

Strategic Industrial Location Selection for SMEs in Indonesia: Integrating Tangible and Intangible Determinants through a Multi-Criteria Decision-Making Framework

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Abstract

Micro, Small, and Medium Enterprises (MSMEs) represent a critical pillar of economic transformation in developing economies, particularly in emerging markets such as Indonesia. Industrial location selection remains one of the most consequential strategic decisions affecting SME competitiveness, operational efficiency, long-term sustainability, and investment resilience. Existing studies on industrial site selection have predominantly emphasized measurable economic variables while underestimating the strategic significance of intangible determinants such as institutional quality, security stability, regulatory support, and socio-business ecosystems. This study develops an integrated Multi-Criteria Decision-Making (MCDM) framework using the Simple Additive Weighting (SAW) method to evaluate three industrial alternatives in Indonesia: West Java Region, East Java Region, and Central Java Region. The analysis incorporates both tangible and intangible variables to provide a more comprehensive decision architecture for SME industrial location strategy. Primary data were obtained through purposive surveys involving SME owners, industrial consultants, and regional planners, while secondary data were derived from governmental and international institutional reports. The findings demonstrate that Central Java Region achieved the highest composite score due to its balanced cost structure, favorable incentive systems, stronger security conditions, and supportive institutional environment. West Java Region exhibited superior infrastructure and market accessibility but suffered from elevated operational costs and urban complexity. East Java Region provided strong affordability advantages but showed weaknesses in institutional and security dimensions. Sensitivity analysis confirms the robustness of the model under alternative weighting structures and highlights the increasing strategic relevance of intangible variables in industrial planning. The study contributes theoretically by integrating resource-based and institutional perspectives into industrial location analysis and offers practical managerial implications for SME investors, policymakers, and regional development authorities.

INTRODUCTION

Micro, Small, and Medium Enterprises (MSMEs) constitute the backbone of economic development across many emerging economies due to their contribution to employment generation, innovation diffusion, regional industrialization, and poverty reduction. According to the World Bank, SMEs account for the majority of businesses globally and contribute significantly to job creation and GDP growth in developing nations. In economies characterized by structural transformation and industrial transition, SMEs function not only as economic actors but also as instruments for social mobility and regional economic inclusion.

In the context of Indonesia, industrial expansion among SMEs has accelerated over recent decades due to urbanization, demographic growth, and entrepreneurial diversification. Nevertheless, many SMEs continue to experience operational fragility arising from infrastructural deficiencies, regulatory uncertainty, security instability, and inefficient spatial planning. Among the most strategic decisions influencing SME survival and competitiveness is industrial location selection. Location decisions shape production efficiency, logistics performance, market responsiveness, labour accessibility, supply-chain integration, and long-term sustainability.

Classical location theory argues that firms strategically position themselves to minimize operational costs while maximizing market access and agglomeration benefits. Contemporary industrial economics

further suggests that location decisions are multidimensional and extend beyond purely economic calculations to include institutional quality, governance effectiveness, policy support, and socio-environmental conditions. The increasing complexity of industrial ecosystems therefore requires firms to evaluate both tangible and intangible determinants simultaneously.

Tangible determinants generally refer to measurable operational variables such as land cost, labour expenses, infrastructure quality, transportation access, and market proximity. These variables directly influence operational expenditure and production efficiency. By contrast, intangible determinants include institutional support, regulatory quality, business climate, community acceptance, security conditions, and governmental incentives. Although less measurable, these factors significantly influence long-term organizational resilience, investment confidence, and strategic sustainability.

The theoretical foundation of this study is informed by the Resource-Based View (RBV) and institutional theory. The RBV posits that sustainable competitive advantage emerges from valuable, rare, inimitable, and organizationally embedded resources. While physical assets remain important, intangible assets such as institutional trust, governance quality, and ecosystem support increasingly determine long-term competitiveness. Institutional theory similarly emphasizes that organizations operate within broader regulatory and socio-political environments that shape

strategic behavior and operational outcomes.

Previous studies investigating industrial location selection have frequently utilized Multi-Criteria Decision-Making (MCDM) methods such as Analytic Hierarchy Process (AHP), Technique for Order Preference by Similarity to Ideal Solution (TOPSIS), and Simple Additive Weighting (SAW). However, much of the existing literature demonstrates two important limitations. First, empirical studies often overemphasize measurable cost-oriented variables while underrepresenting institutional and strategic intangible dimensions. Second, there remains limited empirical evidence within the Indonesian industrial context integrating both dimensions into a unified and replicable decision framework.

This study addresses these gaps by developing an integrated SAW-based MCDM framework to evaluate industrial location alternatives across West Java Region, East Java Region, and Central Java Region. The study seeks to identify the most strategically viable industrial location for SMEs by incorporating both operational and institutional determinants into a single analytical architecture. Beyond methodological contribution, the study also provides managerial insights for SME investors and policy implications for regional industrial planners seeking to strengthen industrial competitiveness and balanced regional development.

MATERIALS AND METHODS

Study Area

This study evaluates three industrial alternatives located within major economic corridors in Indonesia:

West Java Region (Location A)

Lagos represents Indonesia's principal commercial and financial center. The state possesses highly developed infrastructure, strong logistics connectivity, extensive market concentration, and advanced business ecosystems. However, it is also characterized by elevated land acquisition costs, labour expenses, urban congestion, and operational complexity.

East Java Region (Location B)

East Java Region has emerged as an expanding industrial corridor due to its geographic proximity to Lagos. The state offers relatively lower land and labour costs and increasing industrial expansion. Nevertheless, infrastructural limitations and institutional inconsistencies remain developmental challenges.

Central Java Region (Location C)

Central Java Region presents a moderately priced industrial environment supported by governmental incentives, relatively stable security conditions, and improving institutional support mechanisms. Although infrastructural development remains lower than Lagos, the state offers balanced operational conditions for SMEs.

Data Collection

The study employed both primary and secondary data sources to enhance analytical reliability and triangulation.

Primary data were collected through purposive surveys involving 30 respondents comprising SME owners, industrial consultants, business strategists, and regional planning experts. Respondents were selected based on professional experience and direct involvement in industrial location planning and SME operational management.

Secondary data were obtained from reports published by the World Bank, the National Bureau of Statistics, and the Indonesian Investment Promotion Commission. These institutional sources provided macroeconomic indicators, infrastructure assessments, investment climate evaluations, and regional industrial statistics.

Evaluation Criteria and Weighting Structure

The analytical framework classifies industrial location determinants into two broad dimensions:

A. Tangible Factors (80%)

Tangible factors were assigned dominant weighting because they directly influence operational feasibility, cost efficiency, and production continuity.

1. Land Cost (20%)
Reflects acquisition affordability and capital intensity.
2. Infrastructure Quality (25%)
Represents transportation networks, electricity reliability, logistics systems, and utility availability.
3. Labour Cost (15%)

Measures workforce affordability and labour accessibility.

4. Market Proximity (20%)

Indicates distance to major consumer and distribution markets.

B. Intangible Factors (20%)

Intangible factors capture institutional and socio-environmental dimensions influencing sustainability and strategic resilience.

1. Business Environment (20%)

Measures regulatory ease, institutional efficiency, and commercial ecosystem maturity.

2. Government Incentives (20%)

Represents fiscal incentives, tax reliefs, investment support, and policy facilitation.

3. Community Support (15%)

Reflects stakeholder acceptance, social integration, and local cooperation.

4. Security and Stability (15%)

Measures safety conditions, political stability, and operational risk exposure.

The weighting architecture was developed based on literature synthesis, expert consultation, and empirical perceptions obtained from respondents. A scoring scale ranging from 1 to 10 was utilized, where 1 represented the least favorable condition and 10 represented the most favorable condition.

Simple Additive Weighting (SAW) Method

The study adopted the Simple Additive Weighting (SAW) approach due to its interpretability, transparency, and suitability for strategic industrial decision-making involving multiple criteria.

The SAW method enables the aggregation of heterogeneous criteria into a unified strategic evaluation framework, thereby facilitating comparative industrial location analysis.

RESULTS

Evaluation of Tangible Factors

The analysis of tangible determinants reveals substantial differences in operational competitiveness among the three locations.

East Java Region achieved the highest score for land affordability due to comparatively lower acquisition costs. This indicates strong attractiveness for SMEs operating under capital constraints and seeking rapid operational scalability. However, managerial interpretation suggests that low land cost alone cannot guarantee sustainable industrial competitiveness if unsupported by adequate infrastructure and institutional reliability.

West Java Region demonstrated the strongest infrastructure performance owing to superior transportation systems, electricity accessibility, logistics integration, and proximity to dense consumer markets. From a managerial perspective, this creates strategic advantages for firms operating within high-volume distribution networks, export-oriented manufacturing, and time-sensitive

supply chains. Nevertheless, these advantages are partially offset by escalating urban operational costs, traffic congestion, labour expenses, and regulatory complexity.

Central Java Region exhibited balanced performance across tangible indicators. Although its infrastructure quality remains below Lagos, the state demonstrated stronger equilibrium between affordability and operational feasibility. Strategically, this balance reduces operational volatility and enables SMEs to maintain cost efficiency while avoiding excessive exposure to urban diseconomies.

The results indicate that industrial competitiveness is not determined solely by infrastructure superiority or cost minimization independently, but rather by the strategic alignment between operational affordability and institutional sustainability.

Evaluation of Intangible Factors

The intangible assessment produced significant differentiation across the three locations.

West Java Region scored strongly in business ecosystem maturity due to its concentration of financial institutions, suppliers, professional services, and commercial networks. Such ecosystem density enhances innovation diffusion, partnership opportunities, and supply-chain integration. However, the managerial burden associated with regulatory complexity and high competitive intensity may reduce operational agility for smaller enterprises.

Central Java Region achieved the strongest performance in governmental incentives, community support, and

security stability. This finding is strategically important because institutional predictability and socio-political stability significantly influence long-term investment sustainability. SMEs operating in uncertain environments often face hidden operational costs arising from regulatory inconsistency, security threats, and community resistance.

From a tactical management perspective, Oyo's institutional support mechanisms may reduce transaction costs, improve business continuity, and strengthen investor confidence. In addition, strong community acceptance enhances labour relations, operational legitimacy, and local market integration.

East Java Region demonstrated moderate institutional performance but exhibited relative weaknesses in security and governance consistency. Although the state offers affordability advantages, institutional vulnerabilities may elevate operational risk exposure, insurance costs, and long-term uncertainty for investors.

The findings emphasize that intangible variables increasingly function as strategic differentiators in industrial planning, particularly in emerging economies characterized by institutional volatility.

Overall Comparative Performance

The integrated evaluation revealed that Central Java Region obtained the highest composite score among all alternatives. The result demonstrates that balanced operational affordability combined with institutional stability creates superior strategic positioning for SME industrial development.

West Java Region and East Java Region achieved similar overall scores but for fundamentally different reasons. Lagos derives competitiveness primarily from infrastructure excellence and market access, whereas Ogun depends largely on cost efficiency. This distinction carries important managerial implications.

For high-capital firms prioritizing logistics optimization, market penetration, and export competitiveness, Lagos remains strategically advantageous despite elevated costs. Conversely, SMEs emphasizing operational affordability may initially prefer Ogun; however, firms must prepare tactical mitigation strategies for security and governance risks.

Central Java Region emerges as strategically optimal because it minimizes extreme trade-offs between operational cost and institutional sustainability. From a managerial standpoint, balanced environments often generate greater long-term resilience than environments characterized by extreme strengths and weaknesses.

Sensitivity Analysis

Sensitivity analysis was conducted by adjusting the weighting composition from 80:20 to 70:30 between tangible and intangible dimensions.

The results demonstrated that Central Java Region maintained its leading position under the revised weighting structure, confirming the robustness and stability of the decision model. Importantly, Oyo's advantage increased as intangible variables received greater emphasis. This

indicates that institutional quality, security conditions, and policy support possess increasingly strategic importance within modern industrial location decisions.

West Java Region experienced only marginal improvement under the adjusted weighting structure, suggesting that its competitiveness remains heavily dependent on physical and economic infrastructure rather than institutional flexibility. The finding further implies that rising urban complexity and regulatory burden may constrain Lagos' attractiveness when investors prioritize sustainability and operational resilience.

East Java Region showed minimal improvement, reinforcing the conclusion that its competitive advantage is concentrated primarily within cost-based tangible variables rather than institutional strength.

Managerially, the sensitivity analysis demonstrates that future industrial competitiveness will likely depend increasingly on non-physical strategic assets, including governance quality, institutional trust, regulatory transparency, and socio-environmental stability. This aligns with contemporary strategic management literature emphasizing the transition from resource-based competition toward institutionally embedded competitiveness.

DISCUSSION

The findings demonstrate that industrial location decisions for SMEs cannot be effectively evaluated through cost-based analysis alone. Traditional industrial planning frameworks frequently prioritize tangible operational variables while

underestimating the strategic significance of institutional and socio-environmental determinants.

The study reveals that balanced industrial ecosystems generate stronger long-term competitiveness than environments dominated by isolated advantages. West Java Region illustrates the limitations of infrastructure-centric competitiveness. Although the state possesses superior logistics and market access, escalating operational costs, congestion externalities, and regulatory complexity reduce managerial flexibility for SMEs with limited financial capacity.

By contrast, Central Java Region demonstrates how moderate infrastructure combined with institutional support can generate superior strategic outcomes. Government incentives, stable operating conditions, and supportive community structures collectively reduce uncertainty and strengthen long-term operational sustainability.

From a strategic management perspective, the findings reinforce the argument that intangible institutional assets increasingly function as sources of sustainable competitive advantage. Institutional trust, governance quality, and security stability reduce hidden operational costs and enhance organizational adaptability under uncertain economic conditions.

The study also carries significant policy implications. Regional governments seeking industrial investment attraction should avoid relying exclusively on fiscal incentives or infrastructural expansion. Instead, policymakers must strengthen institutional credibility, regulatory transparency, public security, and stakeholder engagement systems.

Industrial competitiveness increasingly depends on the integration of hard infrastructure and soft institutional infrastructure.

From a tactical operational perspective, SMEs should align location strategy with organizational priorities:

Firms prioritizing logistics efficiency and immediate market penetration may strategically favor Lagos despite higher costs.

SMEs seeking operational balance and long-term sustainability may obtain stronger resilience in Central Java Region.

Cost-sensitive firms entering early growth stages may consider East Java Region but require robust risk mitigation strategies concerning security and governance exposure.

The study further demonstrates the applicability of the SAW method for strategic industrial decision-making within emerging economies. The methodological transparency of SAW enhances managerial interpretability and facilitates practical implementation among policymakers and SME investors.

CONCLUSION

This study developed an integrated MCDM framework using the SAW method to evaluate industrial location alternatives for SMEs in Indonesia based on both tangible and intangible determinants.

The findings indicate that Central Java Region represents the most strategically balanced industrial alternative due to its combination of moderate operational costs, strong governmental incentives, supportive institutional conditions, and relative security stability. West Java Region remains highly competitive in terms of

infrastructure and market accessibility but faces structural cost disadvantages and operational complexity. East Java Region offers affordability benefits but demonstrates institutional and security vulnerabilities that may constrain long-term sustainability.

The sensitivity analysis confirms the robustness of the decision model and highlights the growing strategic relevance of intangible institutional factors in industrial planning. The study therefore concludes that sustainable industrial competitiveness increasingly depends on the integration of physical infrastructure and institutional quality.

Theoretically, the study contributes to industrial location literature by integrating resource-based and institutional perspectives into MCDM analysis. Practically, the findings provide strategic guidance for SME investors, regional planners, and policymakers seeking to enhance industrial competitiveness and balanced regional development.

Future studies should investigate the influence of digital infrastructure, environmental sustainability, smart industrial ecosystems, and technological readiness on industrial location decisions within emerging economies.

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