East Java Cooperative, Small, and Medium Enterprises Office.

The feasibility of the questionnaire as a data collection tool was tested based on validity and reliability analyses according to the Measurement Model Test (Outer Model), which includes convergent validity and discriminant validity. This model comprises four variables: Business Knowledge Ecosystem (BKE/X1) as the independent variable, Competitive Advantage (CA/Y1) as the mediating variable, Knowledge Sharing (KS/X2) as the moderating variable, and MSMEs Independence (MSME/Y2) as the dependent variable. The measurement model analysis results, based on the convergent validity test, show that all indicators for each latent variable have loading factor values greater than 0.5, indicating that all statement items are valid. The discriminant validity test also demonstrates that the correlation values between each indicator and its latent variable are higher than the correlations with other latent variables, confirming that all indicators meet the criteria as appropriate measures of the variables. Additionally, the reliability test results indicate that all variables have a composite reliability value above 0.7, leading to the conclusion that each variable is reliable and suitable for use as a data source in the research.

4.2. Description of Questionnaire and Interview Results

The recapitulation of the questionnaire distributed to 400 respondents is presented in Tables 2 to 5.

Table 2. Business knowledge ecosystem.

No.	Statement item	Total item score	Average item score
1	In my opinion, business experience can influence business success.	1,577	3.96
2	The business experience I possess enhances my motivation to run the business.	1,598	4.02
3	To increase the number of customers, I always serve consumers wholeheartedly.	1,621	4.07
4	I use polite language and courteous behavior when interacting with consumers.	1,722	4.33
5	I separate business funds from personal funds using digital applications.	1,677	4.21
6	I recruit employees by considering their behavioral history on social media.	1,591	4.00
7	To increase revenue, I sell products through social media, e.g., TikTok and Instagram.	1,504	3.78
8	I market products through marketplaces (online marketing platforms), e.g., Shopee and Tokopedia.	1,605	4.03
9	I monitor the types of products and prices offered by similar businesses or competitors.	1,636	4.11
10	To avoid losing customers, I strive to monitor the business strategies implemented by competitors.	1,640	4.12
Total average score			4.06

Table 2 illustrates the respondents' perceptions of the implementation of a knowledge-based business ecosystem by MSME actors, which is generally categorized as good with an average score of 4.06 points. The use of polite language when serving customers is one of the main strengths of MSME actors in increasing sales revenue. They understand that customer character tends to be sensitive to service quality, both in words and actions. This finding indicates that most MSME actors still rely on direct sales as their primary source of income. This is supported by the lowest average score on indicators of sales through social media. Although still classified as good, digital marketing strategies have not been widely adopted by the respondents. Based on interviews with several MSME actors, this condition is caused by their limited ability and knowledge in effectively implementing digital marketing.

Table 3. Competitive advantage.

No.	Statement Item	Total item score	Average item score
1	Compared to competitors' products, my product has unique characteristics, making it easily recognizable.	1,472	3.70
2	My product is irreplaceable, making consumers feel proud to use it.	1,670	4.20
3	I monitor the use of overhead costs (e.g., electricity, water, telephone) to improve cost efficiency.	1,581	3.97
4	I strive to source raw materials directly from the supplier (firsthand).	1,708	4.29
5	The product I offer aligns with my consumers' needs.	1,594	4.01
6	I have a clear understanding of the target market for my product.	1,612	4.05
Total average score			4.04

Table 3 shows that the respondents' perceptions of the competitiveness level of the MSME businesses they manage generally fall into the good category, with an average score of 4.04 points. MSME actors have a high awareness of lowering selling prices by obtaining raw materials directly from the source without going through intermediaries, thereby minimizing production costs. This finding indicates that price remains a primary indicator of business success for most MSME actors. However, the study also shows that MSME actors have not yet developed sufficient ability to create truly unique or different products from their competitors. Consumers also find it difficult to identify the best producers because most products have similarities in design, packaging, and quality. This information is important in analyzing how much MSMEs have or have not developed genuine competitive advantages.

Table 4. Knowledge sharing.

No.	Statement Item	Total item score	Average item score
1	I participate in digital marketing assistance using appropriate e-commerce platforms.	1,577	3.96
2	I require ongoing digital marketing assistance	1,686	4.24
3	I participate in digital financial assistance provided by competent financial institutions.	1,519	3.82
4	Digital financial assistance helps me understand the importance of preparing financial reports	1,544	3.88
5	I participate in digital human resource assistance that can be directly applied to the company I manage.	1,641	4.12
6	The content of digital human resource assistance meets the needs of my company	1,592	4.00
7	I understand the importance of business partners in building business sustainability.	1,666	4.19
8	I plan to establish more business partnerships in the future, both with the government and the private sector.	1,610	4.05
Total Average Score			4.03

Table 4 illustrates that respondents' perceptions of knowledge sharing activities in MSMEs show an average score of 4.03 points, which falls into the good category. In the knowledge-sharing process, MSME actors demonstrate a high interest in digital marketing topics compared to other business subjects. They recognize that the digital era demands the ability to adapt to technological developments, but still feel they have limited knowledge in this area, thus requiring additional training. Conversely, topics related to finance are less favored by respondents. Based on brief interviews, this is because they believe they do not face significant challenges in financial record-keeping, so they do not see the need for further knowledge related to financial management or transactions in more depth.

Table 5. MSME independence.

No.	Statement item	Total item score	Average item score
1	I am capable of producing products independently without relying on external parties.	1,577	3.96
2	I can build a brand image for the products I produce	1,641	4.12
3	I have detailed written plans regarding production, human resources, marketing, and finance.	1,521	3.82
4	I adjust my business strategies according to current developments	1,561	3.92
5	I understand that public trust is essential in maintaining customer loyalty	1,671	4.20
6	I have specific strategies to maintain and enhance public trust in my business.	1,505	3.78
7	I can set competitive selling prices compared to my competitors' product prices.	1,628	4.09
8	I have loyal customers who can continuously increase sales revenue	1,606	4.04
Total Average Score			3.99

Table 5 shows respondents' responses indicate that the concept of business independence has been well understood by MSME actors, with an average score of 3.99 points. MSME actors believe that public trust is a key factor in maintaining customer loyalty. To build and sustain that trust, they generally implement the best pricing strategies or offer lower prices. When related to limitations in creating product differentiation and strategies for obtaining raw materials directly from sources, pricing policies become the most commonly used approach to attract potential customers. However, beyond pricing strategies, most MSME actors do not yet have specific strategies for achieving long-term profits that surpass industry averages, so there is a need to improve knowledge and skills in more strategic business management.

4.3. Hypothesis Testing (Inner Model)

This research employs Structural Equation Modeling – Partial Least Squares (SEM-PLS) analysis using Smart-PLS software to test the developed hypotheses. The constructed model has an R^2 value of 0.78, indicating that 78% of the variation in the construct can be explained by its predictor variables. This value falls into the good category according to Hair, Risher, Sarstedt, and Ringle (2019) and can proceed with the research process. The functional relationships among the variables believed to influence the independence of MSMEs are presented in the Structural Model (Figure 2), along with the coefficient values of the variables and the significance of the t-statistics, which serve as the basis for accepting or rejecting a hypothesis, as shown in the results of inner model testing (Table 6).

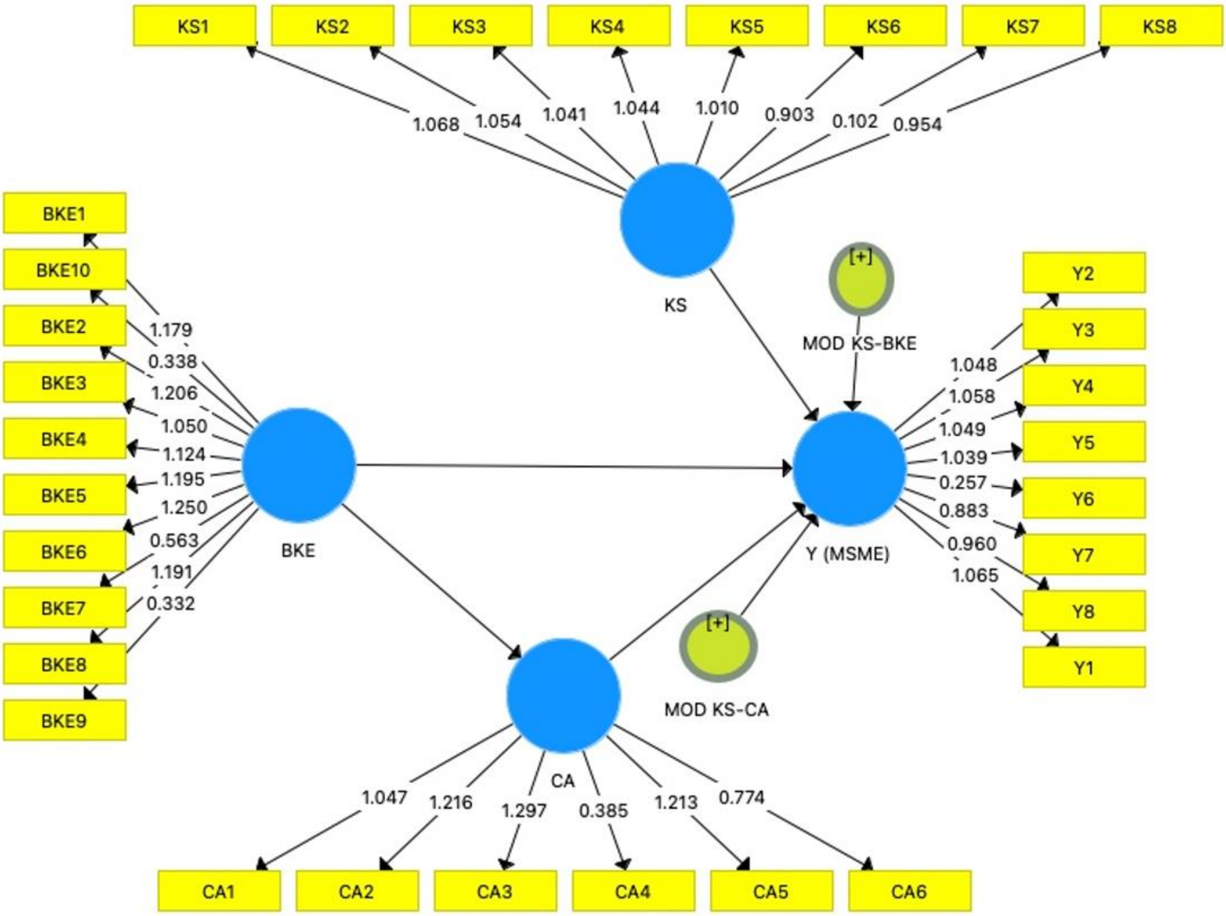

Figure 2. Structural model.

Figure 2 illustrates the flow diagram of the functional relationships among the four variables, along with the role of each variable predicted to impact the independence of MSMEs. The hypothesis testing of these functional relationships is presented in Table 6 as follows.

Table 6. Hypothesis testing (Inner model).

Relationship between variables	Original Sample (O)	T Statistics (|O/STDEV|)	P Values	Remarks
a. BKE -> MSME	0.196	5.741	0.049	Significant
b. BKE -> CA	0.799	17.084	0.000	Significant
c. CA -> MSME	0.303	8.841	0.021	Significant
d. BKE -> CA -> MSME	0.487	10.174	0.018	Significant
e. KS -> MSME	0.923	18.412	0.000	Significant
f. MOD. KS-BKE -> MSME	0.260	4.977	0.029	Significant
g. MOD. KS-CA -> MSME	0.047	0.927	0.354	Not significant

Note: BKE (Business Knowledge Ecosystem); CA (Competitive Advantage); KS (Knowledge Sharing); MSME (MSME Independence).

Table 6 presents the significance values of the relationships among the variables serve as a basis for concluding the acceptance or rejection of the study hypotheses, where H_1, H_2, H_3, H_4, H_5, and H_6 are accepted as true, while H_7 is rejected.

4.4. Discussion

4.4.1. The Business Knowledge Ecosystem Directly Influences MSME Independence

This study shows that the business knowledge ecosystem has a significant impact on MSMEs' independence. The results indicate that the business experience possessed by MSME actors can influence their business motivation and success (Navas et al., 2025). With their business experience, MSME actors are able to monitor competitors' business strategies and adjust their own strategies in accordance with current trends (Lin et al., 2022). The assessment of the business knowledge ecosystem variable, which falls within the "good" category, reflects a strong enthusiasm among MSME actors to enhance their business knowledge in order to achieve long-term profitability (Abdallah, Harraf, Ghura, & Abrar, 2025; Zuhroh et al., 2025). The description of the questionnaire responses reveals that sales processes are still conducted directly (offline) and that there is a need for additional knowledge regarding online sales strategies using specific marketplaces.

Considering the items measured within the business knowledge management variable, various skills are required to form a knowledge-based business ecosystem, which will involve community groups with specific expertise. For instance, 1) successful business actors to motivate MSME participants to persist in their ventures and strive for improvement in the future, 2) marketing practitioners, particularly in online marketing, to share knowledge about effective marketing strategies, pricing according to consumer targets, and application-based online marketing techniques, 3) academics to share knowledge on strategies for building sustainability by preparing the next generation in accordance with academic ethics, and 4) government to provide business regulations that benefit MSME actors.

4.4.2. The Business Knowledge Ecosystem Influences Competitive Advantage

This study demonstrates that the business knowledge ecosystem has a significant impact on competitive advantage. The findings indicate that various business knowledge interconnected within a single ecosystem can enhance the competitiveness of MSMEs in the global market (Horváth, 2022; Marinelli et al., 2024; Oliveira & Rua, 2025). The ability to provide quality services to customers, understand business financial principles, comprehend competition, and select honest and innovative human resources is believed to enhance a company's competitiveness (Vedhathiri, 2020). MSME actors recognize that "price" is a highly sensitive factor for consumers when making purchasing decisions, making price wars a primary concern in creating competitiveness (Kharub & Sharma, 2017; Musiello-Neto et al., 2021). MSME actors possess the capability to source raw materials directly from their origins, thereby obtaining the lowest prices.

The key to competition lies in a company's ability to produce unique products that are not easily replaced and are difficult for competitors to imitate (Barney, 1991). The results of the questionnaire analysis strongly indicate that most small and medium enterprises (SMEs) have not yet developed sufficient capability to create products in line with this concept. For example, in processed banana products such as banana cake, the production outputs among SMEs tend to be similar. Consumers also find it difficult to distinguish between banana cakes from SME A, B, or others because they have almost the same taste and packaging. This condition shows that SME actors more often produce goods based on their existing capabilities rather than on consumer needs or preferences. This is an important point that requires attention from all parties involved in the SME business ecosystem.

4.4.3. Competitive Advantage Influences MSME Independence

This research demonstrates that competitive advantage significantly influences MSMEs' independence. The findings indicate that micro, small, and medium enterprises (MSMEs) have a clear understanding of why consumers choose their products, emphasizing the importance of improving service quality. MSME actors also recognize that their primary target market is the lower-middle-income group, which is highly sensitive to price changes. This consumer segment generally pays less attention to product differentiation and tends to select items that are already popular among the general public. A sense of pride is associated with purchasing well-known or commonly owned products rather than unique or exclusive items. Consequently, to achieve customer satisfaction, MSME actors tend to modify product designs to align with general preferences while offering lower prices compared to competitors.

These characteristics are certainly not aligned with the concept of competitive advantage proposed by Barney (1991), which emphasizes that companies must be able to produce unique, high-value products that are not easily replaced and are difficult for competitors to imitate. In reality, small and medium enterprises (SMEs) actually achieve higher sales turnover when they can produce similar products, both in terms of design and quality, but at lower prices. This condition raises an important question: Is Barney's (1991) theory of competitiveness entirely relevant when applied to small-scale businesses like SMEs? If so, then it is appropriate for academics to critically examine this theory so that it can be adapted to the actual context and characteristics of SME businesses.

4.4.4. The Business Knowledge Ecosystem Influences MSME Independence through Competitive Advantage

This research demonstrates that the business knowledge ecosystem has an indirect effect on MSME independence through competitive advantage. These findings confirm that various forms of business knowledge possessed by micro, small, and medium enterprises (MSMEs), including (1) experience in running a business, (2) the ability to provide good service to customers, both through words and actions, (3) basic understanding of financial management, (4) skills in online marketing, and (5) understanding of competitive dynamics, are proven to enhance the competitiveness of MSMEs. With these skills and understandings, MSME actors can better analyze their target markets and develop business strategies that align with the characteristics and needs of consumers in their targeted market segments.

Until now, the ability of most MSME actors to reach the market has still been limited to traditional markets with offline sales systems. According to the Head of Public Relations at the East Java Cooperative and MSME Office, only about 2% of MSME actors are able to market their products online, indicating that the use of digital technology is still very low. The main factor believed by MSME actors as a determinant of competitiveness is the ability to set low selling prices. To achieve this, they try to reduce production costs through various strategies, such as sourcing raw materials directly from the source, managing labor costs to remain efficient, and minimizing factory overhead costs. With these cost-efficiency strategies, MSME actors aim to create business independence and achieve higher profits compared to their competitors in the long term.

4.4.5. Knowledge Sharing Influences MSME Independence

Highlighting the result of this study, knowledge sharing has a significant impact on MSME independence. The results indicate that MSME actors understand the importance of maintaining or even enhancing their strengths while addressing their weaknesses through knowledge sharing with partners. The questionnaire responses reveal that the additional knowledge most needed by respondents includes online marketing techniques, both through specific marketplaces and social media.

The business knowledge acquired by MSME actors to improve performance sustainably has proven capable of creating business independence for MSMEs. Competitive selling prices can be established, products can be tailored to meet community needs, service quality can be enhanced, and a positive image or reputation can be built. Customer loyalty is maintained by offering the best prices. This situation leads to consistently higher profits than those of competitors.

4.4.6. Knowledge Sharing Enhances the Relationship between the Business Knowledge Ecosystem and MSME Independence

The previous section discussed the relationship between the business knowledge ecosystem and MSMEs' independence, where business experience and all the knowledge possessed by MSME actors have a direct impact on their business independence. This business knowledge includes: 1) the ability to provide good service to consumers, both in speech and action, 2) understanding the concept of business competition, 3) understanding employee behavior, 4) knowledge of online marketing and other digital realms, and 5) understanding financial management concepts in business.

MSME actors recognize the role of each type of knowledge in increasing revenue and profits, yet they face limitations in applying this knowledge (Harjanti et al., 2024). Limited interviews with several MSME actors revealed that consumer behavior and the business environment play a role in determining strategies for utilizing knowledge in business management.

This study confirms that the process of knowledge sharing is an activity that MSME actors expect to practice with the knowledge they possess in their current businesses. For instance, 1) digital marketing assistance is deemed crucial for applying online marketing knowledge, leading to significant profit increases; 2) digital financial guidance is necessary to accurately understand assets, debts, and business capital; and 3) explanations of strategies for building partnerships with government and private institutions. Various knowledge-sharing activities participated in by MSME actors make the role of knowledge in achieving business independence increasingly evident.

4.4.7. Knowledge Sharing Does Not Enhance the Relationship between Competitive Advantage and MSME Independence

The study confirms that the level of competitiveness among MSMEs is established through the setting of the lowest selling prices. The costs of raw materials and other production expenses are minimized to achieve lower prices compared to competitors. Product designs are made to be the same or at least similar to those of competitors, as consumer characteristics are homogeneous. On average, consumers of MSME products lack confidence when using products that differ from those of the majority, even if the products are superior. This phenomenon could serve as a subject for future study to critically examine the theory of competitive advantage, which requires products to be unique, valuable, irreplaceable, and difficult for competitors to imitate.

To achieve business independence, micro, small, and medium enterprises (MSMEs) can choose a strategy of becoming market leaders in certain products. This requires MSMEs to be innovative, meaning they are capable of guiding consumer preferences toward something new and different from existing products in the market. To realize such innovative behavior, not only knowledge and financial capability are needed, but also the courage to take the initial step. However, empirical studies show that this kind of character is still rare among MSME actors. Based on survey results, most MSMEs prefer to produce products that have already been proven to be accepted by the market rather than trying to create new products. Limited knowledge and limited capital are the main factors causing a lack of courage among MSME actors to face risks if the innovative products they produce do not sell in the market.

5. CONCLUSION

This study concludes that a science-based innovation ecosystem in the MSME environment can be formed if MSME actors understand the importance of knowledge as the main foundation to increase competitiveness in the global market. With adequate knowledge mastery, MSME actors are able to build a business image that is in line with consumer needs and win business competition. Business knowledge that includes aspects of production techniques, marketing, finance, consumer service, and competitive strategies plays an important role in encouraging the creation of synergies between companies and their supporting structures in a symbiotic relationship that is mutually beneficial. Through the existence of this innovation ecosystem, MSME actors have the opportunity to expand knowledge horizons, build strategic partnerships, improve cost efficiency, and optimize risk management towards business independence. To make this happen, mutually supportive collaboration is needed between the government, the industrial world, and academia through business community forums and knowledge-sharing activities tailored to the capacity of each party.

Overall, the results of the study show that the functional relationship between variables affecting the independence of MSMEs is as follows:

1. *The Business Knowledge Ecosystem* has a direct effect on the independence of MSMEs.
2. *Business Knowledge Ecosystem* has a direct effect on *Competitive Advantage.*
3. *Competitive Advantage* affects the independence of MSMEs.
4. *The Business Knowledge Ecosystem* has an indirect effect on the independence of MSMEs through *Competitive Advantage.*

5. *Knowledge Sharing* has a direct effect on the independence of MSMEs.
6. *Knowledge Sharing* strengthens the influence of *the Business Knowledge Ecosystem* on the independence of MSMEs.
7. *Knowledge sharing* does not strengthen the influence of *competitive advantage* on the independence of MSMEs.

This finding proves that various knowledge-sharing activities, such as business planning training, financial management, digital marketing, and business mentoring, are proven to strengthen the role of the Business Knowledge Ecosystem in enhancing the independence of MSMEs. However, there are some limitations of this research, including: 1) The process of achieving business independence for MSMEs is certainly not the same for each MSME, but this research did not make such distinctions. The analysis results are still very general, so further research is needed to discuss the concept of independence for each type of MSME; 2) The research approach is quantitative, so it cannot formulate a detailed model of MSME independence. Therefore, further research with a qualitative approach is needed to obtain an accurate model for achieving MSME independence.

6. IMPLICATION

This study provides broad benefits, both theoretically and practically. On a theoretical level, the study's findings contribute to the development of Strategic Management knowledge and open opportunities for further research. Empirical evidence shows that products that are unique, distinctive, or different from others are not favored by consumers, leading to poor sales. This challenges some aspects of the competitive advantage theory proposed by Barney (1991). How can academics critique this theory? This is an issue that requires analysis in future studies.

Meanwhile, on a practical level, research is useful as input for the government regarding strategies to build the independence of MSMEs as a benchmark for national independence. The government needs to step in to manage a knowledge-based innovation climate for MSME actors so they can sustain their businesses in the long term. Various parties, such as academics, business communities, or the general public, can participate in this process by sharing knowledge with MSME actors. The government should facilitate mentoring and knowledge-sharing processes so that policy directions can support MSME independence. For MSME actors themselves, it is necessary to build and develop synergy between companies, the industrial sector, communities, and academics in a symbiotic relationship through a more theoretical and open approach within the scope of the innovation ecosystem.

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Transparency: The authors state that the manuscript is honest, truthful, and transparent, that no key aspects of the investigation have been omitted, and that any differences from the study as planned have been clarified. This study followed all writing ethics.
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