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Entrepreneurship Orientation, Process Innovation, and Knowledge Management on the Competitive Advantages of MSMEs in Surabaya

Nanda Hidayati
Universitas IPWIJA

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ABSTRACT

This study aims to analyze the effect of entrepreneurial orientation, process innovation, and knowledge management on the competitive advantage of micro, small, and medium enterprises (MSMEs) in Surabaya. Grounded in the resource-based view, this research adopts a quantitative approach to examine how internal strategic capabilities contribute to MSME competitiveness in a dynamic business environment. Data were collected from 200 MSME owners and managers using a structured questionnaire measured on a five-point Likert scale. The data were analyzed using multiple linear regression with the Statistical Package for the Social Sciences (SPSS) version 25. The results indicate that entrepreneurial orientation, process innovation, and knowledge management each have a positive and significant effect on competitive advantage. Furthermore, the simultaneous test shows that these three variables jointly explain 50.7% of the variance in competitive advantage. The findings suggest that MSMEs with stronger entrepreneurial behavior, continuous process improvement, and effective knowledge utilization are better positioned to achieve sustainable competitive advantage. This study contributes to the MSME literature by providing empirical evidence on the integrated role of entrepreneurship, innovation, and knowledge management, while offering practical insights for MSME practitioners and policymakers in strengthening competitiveness.

Corresponding Author:

Name: Nanda Hidayati
Institution Address: Universitas IPWIJA
e-mail: nanda.assalaam@gmail.com

1. Introduction

Micro, small, and medium enterprises (MSMEs) play a crucial role in driving economic growth, employment creation, and regional development, particularly in emerging economies such as Indonesia [1]. As the backbone of the national economy, MSMEs contribute significantly to gross domestic

product and absorb a large proportion of the workforce. In urban economic centers like Surabaya, MSMEs operate in an increasingly competitive and dynamic business environment characterized by rapid technological change, market uncertainty, and intensified competition [2]. These conditions require MSMEs not only to survive but also to develop sustainable competitive advantages that enable long-term growth and resilience [3].

In recent years, competitive advantage has become a central issue in MSME development studies, as traditional cost-based competition is no longer sufficient in highly competitive markets [4]. Instead, firms are required to leverage internal capabilities, strategic orientations, and organizational knowledge to differentiate themselves from competitors [5]. From the perspective of the resource-based view (RBV), competitive advantage emerges when firms possess valuable, rare, inimitable, and non-substitutable resources that are effectively managed and deployed. For MSMEs, such resources are often intangible in nature, including entrepreneurial orientation, innovative processes, and knowledge management capabilities [6].

Entrepreneurial orientation reflects a firm's strategic posture in terms of innovativeness, proactiveness, and risk-taking. MSMEs with a strong entrepreneurial orientation tend to be more responsive to market opportunities, more willing to experiment with new ideas, and more capable of adapting to environmental changes [7]. Prior studies have demonstrated that entrepreneurial orientation positively influences firm performance and competitiveness; however, empirical evidence remains mixed, particularly in the context of developing economies and urban MSME clusters [8]. This inconsistency suggests that entrepreneurial orientation alone may not be sufficient to generate competitive advantage without being supported by effective internal processes and knowledge utilization [9].

Process innovation represents an important mechanism through which MSMEs can enhance efficiency, reduce operational costs, improve product quality, and increase responsiveness to customer needs [10]. Unlike product innovation, which often requires substantial financial investment, process innovation is more accessible to MSMEs as it focuses on improving existing production, distribution, and operational procedures [11]. In the context of Surabaya's MSMEs, process innovation is increasingly relevant due to pressure to optimize limited resources while maintaining competitiveness. Nevertheless, empirical research examining the direct contribution of process innovation to competitive advantage among MSMEs remains relatively limited and fragmented [12].

Knowledge management has also emerged as a strategic capability that enables organizations to create, store, share, and apply knowledge effectively. For MSMEs, knowledge management plays a critical role in transforming individual experience and tacit knowledge into organizational assets that support decision-making, innovation, and strategic renewal [13]. Effective knowledge management facilitates learning, enhances problem-solving capabilities, and supports the successful implementation of entrepreneurial strategies and innovation initiatives [14]. Despite its recognized importance, many MSMEs in developing regions still struggle to institutionalize knowledge management practices, and empirical studies investigating its impact on competitive advantage remain underexplored [15].

Although prior research has examined entrepreneurial orientation, process innovation, and knowledge management independently, integrative empirical studies that analyze the combined effects of these variables on MSME competitive advantage remain limited, particularly within the context of Surabaya. Existing studies also tend to focus on large firms or manufacturing sectors, leaving a significant research gap in understanding how these strategic factors operate within MSMEs that often face resource constraints and high levels of environmental uncertainty. Addressing this

gap is crucial to developing a more comprehensive understanding of the key drivers of MSME competitiveness in urban economic settings.

Based on these considerations, this study aims to empirically examine the influence of entrepreneurial orientation, process innovation, and knowledge management on the competitive advantage of MSMEs in Surabaya. Employing a quantitative research approach, data are collected from MSME owners and managers and analyzed using SPSS version 25 to assess both the partial and simultaneous effects of the proposed variables. The findings are expected to contribute to the theoretical development of MSME competitiveness by integrating perspectives from entrepreneurship, innovation, and knowledge management, while also providing practical insights for MSME practitioners and policymakers in formulating strategies to enhance sustainable competitive advantage.

2. *Literature Review*

2.1 *Theoretical Framework*

This study is grounded in the Resource-Based View (RBV) theory, which posits that firms can achieve sustainable competitive advantage by effectively acquiring, developing, and deploying strategic resources that are valuable, rare, inimitable, and non-substitutable, a perspective that is particularly relevant for MSMEs given their limited tangible resources such as capital and physical assets [16]. In this context, intangible resources—including entrepreneurial orientation, innovation capabilities, and knowledge management—become critical sources of competitiveness, as RBV emphasizes that the strategic management of internal capabilities enables firms to outperform competitors even in highly competitive and uncertain environments [16]. Complementing RBV, this study also draws on innovation theory and knowledge-based theory, which view innovation and knowledge as key drivers of organizational performance and long-term competitiveness; innovation theory highlights the importance of continuous process improvement to enhance efficiency and value creation, while knowledge-based theory positions knowledge as the most strategically significant organizational resource. Together, these theoretical perspectives provide a strong foundation for examining how entrepreneurial orientation, process innovation, and knowledge management contribute to the competitive advantage of MSMEs [17].

2.2 *Competitive Advantage*

Competitive advantage refers to a firm's ability to deliver superior value to customers compared to its competitors through lower costs, differentiation, or a combination of both, and in the context of MSMEs it is commonly reflected in superior product quality, operational efficiency, customer responsiveness, innovation capability, and effective market positioning [18]. Unlike large firms, MSMEs rely heavily on flexibility, speed, and local market knowledge to compete successfully. From a Resource-Based View (RBV) perspective, competitive advantage is achieved when firms leverage unique internal resources and capabilities that are difficult for competitors to replicate, and empirical studies consistently show that strong internal capabilities are associated with higher competitiveness and performance [16]. However, due to rapid environmental changes and limited resource availability, sustaining competitive advantage in MSMEs requires continuous adaptation and learning, making the identification of key strategic drivers of competitive advantage a critical issue in MSME research [19].

2.3 *Entrepreneurial Orientation and Competitive Advantage*

Entrepreneurial orientation (EO) reflects a firm's strategic posture and managerial philosophy characterized by innovativeness, proactiveness, and risk-taking, where innovativeness denotes a willingness to support creativity and experimentation, proactiveness reflects forward-looking market behavior, and risk-taking represents the tendency to pursue

uncertain but potentially rewarding initiatives. In the context of MSMEs, entrepreneurial orientation plays a vital role in shaping strategic decisions and organizational behavior [20]. Prior empirical research generally indicates that entrepreneurial orientation positively influences firm performance, growth, and competitive advantage, as MSMEs with strong EO are better able to identify market opportunities, respond quickly to customer needs, and introduce new ideas that differentiate them from competitors [21]. Although some studies report inconsistent findings due to contextual factors such as industry dynamics, firm size, and resource availability, entrepreneurial orientation remains a critical strategic capability that enables MSMEs to navigate uncertainty and enhance competitiveness, forming the basis for the proposed hypothesis [22].

H1: Entrepreneurial orientation has a positive and significant effect on the competitive advantage of MSMEs.

2.4 Process Innovation and Competitive Advantage

Process innovation refers to the implementation of new or significantly improved production, operational, or managerial processes that enhance efficiency, quality, and flexibility, and for MSMEs it is particularly important because it enables firms to optimize limited resources, reduce costs, improve service delivery, and increase productivity without requiring substantial investment in new products or technologies [23]. Prior studies indicate that process innovation contributes positively to competitive advantage by allowing firms to operate more efficiently, shorten production cycles, improve quality control, and respond more effectively to market demands, which in turn enhances customer satisfaction and strengthens competitive positioning [24]. In urban markets such as Surabaya, where competition is intense and customer expectations continue to rise, process innovation becomes increasingly essential for MSMEs to sustain competitiveness [25]. However, despite its strategic importance, empirical research on process innovation in MSMEs remains relatively limited compared to product innovation, prompting this study to explicitly examine process innovation as a determinant of competitive advantage and to propose the corresponding hypothesis based on innovation theory and existing empirical evidence.

H2: Process innovation has a positive and significant effect on the competitive advantage of MSMEs.

2.5 Knowledge Management and Competitive Advantage

Knowledge management (KM) refers to the systematic process of creating, capturing, sharing, and applying knowledge to achieve organizational objectives, and in the context of MSMEs it is often informal and embedded in individual experience, making it vulnerable to loss and underutilization [26]. Nevertheless, when managed effectively, knowledge becomes a strategic asset that supports innovation, informed decision-making, and competitive positioning. Drawing on knowledge-based theory, firms that are able to manage knowledge effectively are better equipped to learn, adapt, and innovate in dynamic environments, and empirical studies consistently show that knowledge management positively influences organizational performance, innovation capability, and competitive advantage. Through effective knowledge sharing and utilization, MSMEs can enhance problem-solving, improve operational efficiency, and support continuous improvement initiatives [27]. Despite its importance, many MSMEs face challenges in implementing formal knowledge management practices due to limited resources and managerial capabilities, motivating this study to provide empirical evidence on the role of knowledge management in enhancing MSME competitive advantage in an urban Indonesian context and to propose the corresponding hypothesis.

H3: Knowledge management has a positive and significant effect on the competitive advantage of MSMEs.

2.6 Conceptual Framework and Hypothesis Development

Based on the theoretical and empirical review, this study proposes a conceptual framework in which entrepreneurial orientation, process innovation, and knowledge management are treated as independent variables that influence competitive advantage as the dependent variable [28]. The framework assumes that these strategic capabilities function both independently and collectively to enhance MSMEs' competitive position [29]. Entrepreneurial orientation drives opportunity recognition and strategic initiative, process innovation enhances operational efficiency, and knowledge management enables learning and capability development. Accordingly, the final hypothesis of this study is formulated as follows:

H4: Entrepreneurial orientation, process innovation, and knowledge management simultaneously have a positive and significant effect on the competitive advantage of MSMEs.

3. Research Methods

3.1 Research Design

This study employs a quantitative research design using a cross-sectional survey approach to examine the effect of entrepreneurial orientation, process innovation, and knowledge management on the competitive advantage of micro, small, and medium enterprises (MSMEs) in Surabaya. A quantitative approach is considered appropriate because it allows for objective measurement of variables, hypothesis testing, and generalization of findings based on statistical analysis. The research focuses on identifying causal relationships between the independent variables and the dependent variable through empirical data.

3.2 Population and Sample

The population of this study consists of MSME owners and managers operating in Surabaya across various business sectors, including trade, services, manufacturing, and creative industries, as these individuals are directly involved in strategic decision-making related to entrepreneurship, innovation, and knowledge management within their firms [30]. A total sample of 200 MSMEs was selected, which meets the minimum requirements for multivariate statistical analysis and is considered adequate to ensure statistical power and the reliability of results. The sampling technique employed was purposive sampling, with criteria that the business is classified as an MSME according to Indonesian regulations, operates within the Surabaya area, and is represented by an owner or manager who possesses sufficient understanding of the firm's strategic and operational activities.

3.3 Data Collection Method

Primary data were collected using a structured questionnaire distributed both directly and online to MSME owners and managers. The questionnaire was developed based on established measurement scales from previous studies and adapted to suit the MSME context, with respondents asked to indicate their level of agreement using a five-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree) [31]. Data collection was carried out over a defined period to ensure response consistency, and prior to full distribution the questionnaire was reviewed to ensure the clarity and relevance of all measurement items.

3.4 Research Variables and Measurement

This study involves three independent variables—entrepreneurial orientation, process innovation, and knowledge management—and one dependent variable, competitive advantage. Entrepreneurial orientation is measured through indicators reflecting innovativeness, proactiveness, and risk-taking, capturing the extent to which MSMEs emphasize creativity, forward-looking strategies, and a willingness to take calculated

risks. Process innovation is assessed using indicators related to improvements in production methods, operational procedures, service delivery processes, and efficiency enhancement, which reflect how MSMEs implement new or improved processes to increase productivity and effectiveness. Knowledge management is measured through indicators representing knowledge creation, sharing, storage, and application, evaluating how MSMEs manage organizational knowledge to support learning and decision-making. Competitive advantage is measured using indicators such as cost efficiency, product or service differentiation, quality improvement, customer responsiveness, and overall market competitiveness. All measurement items are operationalized using Likert-scale statements to ensure consistency and comparability across variables.

3.5 Validity and Reliability Testing

To ensure the quality of the measurement instrument, validity and reliability tests were conducted prior to hypothesis testing. Construct validity was assessed using item–total correlation, where an item was considered valid if its correlation coefficient exceeded the critical value at a significance level of 0.05. Reliability was evaluated using Cronbach's Alpha, with values greater than 0.70 indicating adequate internal consistency among the measurement items. All validity and reliability analyses were performed using SPSS version 25.

3.6 Data Analysis Technique

The collected data were analyzed using the Statistical Package for the Social Sciences (SPSS) version 25 through several analytical stages. Descriptive statistics were first employed to describe respondent characteristics and summarize the distribution of responses for each research variable. Prior to regression analysis, classical assumption tests—including normality, multicollinearity, and heteroscedasticity—were conducted to ensure that the data met the requirements for multiple linear regression analysis. Subsequently, multiple linear regression analysis was used to examine the partial and simultaneous effects of entrepreneurial orientation, process innovation, and knowledge management on competitive advantage. Hypothesis testing was carried out using t-tests to assess the partial effects of each independent variable, an F-test to evaluate their simultaneous effect, and the coefficient of determination (R^2) to measure the extent to which the independent variables explain variations in competitive advantage, with all statistical tests conducted at a 5 percent significance level ($\alpha = 0.05$).

4. RESULTS AND DISCUSSION

4.1 Descriptive Statistics

Descriptive statistics were used to examine respondents' perceptions of entrepreneurial orientation, process innovation, knowledge management, and competitive advantage. Table 1 presents the mean and standard deviation values of each variable.

Table 1. Descriptive Statistics

Variable	Number of Items	Mean	Standard Deviation
Entrepreneurial Orientation	9	3.89	0.61
Process Innovation	6	3.76	0.65
Knowledge Management	8	3.83	0.58
Competitive Advantage	7	3.92	0.60

The descriptive statistics in Table 1 indicate that all variables in this study are perceived at relatively high levels by MSME owners and managers in Surabaya. Competitive advantage shows the highest mean score (M = 3.92; SD = 0.60), suggesting that respondents generally perceive their businesses as having a fairly strong competitive position in terms of efficiency, differentiation, responsiveness, and market competitiveness. Entrepreneurial orientation also records a high mean score (M = 3.89; SD = 0.61), indicating that MSMEs tend to exhibit proactive behavior, innovativeness, and a willingness to take calculated risks. This finding reflects the adaptive and opportunity-driven nature of MSMEs operating in a dynamic urban environment such as Surabaya.

Knowledge management (M = 3.83; SD = 0.58) and process innovation (M = 3.76; SD = 0.65) likewise demonstrate positive perceptions, although process innovation shows the lowest mean among the variables. This suggests that while MSMEs recognize the importance of improving operational processes and managing knowledge, the implementation of systematic process innovation may still face constraints, such as limited resources, technology, or managerial capability. Nevertheless, the relatively high mean values across all variables imply that entrepreneurial orientation, process innovation, and knowledge management are already present to a meaningful extent and collectively form a strong foundation for enhancing competitive advantage among MSMEs in Surabaya.

4.2 Validity and Reliability Results

Validity testing was conducted using item-total correlation, and all items showed correlation coefficients greater than the critical value (r-table = 0.138, α = 0.05). Reliability was tested using Cronbach's Alpha.

Table 2. Reliability Test

Variable	Cronbach's Alpha	Reliability Status
Entrepreneurial Orientation	0.862	Reliable
Process Innovation	0.814	Reliable
Knowledge Management	0.879	Reliable
Competitive Advantage	0.846	Reliable

The reliability test results presented in Table 2 indicate that all measurement instruments used in this study demonstrate strong internal consistency. The Cronbach's Alpha values for all variables exceed the commonly accepted threshold of 0.70, confirming that the items used to measure each construct are reliable. Knowledge management shows the highest reliability (α = 0.879), suggesting a high degree of consistency among its measurement items in capturing knowledge creation, sharing, storage, and application within MSMEs. Entrepreneurial orientation (α = 0.862) and competitive advantage (α = 0.846) also exhibit high reliability, indicating that the indicators used effectively represent these constructs.

Process innovation, with a Cronbach's Alpha value of 0.814, likewise meets the reliability criteria, although it is slightly lower compared to the other variables. This result still reflects acceptable internal consistency and suggests that the indicators related to process improvements and operational efficiency are consistently understood by respondents. Overall, these findings confirm that the measurement instruments are reliable and suitable for further statistical analysis, including regression testing and hypothesis evaluation, thereby strengthening the credibility and robustness of the study's empirical results.

4.3 Classical Assumption Test

Normality testing using the Kolmogorov–Smirnov test produced a

significance value of 0.087, which is greater than 0.05, indicating normally distributed residuals. Multicollinearity testing shows tolerance values above 0.10 and VIF values below 10. Heteroscedasticity testing using the Glejser test reveals significance values greater than 0.05, indicating no heteroscedasticity.

Table 3. Multicollinearity Test

Independent Variable	Tolerance	VIF
Entrepreneurial Orientation	0.612	1.634
Process Innovation	0.547	1.828
Knowledge Management	0.589	1.697

The multicollinearity test results presented in Table 3 indicate that there is no multicollinearity problem among the independent variables in this study. All tolerance values are above the minimum threshold of 0.10, and all Variance Inflation Factor (VIF) values are well below the critical value of 10, with entrepreneurial orientation (VIF = 1.634), process innovation (VIF = 1.828), and knowledge management (VIF = 1.697). These results suggest that the independent variables are not highly correlated with one another and each contributes unique explanatory power to the regression model. Consequently, the regression estimates can be considered stable and reliable, allowing for valid interpretation of the individual and simultaneous effects of entrepreneurial orientation, process innovation, and knowledge management on competitive advantage.

4.4 Multiple Linear Regression Analysis

Multiple linear regression analysis was performed to test the influence of entrepreneurial orientation, process innovation, and knowledge management on competitive advantage.

Table 4. Multiple Regression

Variable	Regression Coefficient (β)	t-value	Sig.
Entrepreneurial Orientation	0.312	4.876	0.000
Process Innovation	0.271	4.215	0.000
Knowledge Management	0.295	4.502	0.000
Constant	0.842	2.114	0.036

The multiple regression results in Table 4 indicate that entrepreneurial orientation, process innovation, and knowledge management each have a positive and statistically significant effect on competitive advantage among MSMEs in Surabaya. Entrepreneurial orientation shows a regression coefficient of $\beta = 0.312$ with a t-value of 4.876 ($p = 0.000$), suggesting that MSMEs that are more innovative, proactive, and willing to take calculated risks tend to achieve higher competitive advantage. Knowledge management also demonstrates a strong positive influence ($\beta = 0.295$; $t = 4.502$; $p = 0.000$), highlighting the importance of effectively creating, sharing, and applying knowledge to support learning, decision-making, and differentiation. Process innovation likewise has a significant positive effect ($\beta = 0.271$; $t = 4.215$; $p = 0.000$), indicating that improvements in operational and managerial processes contribute meaningfully to enhancing efficiency

and market competitiveness. The significance of all three variables confirms that competitive advantage in MSMEs is driven by a combination of entrepreneurial mindset, continuous process improvement, and effective knowledge utilization, while the significant constant term ($\beta = 0.842$; $p = 0.036$) suggests the presence of baseline factors influencing competitive advantage beyond the variables included in the model.

The results of the F-test indicate that entrepreneurial orientation, process innovation, and knowledge management simultaneously have a significant effect on competitive advantage, as evidenced by an F-value of 67.284 with a significance level of 0.000. The coefficient of determination shows an R value of 0.712 and an R^2 of 0.507, meaning that 50.7% of the variation in competitive advantage among MSMEs in Surabaya can be explained by the combined influence of the three independent variables, while the remaining 49.3% is attributable to other factors not included in the model. The adjusted R^2 value of 0.499 further confirms the robustness of the model by accounting for the number of predictors, indicating that entrepreneurial orientation, process innovation, and knowledge management together provide substantial explanatory power in understanding MSME competitive advantage.

4.5 Discussion

The results of this study confirm that entrepreneurial orientation has a positive and significant influence on competitive advantage, thereby supporting Hypothesis 1. MSMEs that exhibit higher levels of innovativeness, proactiveness, and risk-taking are better positioned to identify market opportunities and respond effectively to environmental changes [29]. This finding is consistent with the Resource-Based View, which conceptualizes entrepreneurial orientation as a strategic intangible resource that enables firms to create value and achieve superior competitiveness in dynamic market conditions [32].

Process innovation is also found to have a significant positive effect on competitive advantage, supporting Hypothesis 2. MSMEs that continuously improve their operational and managerial processes are able to enhance efficiency, improve service quality, and respond more quickly to customer needs [10]. This result aligns with innovation theory, which emphasizes that incremental improvements in processes can serve as an effective competitive strategy, particularly for MSMEs that face limitations in financial and technological resources [23].

Furthermore, the findings indicate that knowledge management significantly enhances competitive advantage, supporting Hypothesis 3. MSMEs that actively engage in knowledge creation, sharing, and application are better equipped to solve operational problems, innovate, and sustain performance over time [26]. This outcome is consistent with knowledge-based theory, which positions knowledge as a core source of organizational advantage. The significant simultaneous effect of entrepreneurial orientation, process innovation, and knowledge management also supports Hypothesis 4, demonstrating that these capabilities interact synergistically—entrepreneurial orientation drives strategic initiative, process innovation strengthens operational effectiveness, and knowledge management facilitates learning and continuous improvement—together forming a solid foundation for sustainable competitive advantage among MSMEs in Surabaya [27].

5. Conclusion

This study provides empirical evidence on the determinants of competitive advantage among MSMEs in Surabaya by examining the roles of entrepreneurial orientation, process innovation, and knowledge management. The results show that entrepreneurial orientation has a positive and significant effect on competitive advantage, indicating that MSMEs that are more innovative, proactive, and willing to take calculated risks are better able to

compete in dynamic markets. In addition, process innovation is found to significantly enhance competitive advantage, as continuous improvements in operational and managerial processes enable MSMEs to increase efficiency, improve service quality, and respond more effectively to customer needs. These findings highlight entrepreneurial behavior and process innovation as critical and practical strategic resources for MSMEs, particularly in contexts characterized by intense competition and limited resources.

Furthermore, knowledge management is demonstrated to have a positive and significant impact on competitive advantage, as MSMEs that effectively create, share, and apply knowledge are better positioned to support innovation, improve decision-making, and adapt to environmental changes. The simultaneous influence of entrepreneurial orientation, process innovation, and knowledge management explains more than half of the variance in competitive advantage, underscoring the importance of integrating these three capabilities in a coherent strategic approach. Overall, this study concludes that strengthening entrepreneurial orientation, fostering continuous process innovation, and developing effective knowledge management practices are essential for enhancing the long-term and sustainable competitive advantage of MSMEs in urban economic centers such as Surabaya.

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