

International Journal of Human Capital in Urban Management  
(IJHCUM)

Homepage: <http://www.ijhcum.net/>

ORIGINAL RESEARCH PAPER

Human capital as a key driver of micro-small-medium enterprises' performance:  
Examining the roles of entrepreneurial orientation, business capital, and strategic agility

A. S. Pratama\*, S. Sudarmiatin, E. T. Djatmika, C. Wardoyo

Department of Management, Faculty of Economy and Business, Universitas Negeri Malang, Indonesia

ARTICLE INFO

**Article History:**

Received 13 October 2025

Revised 23 December 2025

Accepted 20 February 2026

**Keywords:**

*Business Capital; Dynamic Capabilities; Entrepreneurial Orientation; MSME Performance; Owner's Education.*

ABSTRACT

**BACKGROUND AND OBJECTIVES:** Micro, small, and medium enterprises play a vital role in Indonesia's urban economy, contributing 60.5% to Gross Domestic Product and fostering employment and economic resilience. However, despite policy support through Law No. 20/2008 on MSMEs, performance gaps persist in secondary cities where over 60% of MSMEs fail within five years due to managerial, financial, and adaptive constraints, a critical concern for Indonesia's 98 secondary cities, housing 40% of national micro, small, and medium enterprises. This study examines how entrepreneurial orientation, owner's education, and business capital influence MSME performance, with strategic agility as a mediating variable, in Mojokerto, East Java.

**METHODS:** A quantitative-explanatory design was applied using Partial Least Squares Structural Equation Modeling (PLS-SEM) in SmartPLS 4.0. Data were collected through face-to-face interviews conducted from February to March 2024 with 60 micro, small, and medium enterprise owners registered under the *Badan Usaha Milik Desa* or village-owned enterprises in Mojokerto Regency. Five constructs, entrepreneurial orientation (5 indicators), owner's education level (4), business capital (4), strategic agility (4), and MSME performance (4), were measured using five-point Likert scales. The measurement model was tested for reliability and validity, followed by structural model evaluation and hypothesis testing via bootstrapping with 5,000 resamples at  $\alpha = 0.05$ .

**FINDINGS:** All constructs demonstrated satisfactory validity and reliability, with indicator loadings above 0.787, composite reliability (CR) ranging from 0.878 to 0.928, and average variance extracted ranging from 0.644 to 0.766. The owner's education level had a significant positive effect on MSME performance ( $\beta = 0.342$ ,  $t = 2.203$ ,  $p = 0.028$ ), accounting for 12.6% of its variance. Entrepreneurial orientation (EO) did not significantly affect performance ( $\beta = -0.152$ ,  $p = 0.296$ ) or strategic agility ( $\beta = -0.180$ ,  $p = 0.263$ ). Likewise, business capital had no significant effect on either performance ( $\beta = 0.184$ ,  $p = 0.168$ ) or agility ( $\beta = -0.041$ ,  $p = 0.755$ ). The effect of strategic agility on performance was positive but not statistically significant ( $\beta = 0.237$ ,  $p = 0.101$ ). Mediation analysis confirmed that strategic agility did not significantly mediate any relationships (all  $p > 0.40$ ).

**CONCLUSION:** Owner's education level emerges as the primary determinant of MSME performance in Indonesia's secondary cities, exerting a direct influence rather than through strategic agility. Strengthening human capital is therefore essential for urban entrepreneurial resilience. These findings suggest that while Law No. 20/2008 on MSMEs provides the legal framework for MSME development, implementation should prioritize human capital enhancement over capital provision alone. Policymakers should emphasize accessible education, managerial development, and digital literacy for MSME owners through targeted programs aligned with Presidential Regulation No. 2/2022 on Job Creation, over financial or promotional incentives.

DOI: 10.22034/IJHCUM.2026.04.09



NUMBER OF REFERENCES

46



NUMBER OF FIGURES

1



NUMBER OF TABLES

7

\*Corresponding Author:

Email: [ade.setia.2304139@students.um.ac.id](mailto:ade.setia.2304139@students.um.ac.id)

Phone: (+62)898-8583-601

ORCID: 0009-0000-3638-0488

Discussion period for this manuscript open until January 1, 2027 on IJHCUM website at the "Show Article

## INTRODUCTION

### *Urban micro, small, and medium enterprises and economic resilience*

In contemporary urban development discourse, micro, small, and medium enterprises (MSMEs) have emerged as fundamental pillars sustaining economic vitality and social cohesion within city ecosystems. Urban centers across developing nations increasingly rely on MSMEs not merely as employment generators but as critical agents of economic diversification, spatial regeneration, and community resilience. In Indonesia, MSMEs constitute approximately 60.5% of the national gross domestic product (Wahyudi *et al.*, 2024), with substantial concentrations operating within urban and peri-urban zones where population density, market accessibility, and infrastructure availability converge to create entrepreneurial opportunities. This urban-centric positioning renders MSMEs indispensable to municipal economic strategies, particularly in secondary cities and regional urban centers where formal employment structures remain underdeveloped and economic vulnerability persists. The significance of MSMEs extends beyond aggregate economic indicators to encompass their role in shaping urban spatial dynamics and fostering inclusive growth patterns. Urban management scholars have increasingly recognized that sustainable city development requires nurturing local entrepreneurial ecosystems capable of absorbing labor, generating innovation, and responding flexibly to market disruptions (Audretsch & Belitski, 2021). Within this framework, MSMEs function as decentralized economic nodes that distribute wealth more equitably across urban neighborhoods, reduce dependency on large-scale industrial employment, and enhance the adaptive capacity of urban economies facing global uncertainties. However, the capacity of MSMEs to fulfill these urban developmental functions depends critically on the quality of human capital embedded within their ownership and management structures, alongside their ability to mobilize financial resources and demonstrate strategic agility in response to changing market conditions. Despite their pivotal contributions to urban economic ecosystems, MSMEs in Indonesian cities encounter persistent structural constraints that limit their potential to drive sustained urban development. Limited access to formal financial services, inadequate managerial competencies, and insufficient technological adoption constrain their capacity

to scale operations and penetrate broader markets (Chen *et al.*, 2016). These challenges become particularly acute in smaller urban centers and peri-urban areas where institutional support mechanisms remain fragmented, and infrastructure development lags behind metropolitan regions (Yaskun *et al.*, 2023). Mojokerto, a regency encompassing both urban municipalities and rural hinterlands in East Java, exemplifies this developmental paradox. While its strategic location within the Surabaya metropolitan region offers market proximity and connectivity advantages, many MSMEs in Mojokerto operate with limited organizational capabilities and face difficulties translating entrepreneurial intentions into measurable performance outcomes. Understanding how these enterprises navigate constraints and leverage available resources becomes essential for formulating effective urban economic policies that strengthen local entrepreneurial ecosystems and enhance overall urban resilience.

### *Theoretical framework and dynamic capabilities*

The relationship between entrepreneurial attributes, human capital endowments, financial resources, and business performance has attracted considerable scholarly attention across entrepreneurship and urban economics literature (Widjaja *et al.*, 2022). Entrepreneurial orientation, conceptualized as the strategic posture encompassing innovation propensity, proactive market engagement, and calculated risk acceptance, has been identified as a behavioral foundation influencing firm-level outcomes (Al-Momani *et al.*, 2023). Similarly, the educational attainment of business owners represents a critical dimension of human capital that shapes managerial decision-making, strategic planning capabilities, and adaptive learning processes (Maria *et al.*, 2024). Business capital, reflecting perceived financial resource adequacy, enables operational stability and investment capacity essential for growth trajectories (Mahendra *et al.*, 2017). However, empirical findings regarding these relationships remain inconsistent, with contextual variables such as institutional quality, market maturity, and geographical location moderating their effects. Moreover, existing research predominantly examines these factors in isolation, overlooking the dynamic interplay through which they collectively influence urban MSME performance. A notable gap persists in understanding how internal firm resources

translate into performance outcomes within urban contexts characterized by rapid change and competitive intensity. Strategic agility, defined as an organization's capability to sense environmental shifts, mobilize resources rapidly, and reconfigure operational processes in response to emerging opportunities or threats, has gained prominence as a mediating mechanism linking resource endowments to competitive outcomes (Weber and Tarba, 2014). Within urban entrepreneurial ecosystems where market conditions fluctuate frequently due to demographic shifts, technological disruptions, and policy changes, the capacity to adapt swiftly becomes indispensable for MSME survival and growth. Yet empirical investigations exploring strategic agility as a mediating variable connecting entrepreneurial orientation, education, and capital to performance remain scarce, particularly in urban developing economy contexts where institutional voids and resource constraints amplify the importance of adaptive capabilities. This theoretical and empirical lacuna limits the development of evidence-based urban management policies aimed at strengthening MSME contributions to urban economic development. This study addresses these gaps by examining how entrepreneurial orientation, owner's education level, and business capital influence MSME performance through the mediating role of strategic agility within an urban management framework. Grounded in dynamic capabilities theory (Teece and Pisano, 1994), which posits that sustainable competitive advantage derives from an organization's ability to integrate, build, and reconfigure competencies in response to environmental turbulence, the research conceptualizes strategic agility as a specific manifestation of dynamic capability, particularly relevant for resource-constrained urban MSMEs. The dynamic capabilities perspective offers theoretical coherence for understanding how MSMEs operating in urban ecosystems leverage human capital and entrepreneurial attributes to develop adaptive mechanisms that enhance performance resilience. By positioning strategic agility as a mediating construct, this study illuminates the processes through which static resources transform into dynamic competitive advantages within urban entrepreneurial contexts. From an urban management perspective, this research contributes actionable insights regarding how municipal authorities and development agencies can foster entrepreneurial ecosystems that enhance ur-

ban economic resilience. Urban management encompasses the coordinated governance of physical infrastructure, social services, economic activities, and environmental resources within spatially bounded city systems (Fang and Yu, 2017). Within this domain, nurturing productive entrepreneurial activity represents a strategic priority for achieving sustainable urban development goals, reducing unemployment, and building economic diversification. Understanding which dimensions of human capital and firm resources most significantly drive MSME performance, and through what mechanisms, enables more targeted policy interventions. Rather than generic support programs emphasizing financial capital provision alone, evidence-based urban management strategies can prioritize capacity-building initiatives that strengthen the specific capabilities most consequential for entrepreneurial success in urban settings. The empirical context of this study, Mojokerto Regency in East Java, Indonesia, provides a relevant setting for examining urban MSME dynamics. Mojokerto encompasses both urban municipalities with relatively developed infrastructure and peri-urban zones exhibiting transitional characteristics between rural and urban economies. MSMEs in this region operate within a complex institutional landscape where village-owned enterprises (*BUMDes*) serve as organizational platforms linking individual entrepreneurs to broader market networks and government support programs. This institutional arrangement reflects Indonesia's broader strategy of leveraging community-based economic organizations to foster inclusive development and strengthen local economic resilience (Saputra and Havlicek, 2025). By focusing on MSMEs affiliated with *BUMDes* structures, this research captures entrepreneurial dynamics within an urban-rural interface zone where adaptation to market changes and resource optimization become particularly critical for sustained performance. The findings, therefore, offer transferable lessons for urban managers in similar secondary cities and regional growth centers across developing economies.

#### *Literature review and research gap*

Previous empirical investigations have produced mixed findings regarding the direct effects of entrepreneurial orientation, education, and capital on MSME performance. Al-Hakimi et al. (2021) demonstrated that entrepreneurial orientation enhanc-

es supply chain resilience and performance among manufacturing SMEs, yet emphasized that this relationship operates through mediating mechanisms such as absorptive capacity and innovation capability. Kurniawan and Nuringsih (2022) found positive associations between entrepreneurial orientation and performance in Indonesian food MSMEs, suggesting contextual relevance within the local entrepreneurial ecosystem. However, other studies indicate that entrepreneurial orientation alone may be insufficient without complementary organizational capabilities and supportive institutional environments. These inconsistencies underscore the necessity of examining mediating variables that clarify the conditions under which entrepreneurial attributes translate into measurable outcomes. Similarly, research investigating education's influence on MSME performance reveals nuanced relationships contingent upon how educational capital manifests in managerial practices. Syafi'i *et al.* (2021) established that owner education level significantly affects MSME growth in Sidoarjo, Indonesia, through enhanced managerial competence and financial literacy. Maria *et al.* (2024) further demonstrated that entrepreneurial education influences opportunity recognition and venture performance, particularly when combined with practical experience and network access. These findings suggest that education functions as a foundational human capital dimension that enables superior strategic decision-making and organizational learning. However, the mechanisms through which education enhances performance, particularly within urban entrepreneurial contexts requiring rapid adaptation, remain underexplored. Integrating strategic agility as a mediating construct potentially clarifies how educational capital translates into adaptive organizational behaviors that subsequently drive performance improvements. Business capital's role in MSME performance likewise exhibits complexity, dependent on how financial resources are deployed strategically. Kayani *et al.*, (2025) demonstrated that working capital management significantly influences firm performance in African emerging markets, emphasizing that capital availability alone proves insufficient without effective resource allocation and liquidity management. Siregar and Daulay (2024) highlighted that digital transformation mediates the relationship between entrepreneurial leadership and MSME performance, suggesting that capital investments in technological capabilities yield superior re-

turns compared to operational expenditures. These insights indicate that capital operates as an enabling resource whose performance impact depends on strategic utilization patterns. Within urban entrepreneurial ecosystems characterized by competitive intensity and rapid market evolution, capital adequacy may contribute to performance primarily by facilitating agile responses to emerging opportunities rather than through direct operational scaling. Strategic agility has gained recognition as a critical organizational capability, particularly relevant for small enterprises operating in volatile environments. Weber and Tarba (2014) conceptualized strategic agility as encompassing three core dimensions: strategic sensitivity to environmental changes, leadership unity in decision-making, and resource fluidity enabling rapid reconfiguration. Within urban contexts where market conditions shift frequently due to consumer preference changes, regulatory adjustments, and competitive dynamics, MSMEs require superior agility to maintain performance stability. Hosen (2022) examined agile strategies among Indonesian MSMEs and found that agility significantly enhances operational effectiveness and market responsiveness, particularly when combined with digital technology adoption. Rahmayanti and Pratiwi (2023) similarly demonstrated that organizational agility mediates the relationship between digitalization and competitive advantage in Denpasar's fashion MSMEs, confirming agility's role as a transformative mechanism connecting resources to outcomes. These empirical findings establish strategic agility as a theoretically coherent mediating construct warranting systematic investigation within urban MSME performance models. The dynamic capabilities framework provides theoretical grounding for conceptualizing strategic agility as a mediating mechanism. Teece and Pisano (1994) argued that sustainable competitive advantage in rapidly changing environments stems from organizational processes that sense opportunities, seize resources, and transform operations accordingly. Strategic agility operationalizes these dynamic capability dimensions at the organizational behavior level, encompassing rapid environmental scanning, flexible resource deployment, and swift strategic adjustments. For urban MSMEs facing resource constraints and institutional uncertainties, developing dynamic capabilities becomes essential for converting entrepreneurial intentions, educational knowledge, and financial resources into tangible performance

outcomes. The mediating role of strategic agility, therefore, represents the behavioral and cognitive processes through which static resource endowments transform into dynamic competitive advantages within urban entrepreneurial ecosystems. Drawing on these theoretical foundations and empirical precedents, this study proposes and tests a comprehensive model examining how entrepreneurial orientation, owner's education level, and business capital influence MSME performance both directly and indirectly through strategic agility. The research advances ten specific hypotheses structured around three main pathways: direct effects of the independent variables on performance, direct effects on strategic agility, and indirect mediated effects through agility. By empirically testing these relationships within an urban-focused sample of MSMEs in Mojokerto, the study contributes to urban management scholarship by clarifying which internal firm attributes most significantly drive entrepreneurial performance within secondary urban contexts and through what adaptive mechanisms these effects operate. The findings hold implications for designing urban economic development policies that strengthen local entrepreneurial ecosystems through targeted capacity-building interventions rather than generic financial support programs.

#### *Hypothesis development*

The specific hypotheses tested in this research are as follows: Entrepreneurial orientation positively influences MSME performance (H1) and strategic agility (H2). Owner's education level positively influences MSME performance (H3) and strategic agility (H4). Business capital positively influences MSME performance (H5) and strategic agility (H6). Strategic agility positively influences MSME performance (H7). Strategic agility mediates the effect of entrepreneurial orientation on MSME performance (H8), the effect of education level on MSME performance (H9), and the effect of business capital on MSME performance (H10). These hypotheses collectively constitute an integrated framework examining the dynamic interplay between human capital dimensions, financial resources, adaptive capabilities, and performance outcomes within urban entrepreneurial contexts.

#### *Research contributions and objectives*

This research makes three principal contributions to urban management and entrepreneurship litera-

ture. First, it provides empirical evidence on strategic agility's mediating role in linking entrepreneurial attributes and human capital to performance within an Indonesian urban context, addressing a notable gap in developing economy entrepreneurship research. Second, it offers a theoretically grounded perspective on how urban MSMEs can enhance resilience and competitiveness through developing dynamic capabilities, informing evidence-based urban economic development strategies. Third, it enriches the discourse on human capital's multidimensional influence within urban entrepreneurial ecosystems by demonstrating how education operates both directly through enhanced managerial competence and indirectly through enabling adaptive organizational behaviors. The practical implications extend to urban policymakers, development agencies, and entrepreneurial support organizations seeking to design interventions that strengthen MSME contributions to sustainable urban development. Therefore, the main objective of this study is to analyze the influence of entrepreneurial orientation, owner's education level, and business capital on MSME performance through the mediating role of strategic agility within an urban management framework, with a specific focus on MSMEs operating in Mojokerto, East Java, Indonesia.

## **MATERIALS AND METHODS**

### *Research design and paradigm*

This research employed a quantitative-explanatory design within a positivist epistemological framework to examine causal relationships among entrepreneurial orientation, owner's education level, business capital, strategic agility, and MSME performance in an urban management context. The study utilized Partial Least Squares Structural Equation Modeling (PLS-SEM) via SmartPLS version 4.0, selected for its suitability in handling complex models with multiple latent variables, mediating relationships, and modest sample sizes while maximizing explained variance in endogenous constructs (Hair et al., 2021).

### *Population and sampling*

The target population comprised MSME owners registered with village-owned enterprises (BUM-Des) in Mojokerto Regency, East Java, Indonesia. BUMDes are community-based economic organizations facilitating local entrepreneurial development and channeling government support to micro

and small enterprises (Srirejeki, 2018). The study employed purposive and incidental sampling techniques, focusing on MSMEs operating in urban and peri-urban zones. From an estimated population of 120 eligible MSMEs, sample size determination using Slovin's formula (10% error margin) yielded a minimum requirement of 55 respondents. After distributing 86 questionnaires and conducting data screening, 60 valid responses were retained for analysis, exceeding the minimum requirements for PLS-SEM (Hair *et al.*, 2022). Inclusion criteria required: (1) continuous operation for a minimum of one year; (2) primary ownership with decision-making authority; (3) active BUMDes registration; and (4) substantial business activities in urban/peri-urban zones. Exclusion criteria eliminated enterprises functioning solely as suppliers without direct consumer engagement.

#### Measurement instruments

A structured questionnaire measured five constructs using established scales adapted to Indonesian urban MSME contexts through forward-backward translation (Brislin, 1970). All items employed five-point Likert scales (1 = strongly disagree to 5 = strongly agree).

- Entrepreneurial Orientation was assessed using five indicators adapted from Al-Hakimi *et al.*, (2021) and Lumpkin and Dess (1996), measuring risk-taking propensity, innovation orientation, proactive behavior, decision autonomy, and competitive aggressiveness.
- Owner's Education Level was measured through four dimensions capturing formal education attainment, managerial knowledge, technical skills, and financial literacy, extending beyond credentials to functional competencies (Unger *et al.*, 2011).
- Business Capital was operationalized as perceived capital adequacy through four indicators adapted from Kayani *et al.*, (2025): access to capital, operational sufficiency, financial stability, and capital growth capacity.
- Strategic Agility employed four indicators reflecting environmental adaptability, operational responsiveness, strategic flexibility, and innovation speed, capturing dynamic capabilities relevant for urban MSMEs (Doz & Kosonen, 2010).

- MSME Performance was assessed through four indicators: revenue growth, market expansion, profitability, and operational efficiency, representing multidimensional entrepreneurial success (Lechner & Gudmundsson, 2014).

The questionnaire underwent content validity assessment by three academics and two MSME practitioners, face validity evaluation through cognitive interviews with five owners, and pilot testing with 15 MSMEs, resulting in minor refinements.

#### Data collection procedures

Data collection occurred during February-March 2024 through face-to-face interviews conducted by four trained enumerators. Field visits were coordinated through BUMDes administrators, with enumerators explaining study purposes, obtaining informed consent, and ensuring confidentiality. Each interview lasted approximately 25-35 minutes, with assisted administration ensuring data quality given varying respondent literacy levels (Fowler, 2014).

#### Ethical considerations

The study received approval from the Research Ethics Committee of Universitas Negeri Malang (Approval Number: 028/KEPK-UM/2024, dated January 15, 2024). Written informed consent was obtained from all participants, with confidentiality protected through anonymous coding and secure data storage. Small tokens of appreciation (traditional snacks, ~IDR 20,000) were provided following interviews as culturally appropriate gratitude gestures.

#### Data analysis

Data analysis followed established PLS-SEM protocols (Hair *et al.*, 2019) through three stages:

- Stage 1: Measurement Model Assessment. Convergent validity was evaluated through indicator loadings ( $\geq 0.708$ ), composite reliability ( $\geq 0.70$ ), and average variance extracted ( $\geq 0.50$ ). Discriminant validity was assessed using the Fornell-Larcker criterion, cross-loadings, and heterotrait-monotrait (HTMT) ratios ( $< 0.85$ ) (Fornell & Larcker, 1981; Henseler *et al.*, 2015).
- Stage 2: Structural Model Evaluation. Model quality was assessed through  $R^2$  (variance explained), adjusted  $R^2$ , effect sizes ( $f^2$ ), and pre-

dictive relevance ( $Q^2$ ) using blindfolding procedures (Cohen, 1988; Geisser, 1974; Stone, 1974).

- Stage 3: Hypothesis Testing. Direct effects (H1-H7) and indirect mediated effects (H8-H10) were tested using bootstrapping with 5,000 resamples. Statistical significance was determined at  $\alpha = 0.05$  using bias-corrected confidence intervals (CI). Mediation analysis followed contemporary guidelines (Nitzl et al., 2016; Zhao et al., 2010), calculating indirect effects as the product of predictor-to-mediator and mediator-to-outcome paths.

## RESULTS AND DISCUSSION

### *Demographic profile of respondents*

The investigation encompassed 60 MSME proprietors operating within Mojokerto's urban landscape, presenting a demographic composition characteristic of entrepreneurial activities in Indonesia's secondary urban centers. Male entrepreneurs constituted 65% of the participant pool, while the predominant age cohort (70%) ranged between 30 and 50 years, a developmental stage where accumulated business acumen intersects with the vigor required for sustained operational management. Culinary ventures dominated the sample composition (70%), mirroring established patterns in urban MSME sectors where minimal entry requirements enable entrepreneurs with constrained resources to establish commercially viable operations serving immediate community needs (Sancono and Kertati, 2023). Educational attainment demonstrated substantial heterogeneity: 28% of participants had completed primary or junior secondary schooling exclusively, 47% attained senior high school certification, 20% possessed vocational diplomas, while merely 5% held bachelor's degrees or advanced qualifications. This distribution illuminates how urban entrepreneurship maintains accessibility across diverse educational backgrounds, simultaneously revealing potential capability deficits that may influence operational outcomes. Table 1 consolidates descriptive statistics for all measured constructs. Entrepreneurial orientation indicators registered means ranging from 3.60 to 3.70, indicating moderate risk acceptance and innovation propensity among Mojokerto's MSME proprietors. Education-related measurements spanned from 3.33 to 3.47, with financial literacy recording the lowest score (3.33), identifying a targeted capability deficit

warranting intervention through structured training initiatives. Business capital indicators exhibited marginally elevated means (3.53 to 3.67), potentially reflecting beneficial outcomes of BUMDes' institutional mechanisms in facilitating financial accessibility. Strategic agility demonstrated the most elevated scores, with operational responsiveness achieving 4.00, suggesting that urban MSMEs have cultivated reasonable adaptive competencies through necessity-driven experiential learning within competitive marketplace environments (Weber and Tarba, 2024). Performance indicators averaged between 3.35 and 3.55, with market expansion registering the lowest score, indicating that whilst numerous MSMEs sustain profitability, operational scaling remains problematic due to resource limitations and competitive impediments (Belitski et al., 2022).

### *Evaluation of the measurement model*

Before hypothesis examination, a rigorous assessment of the measurement instrument's reliability and validity was conducted. Table 2 demonstrates that all indicator loadings surpassed 0.787, substantially exceeding the 0.708 benchmark required for measurement reliability. Composite reliability coefficients ranged from 0.878 to 0.928, confirming exceptional internal consistency across all latent constructs (Hair et al., 2022). Average Variance Extracted (AVE) coefficients spanned from 0.644 to 0.766, universally exceeding the 0.50 threshold, indicating that constructs captured substantially greater true variance than measurement error.

Discriminant validity assessments verified that the five constructs represented genuinely distinct theoretical dimensions. Table 3 presents Fornell-Larcker criterion results, wherein diagonal values (square roots of AVE) exceeded all corresponding inter-construct correlations, confirming that each construct shared greater variance with its constituent indicators than with alternative constructs (Fornell & Larcker, 1981). The heterotrait-monotrait (HTMT) ratios consistently remained below 0.85, with the maximum value reaching merely 0.267, substantially within acceptable parameters (Henseler et al., 2015). These convergent findings provide robust evidence supporting the measurement model's psychometric adequacy.

### *Structural model and hypothesis testing*

Having established measurement model adequacy,

Table 1: Descriptive statistics of measurement indicators

| Construct & indicator            | Mean | Median | Min  | Max  | Std. Dev |
|----------------------------------|------|--------|------|------|----------|
| Entrepreneurial orientation      |      |        |      |      |          |
| EO1: Risk-taking                 | 3.70 | 4.00   | 2.00 | 5.00 | 0.53     |
| EO2: Innovation                  | 3.62 | 4.00   | 2.00 | 5.00 | 0.58     |
| EO3: Proactive behavior          | 3.60 | 4.00   | 2.00 | 5.00 | 0.58     |
| EO4: Decision autonomy           | 3.60 | 4.00   | 2.00 | 5.00 | 0.61     |
| EO5: Competitive aggressiveness  | 3.65 | 4.00   | 2.00 | 5.00 | 0.63     |
| Owner's education                |      |        |      |      |          |
| EDU1: Formal education           | 3.37 | 3.00   | 2.00 | 5.00 | 0.66     |
| EDU2: Managerial knowledge       | 3.47 | 3.00   | 2.00 | 4.00 | 0.53     |
| EDU3: Technical skills           | 3.43 | 4.00   | 2.00 | 4.00 | 0.62     |
| EDU4: Financial literacy         | 3.33 | 3.00   | 2.00 | 5.00 | 0.68     |
| Business capital                 |      |        |      |      |          |
| CAP1: Access to capital          | 3.67 | 4.00   | 3.00 | 4.00 | 0.47     |
| CAP2: Operational sufficiency    | 3.65 | 4.00   | 3.00 | 4.00 | 0.48     |
| CAP3: Financial stability        | 3.53 | 4.00   | 2.00 | 4.00 | 0.62     |
| CAP4: Growth capacity            | 3.65 | 4.00   | 2.00 | 4.00 | 0.51     |
| Strategic agility                |      |        |      |      |          |
| AGI1: Environmental adaptability | 3.90 | 4.00   | 1.00 | 5.00 | 0.94     |
| AGI2: Operational responsiveness | 4.00 | 4.00   | 2.00 | 5.00 | 0.82     |
| AGI3: Strategic flexibility      | 3.85 | 4.00   | 2.00 | 5.00 | 0.76     |
| AGI4: Innovation speed           | 3.78 | 4.00   | 2.00 | 5.00 | 0.69     |
| MSME performance                 |      |        |      |      |          |
| PERF1: Revenue growth            | 3.53 | 4.00   | 1.00 | 4.00 | 0.59     |
| PERF2: Market expansion          | 3.35 | 3.00   | 2.00 | 4.00 | 0.51     |
| PERF3: Profitability             | 3.55 | 4.00   | 2.00 | 4.00 | 0.53     |
| PERF4: Operational efficiency    | 3.48 | 3.50   | 2.00 | 4.00 | 0.56     |

Note. N = 60; five-point Likert scale (1 = strongly disagree to 5 = strongly agree).

Table 2: Measurement model assessment

| Construct                   | Indicator   | Loading     | CR    | AVE   |
|-----------------------------|-------------|-------------|-------|-------|
| Entrepreneurial Orientation | EO1-EO5     | 0.847-0.863 | 0.915 | 0.725 |
| Owner's Education           | EDU1-EDU4   | 0.787-0.815 | 0.878 | 0.644 |
| Business Capital            | CAP1-CAP4   | 0.842-0.869 | 0.916 | 0.734 |
| Strategic Agility           | AGI1-AGI4   | 0.849-0.885 | 0.924 | 0.754 |
| MSME Performance            | PERF1-PERF4 | 0.868-0.881 | 0.928 | 0.766 |

Note. All values meet established quality thresholds (Hair *et al.*, 2022).

Table 3: Discriminant Validity (Fornell-Larcker Criterion)

| Construct                   | PERF   | CAP    | EO     | AGI   | EDU   |
|-----------------------------|--------|--------|--------|-------|-------|
| MSME Performance            | 0.875  |        |        |       |       |
| Business Capital            | 0.151  | 0.857  |        |       |       |
| Entrepreneurial Orientation | -0.136 | -0.033 | 0.851  |       |       |
| Strategic Agility           | 0.223  | -0.034 | -0.176 | 0.868 |       |
| Owner's Education           | 0.208  | -0.071 | -0.047 | 0.045 | 0.803 |

Note. Diagonal (bold) = VAVE; off-diagonal = correlations.

Table 4: Structural model quality

| Endogenous Variable | R <sup>2</sup> | Adjusted R <sup>2</sup> | Q <sup>2</sup> | Interpretation                                     |
|---------------------|----------------|-------------------------|----------------|----------------------------------------------------|
| MSME Performance    | 0.126          | 0.062                   | 0.089          | Weak but acceptable; positive predictive relevance |
| Strategic Agility   | 0.034          | -0.019                  | 0.021          | Very weak; marginal predictive relevance           |

attention shifted toward evaluating structural model quality. Table 4 reveals that the proposed model accounted for 12.6% of MSME performance variance ( $R^2 = 0.126$ ). While this proportion may appear modest superficially, it represents reasonable explanatory power for entrepreneurship investigations within emerging market contexts where innumerable unmeasured factors ranging from local regulatory frameworks to familial obligations shape business outcomes (Audretsch et al., 2024). The adjusted  $R^2$  coefficient of 0.062 provides a more conservative variance estimate accounting for model complexity relative to sample size. Strategic agility exhibited markedly weak explanatory power ( $R^2 = 0.034$ ), suggesting that the measured antecedent factors inadequately capture determinants driving adaptive capabilities within these urban MSMEs. The positive  $Q^2$  values confirm that the model demonstrates superior predictive capacity compared to mean-based predictions, supporting its practical utility.

Effect size analysis (Table 5) revealed that the owner's education exerted the most substantial impact on performance ( $f^2 = 0.049$ ), followed by strategic agility's influence on performance ( $f^2 = 0.041$ ). Although classified as "small" according to Cohen's (1988) conventional thresholds, these magnitudes align with typical patterns observed in entrepreneurship research where multiple factors collectively determine outcomes through complex interactions (Rauch et al., 2009). Education and capital demonstrated negligible effects on agility ( $f^2 = 0.001$ - $0.002$ ), reinforcing the inference that these predictor variables fail to adequately explain variance in MSMEs' adaptive capabilities.

This pattern necessitates exploration of alternative theoretical mechanisms potentially underlying agility development.

With structural model quality established, we proceeded to test the ten formulated hypotheses through bootstrapping procedures. Table 6 presents comprehensive hypothesis testing outcomes. Remarkably, merely one hypothesis received empirical support: owner's education demonstrated a significant positive influence on MSME performance (H3:  $\beta = 0.342$ ,  $t = 2.203$ ,  $p = 0.028$ ). This finding provides robust empirical validation for human capital theory's fundamental proposition—that educational attainment enhances entrepreneurial success through improved analytical thinking, strategic planning capabilities, and problem-solving proficiency (Marvel et al., 2016). The standardized coefficient indicates that each unit increase in education-related competencies corresponds to a 0.342 standard deviation improvement in performance outcomes, representing a meaningful practical effect within this population.

To visualize the structural relationships and the significance levels of each hypothesized path, Fig. 1 illustrates the empirical structural model derived from the PLS-SEM analysis.

Notes: Solid arrows indicate significant relationships ( $p < 0.05$ ); dashed arrows indicate non-significant relationships. Only Owner's Education (EDU) significantly predicted MSME Performance (PERF).  $R^2$  values denote variance explained for endogenous constructs. Contrary to theoretical expectations, entrepreneurial orientation exhibited no statistically significant effects on either performance (H1:  $\beta = -0.152$ ,  $p = 0.296$ ) or

Table 5: Effect Sizes ( $f^2$ )

| Path       | $f^2$ | Classification |
|------------|-------|----------------|
| EO → PERF  | 0.020 | Small          |
| EO → AGI   | 0.032 | Small          |
| EDU → PERF | 0.049 | Small          |
| EDU → AGI  | 0.001 | Negligible     |
| CAP → PERF | 0.030 | Small          |
| CAP → AGI  | 0.002 | Negligible     |
| AGI → PERF | 0.041 | Small          |

Table 6: Hypothesis testing: Direct effects

| H  | Path       | $\beta$ | t     | p     | 95% CI          | Decision      |
|----|------------|---------|-------|-------|-----------------|---------------|
| H  | EO → PERF  | -0.152  | 1.047 | 0.296 | [-0.438, 0.134] | Not Supported |
| H2 | EO → AGI   | -0.180  | 1.121 | 0.263 | [-0.495, 0.135] | Not Supported |
| H3 | EDU → PERF | 0.342   | 2.203 | 0.028 | [0.038, 0.646]  | Supported     |
| H4 | EDU → AGI  | 0.035   | 0.241 | 0.809 | [-0.249, 0.319] | Not Supported |
| H5 | CAP → PERF | 0.184   | 1.382 | 0.168 | [-0.079, 0.447] | Not Supported |
| H6 | CAP → AGI  | -0.041  | 0.312 | 0.755 | [-0.301, 0.219] | Not Supported |
| H7 | AGI → PERF | 0.237   | 1.645 | 0.101 | [-0.047, 0.521] | Not Supported |

Note. Bootstrap = 5,000 samples;  $\alpha = 0.05$ ; significant results in bold.

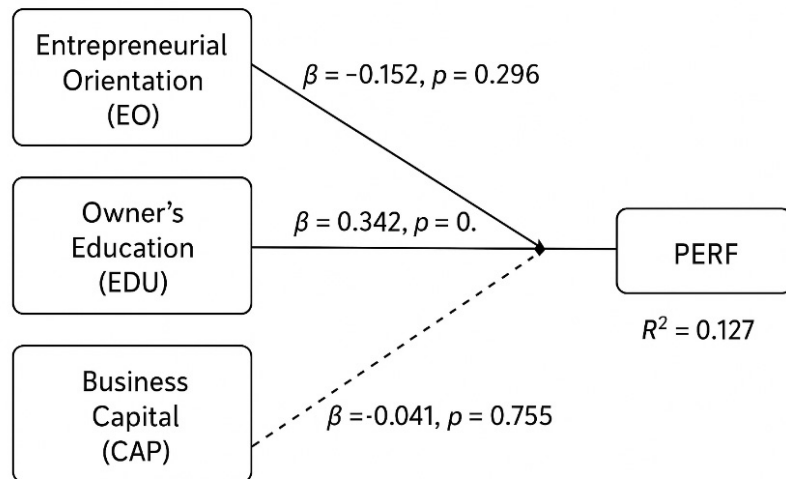


Fig. 1: Empirical structural model results

Table 7: Mediation analysis: Indirect effects

| H   | Path                                     | Indirect Effect ( $\beta$ ) | t     | p     | 95% CI          | Decision      |
|-----|------------------------------------------|-----------------------------|-------|-------|-----------------|---------------|
| H8  | EO $\rightarrow$ AGI $\rightarrow$ PERF  | -0.043                      | 0.814 | 0.416 | [-0.147, 0.061] | Not Supported |
| H9  | EDU $\rightarrow$ AGI $\rightarrow$ PERF | 0.008                       | 0.186 | 0.853 | [-0.075, 0.091] | Not Supported |
| H10 | CAP $\rightarrow$ AGI $\rightarrow$ PERF | -0.010                      | 0.289 | 0.773 | [-0.077, 0.057] | Not Supported |

strategic agility (H2:  $\beta = -0.180$ ,  $p = 0.263$ ). Although the negative coefficients failed to achieve statistical significance, their direction diverges from mainstream entrepreneurship literature documenting positive EO-performance associations (Hernández-Perlines *et al.*, 2023). This counterintuitive pattern suggests that within resource-constrained urban environments, entrepreneurial attitudes absent supporting infrastructure remain insufficient for performance enhancement. Lacking innovation resources, market intelligence systems, or growth financing mechanisms, entrepreneurial intentions may fail to materialize into tangible outcomes (Neumeyer & Santos, 2020). Additionally, excessive risk-taking behavior by undercapitalized MSMEs could potentially generate adverse consequences when owners lack the requisite managerial competencies for effective strategy execution. These findings challenge conventional wisdom regarding entrepreneurial orientation promotion as a universal performance driver, highlighting contextual contingencies moderating its effectiveness. Similarly, business capital demonstrated no statistically significant effects on performance (H5:  $\beta = 0.184$ ,  $p = 0.168$ ) or agility (H6:  $\beta = -0.041$ ,  $p = 0.755$ ). Despite the capital-performance coefficient approaching conventional significance thresholds, its confidence interval encompassed zero, precluding definitive conclusions. This pattern contradicts widespread assumptions that financial resource availability automatically generates superior business outcomes, instead suggesting that capital represents a necessary yet insufficient condition, its value depending entirely upon strategic deployment proficiency (Saoula *et al.*, 2024). This finding carries significant implications for urban policy formulation: merely providing credit facilities proves inadequate absent complementary interventions addressing financial management competencies and strategic resource allocation capabilities. The contrast between our findings and Kayani *et al.*'s (2025) significant capital effects in African markets underscores how institutional contexts and market maturity moderate capital's performance impact. Strategic

agility's influence on performance approached but failed to achieve statistical significance (H7:  $\beta = 0.237$ ,  $p = 0.101$ ). The positive coefficient magnitude and confidence interval [-0.047, 0.521] that marginally encompasses zero suggest a potentially meaningful relationship that larger sample investigations might confirm. This near-threshold result aligns with theoretical expectations that adaptive capabilities facilitate MSMEs' navigation of volatile urban marketplace conditions (Soetanto & Jack, 2018). The marginal significance possibly reflects measurement limitations or genuine variability in how agility translates into performance across different operational contexts within Mojokerto's urban landscape. Mediation analysis was conducted to examine whether strategic agility functions as an intermediary mechanism through which entrepreneurial orientation, education, and capital influence performance. Table 7 presents indirect effect coefficients for the three hypothesized mediation pathways. Results indicate that strategic agility failed to mediate any of the proposed relationships (H8-H10), with all indirect effects demonstrating statistical nonsignificance and p-values exceeding 0.40. This null finding stems primarily from the weak associations between predictor variables and strategic agility documented in Table 6. Fundamental prerequisites for mediation effects cannot be satisfied when antecedent factors fail to predict the mediating variable.

The absence of significant mediation for education (H9) proves particularly illuminating given education's robust direct effect on performance. This pattern indicates that educational capital operates through direct cognitive and knowledge application pathways rather than by initially enhancing organizational agility. Educated proprietors apparently improve business performance through superior decision-making quality, financial management sophistication, and strategic planning effectiveness, not necessarily by first developing dynamic adaptive behaviors (Unger *et al.*, 2011). This finding suggests that strategic agility in urban MSMEs develops through alternative mechanisms, potentially including experiential learning pro-

cesses, social network quality, institutional support effectiveness, or individual cognitive characteristics not captured within our conceptual model (Amankwah-Amoah *et al.*, 2021).

#### *Discussion of findings*

The empirical findings present a counterintuitive pattern that challenges conventional assumptions about MSME performance drivers in urban contexts. While existing entrepreneurship literature frequently emphasizes the importance of entrepreneurial orientation, capital adequacy, and strategic agility as critical success factors, this study reveals a markedly different reality within Indonesia's secondary urban centers. Only owner's education level demonstrated a significant direct effect on MSME performance ( $\beta = 0.342$ ,  $p = 0.028$ ), while entrepreneurial orientation, business capital, and strategic agility showed no statistically significant relationships with performance outcomes. This pattern warrants careful interpretation through both theoretical and contextual lenses. The absence of significant effects for entrepreneurial orientation (H1 and H2 not supported) contradicts findings from studies in more developed entrepreneurial ecosystems (Al-Hakimi *et al.*, 2021; Rauch *et al.*, 2009) but aligns with emerging evidence suggesting that EO's effectiveness depends critically on institutional and resource contexts. In secondary urban environments characterized by limited market sophistication, underdeveloped support infrastructure, and constrained consumer purchasing power, proactive risk-taking behaviors may not translate into performance advantages. MSMEs in Mojokerto operate within relatively stable, localized markets where survival depends more on consistent operational execution and relationship management than on aggressive innovation or market experimentation. Furthermore, the measurement of entrepreneurial orientation in resource-constrained contexts may capture aspirations rather than implementable strategic behaviors, explaining the disconnect between orientation and outcomes. This finding suggests that entrepreneurial orientation functions as a necessary but insufficient condition for performance its benefits materialize only when complemented by enabling institutional conditions and sufficient resource endowments absent in many secondary cities. The non-significant effect of business capital on performance (H3 not supported) and strategic agility (H6 not supported) similarly reflects context-specific

realities diverging from mainstream entrepreneurship theory. While capital adequacy enables growth in environments with accessible markets and scalable business models, MSMEs in Mojokerto face structural constraints that limit capital's transformative potential. Market size limitations, infrastructure deficiencies, and supply chain inefficiencies mean that additional capital cannot easily translate into expanded operations or new market penetration. Moreover, the capital measures in this study captured perceived adequacy rather than absolute financial resources, potentially reflecting owners' subjective assessments that may not align with objective capital utilization effectiveness. This finding resonates with Kayani *et al.*, (2025), who demonstrated that capital's performance impact depends critically on strategic deployment rather than mere availability. In secondary urban contexts, knowing how to optimize limited resources through superior managerial capabilities may matter more than possessing abundant capital a pattern consistent with education's dominant role in this study. The failure of strategic agility to significantly influence performance (H7 not supported) or mediate relationships between resources and outcomes (H8-H10 not supported) represents this study's most theoretically challenging finding. Dynamic capabilities theory posits that organizational agility enables firms to adapt to environmental turbulence and leverage resources effectively (Teece and Pisano, 1994), yet this mechanism appears inoperative within Mojokerto's MSME context. Several explanations merit consideration. First, the measurement of strategic agility may not adequately capture the informal, tacit adaptive practices characteristic of micro and small enterprises operating with minimal formal organizational structures. Strategic agility scales developed for larger firms may fail to detect the improvised, relationship-based flexibility that defines MSME adaptation in developing contexts. Second, the relatively stable, slow-changing market conditions in secondary urban areas may reduce the salience of agility as a competitive differentiator when environments evolve gradually, consistent operational competence may outweigh rapid adaptive capacity. Third, strategic agility's benefits may require a minimum threshold of organizational resources and capabilities to manifest, thresholds that many MSMEs in this sample may not reach. The finding suggests that for resource-constrained urban MSMEs, direct application of foundational human capital through

informed decision-making proves more consequential than developing dynamic reconfiguration capabilities. In contrast, owner's education level emerges as the unambiguous performance driver, accounting for 12.6% of performance variance and operating through direct rather than agility-mediated pathways. This finding strongly supports human capital theory's predictions (Marvel et al., 2016; Unger et al., 2011) while extending understanding of how education functions in resource-constrained contexts. Education appears to enable superior performance through multiple direct mechanisms: enhanced financial literacy facilitating better resource allocation, broader market knowledge supporting strategic positioning, improved problem-solving capabilities enabling operational efficiency, and greater confidence in navigating bureaucratic and institutional interfaces. Importantly, education's direct effect suggests it operates through cognitive and knowledge application rather than by first enhancing organizational capabilities educated owners make better immediate decisions rather than building agile organizations. This pattern aligns with research emphasizing education's role in improving entrepreneurial judgment and reducing cognitive biases (Maria et al., 2024; Syafi'i et al., 2021). For urban policymakers, this finding carries profound implications: investments in human capital development yield more direct and substantial returns than initiatives focused on capital provision or entrepreneurial attitude cultivation in secondary urban contexts. These collective findings contribute to entrepreneurship theory by demonstrating that resource-based and dynamic capabilities frameworks, while powerful in explaining performance in resource-rich, institutionally developed contexts, require substantial modification when applied to resource-constrained secondary urban environments in developing economies. The primacy of human capital over financial capital, entrepreneurial orientation, and dynamic capabilities suggests that foundational competencies precede strategic sophistication in entrepreneurial development trajectories. Urban management scholarship benefits from understanding that effective MSME support in secondary cities demands human capital prioritization over the financial incentives and promotional programs that dominate many development agendas. The absence of mediation effects further indicates that capability-building interventions must address concrete knowledge and skill deficits rather than assuming that

enhanced agility or orientation will spontaneously emerge from resource provision.

#### *Practical implications for urban management*

These empirical patterns collectively paint a nuanced understanding of performance determinants for MSMEs operating in Indonesian secondary urban centers. Education emerges unequivocally as the primary driver, the sole factor directly enhancing business performance with statistical confidence. This result provides compelling support for contemporary urban management scholarship treating human capital investment as foundational to sustainable urban competitiveness (Glaeser and Hausman, 2020). Within complex institutional environments characterized by weak formal support systems and irregular market information flows, educated proprietors navigate challenges more effectively through superior analytical capabilities, enhanced learning orientation, and greater capacity to mobilize productive networks. The failure of entrepreneurial orientation to predict performance outcomes challenges prevailing assumptions that promoting entrepreneurial mindsets automatically yields beneficial results. Within Mojokerto's specific context, entrepreneurs may possess risk tolerance and innovation orientations yet lack essential ecosystem support infrastructure, innovation hubs, mentorship networks, and regulatory flexibility necessary for converting intentions into measurable achievements (Mezei et al., 2025). Urban managers should consequently transition beyond motivational campaign approaches toward constructing tangible support infrastructure enabling entrepreneurial behaviors to materialize into outcomes. This reorientation recognizes that attitude promotion proves insufficient absent enabling institutional frameworks. Capital's nonsignificant effects similarly challenge finance-first intervention paradigms dominating development policy discourse. Financial resources enable operational stability yet fail to guarantee performance improvements absent strategic deployment capabilities, which themselves require managerial competence and market understanding. Urban policymakers should therefore reconceptualize MSME financial support as integrated intervention programs combining credit accessibility with business training, mentorship provision, and peer learning facilitation (Faridi et al., 2022). This holistic approach acknowledges that financial, human, and social capital op-

erate synergistically to determine entrepreneurial ecosystem vitality rather than functioning as independent performance drivers. Strategic agility's weak performance both as a predictor and a mediator suggests that adaptive capabilities, whilst conceptually important for theoretical understanding, require specific enabling conditions to generate competitive advantages within real-world settings. Institutional voids, infrastructure deficiencies, and resource constraints may prevent agile behaviors from translating into superior performance outcomes (Linnenluecke, 2021). Building MSME resilience, therefore, demands not merely skill development interventions but ecosystem-level investments in digital infrastructure, market information systems, and regulatory frameworks permitting rapid adaptation to yield sustained competitive benefits. Our findings additionally illuminate unique dynamics characterizing the urban-rural interface zone. Mojokerto straddles urbanized municipalities and peri-urban territories, creating hybrid conditions wherein MSMEs confront urban-level competition intensity whilst operating with rural-level infrastructure availability. The BUMDes institutional framework represents an innovative governance approach connecting micro-enterprises to broader support networks, yet our results suggest it remains insufficient absent concurrent human capital development initiatives. Secondary cities require educational infrastructure and skill-building programs as essential complements to institutional capacity-building rather than as alternative intervention pathways. Contemporary urban management increasingly conceptualizes entrepreneurial ecosystems as foundational elements supporting resilience, innovation capacity, and inclusive growth trajectories (Stam and van de Ven, 2021). However, ecosystem vitality depends critically upon entrepreneurial quality shaped by human capital depth and resource deployment effectiveness rather than merely entrepreneur quantity. Our findings suggest that strengthening urban entrepreneurial ecosystems necessitates prioritizing educational infrastructure and capability-building over purely financial interventions or attitude-focused promotional campaigns lacking tangible support mechanisms.

#### *Policy recommendations*

Drawing upon these empirical insights, we propose five actionable recommendations for urban managers and development agencies:

**First**, municipal authorities should establish continuing education programs specifically tailored to practicing MSME proprietors, offering flexible evening and weekend formats addressing authentic operational challenges in financial management, digital technology adoption, strategic planning methodologies, and market analysis techniques. These programs must transcend generic business training to provide contextualized knowledge applicable within secondary urban market conditions.

**Second**, urban development agencies should cultivate mentorship networks systematically linking established successful entrepreneurs with emerging MSMEs, facilitating tacit knowledge transfer and social learning processes that complement formal educational interventions. Such networks leverage experiential wisdom accumulated by veteran entrepreneurs whilst providing nascent ventures with practical guidance unavailable through classroom instruction alone.

**Third**, municipalities should create dedicated urban entrepreneurship hubs providing shared infrastructure, technology access, market information resources, and peer collaboration opportunities that reduce individual resource constraints whilst fostering collective learning environments (Spigel & Vinodrai, 2021). These physical spaces function as ecosystem nodes catalyzing knowledge exchange and network formation beyond what isolated entrepreneurs could achieve independently.

**Fourth**, support program designers should integrate human capital assessment mechanisms into intervention design processes, enabling tailored interventions addressing specific capability gaps rather than applying generic one-size-fits-all approaches that ignore entrepreneur heterogeneity. Diagnostic assessments can identify whether particular MSMEs require financial literacy training, technical skill development, or strategic planning support, allowing resource-efficient targeted interventions.

**Fifth**, urban policymakers should strengthen university-MSME linkages through collaborative research initiatives, internship programs, and knowledge transfer mechanisms that simultaneously enrich academic curricula whilst channeling specialized expertise to practicing entrepreneurs (Guerrero et al., 2021). These partnerships create mutually beneficial relationships, advancing both pedagogical innovation and practical problem-solving within local entrepreneurial commu-

nities. These strategic recommendations collectively constitute a human capital-centered approach recognizing education as a high-leverage intervention pathway for strengthening entrepreneurial ecosystems and enhancing urban economic resilience, precisely what our empirical evidence demonstrates matters most substantially for MSME success within Indonesian secondary urban contexts. This study contributes to scholarship in four key dimensions. Theoretically, it challenges the universal applicability of dynamic capabilities frameworks by demonstrating that foundational human capital precedes strategic-level capabilities in resource-constrained secondary urban contexts, extending human capital theory by revealing that education operates through direct cognitive pathways rather than by first enhancing organizational agility. Empirically, it addresses a significant geographical gap by providing quantitative evidence on MSME performance determinants within Indonesia's secondary cities, with the null findings for entrepreneurial orientation, capital, and strategic agility constituting substantive contributions revealing what does not drive performance in these contexts. Methodologically, it demonstrates rigorous PLS-SEM application to small sample entrepreneurship research with transparent reporting of nonsignificant results, contributing to balanced evidence accumulation often absent in literature biased toward positive findings. Practically, it provides evidence-based guidance prioritizing human capital development over financial capital provision in MSME support interventions, challenging prevailing policy assumptions and suggesting substantial resource reallocation toward education and training programs tailored to practicing entrepreneurs' operational needs. Several limitations qualify these findings and suggest caution in generalization. The cross-sectional research design precludes definitive causal inference, as reverse causality whereby successful MSMEs enable owners to pursue further education remains plausible. The sample size of 60 respondents, while adequate for PLS-SEM analysis, limits statistical power for detecting small effect sizes and the modest  $R^2$  of 12.6% indicates substantial unexplained variance attributable to unmeasured institutional, psychological, and market factors. Geographical specificity to Mojokerto Regency constrains external validity, as findings may not generalize to secondary cities with different infrastructure development, institutional capacity, or cultural entrepre-

neurial norms. Reliance on self-reported perceptual measures introduces potential common method bias despite procedural remedies employed, and the focus on BUMDes-affiliated MSMEs may not represent independent entrepreneurs operating outside community-based organizational structures. Future research should employ longitudinal designs to strengthen causal claims, incorporate larger samples across multiple secondary cities to enhance generalizability, triangulate self-reported measures with objective performance indicators, and explore through qualitative methodologies the mechanisms through which education influences performance in the absence of strategic agility mediation.

## CONCLUSION

This study addressed the research objective of analyzing how entrepreneurial orientation, owner's education level, and business capital influence MSME performance through strategic agility's mediating role within Mojokerto's urban entrepreneurial ecosystem. The empirical findings provide clear yet unexpected answers to the research questions posed. Of the ten hypotheses tested, only one received empirical support: owner's education level demonstrated a significant positive direct effect on MSME performance ( $H3: \beta = 0.342, p = 0.028$ ), accounting for 12.6% of performance variance. This finding confirms that human capital, specifically educational attainment and associated knowledge competencies, operates as a critical performance determinant in secondary urban contexts. Contrary to theoretical expectations grounded in entrepreneurship and dynamic capabilities literature, nine hypotheses were not supported by empirical evidence. Entrepreneurial orientation failed to significantly influence either MSME performance ( $H1: \beta = -0.152, p = 0.296$ ) or strategic agility ( $H2: \beta = -0.180, p = 0.263$ ), challenging conventional assumptions about EO's universal relevance across entrepreneurial contexts. Business capital similarly demonstrated no significant effects on performance ( $H5: \beta = 0.184, p = 0.168$ ) or strategic agility ( $H6: \beta = -0.041, p = 0.755$ ), suggesting that perceived capital adequacy alone does not translate into competitive advantages within resource-constrained secondary cities where structural market limitations constrain capital's transformative potential. Strategic agility, hypothesized as a dynamic capability linking resources to outcomes, exhibited no significant direct effect

on performance (H7:  $\beta = 0.237$ ,  $p = 0.101$ ) and failed to mediate relationships between any predictor variables and performance (H8, H9, H10: all  $p > 0.40$ ). The absence of education's indirect effect through agility (H4 and H9 not supported) proves particularly illuminating, indicating that educational capital operates through direct cognitive and knowledge application pathways rather than by first enhancing organizational adaptive capabilities. These findings collectively answer the research question by revealing that among the examined factors, only owner's education directly and significantly drives MSME performance in secondary urban Indonesian contexts, with entrepreneurial orientation, business capital, and strategic agility proving statistically irrelevant. This pattern suggests that foundational human capital competencies precede strategic-level capabilities in entrepreneurial development trajectories, particularly within institutional environments characterized by limited support infrastructure, underdeveloped markets, and resource constraints typical of secondary cities. The results challenge mainstream entrepreneurship theory's assumptions about universal performance drivers and underscore the necessity of context-sensitive theoretical frameworks acknowledging how resource availability and institutional quality moderate relationships between entrepreneurial attributes and outcomes. The implications for urban management policy and practice are profound and actionable. Given that education emerged as the sole significant predictor while capital and entrepreneurial orientation proved ineffective, urban managers and policymakers should fundamentally reorient MSME support strategies toward human capital development rather than continuing predominant emphases on financial capital provision or generic entrepreneurship promotion. Specifically, municipal authorities should prioritize accessible continuing education programs, managerial training initiatives, and financial literacy workshops tailored to practicing entrepreneurs' operational needs and delivered through flexible formats accommodating business owners' time constraints. Development agencies should establish mentorship networks systematically linking educated, successful entrepreneurs with emerging MSMEs to facilitate tacit knowledge transfer and social capital formation that formal education alone cannot provide. Urban entrepreneurship hubs offering shared infrastructure, technology access, and peer learning opportunities would

amplify education's benefits by creating environments where knowledge application and experimentation occur collaboratively. Future research should investigate several critical questions emerging from these findings. Longitudinal studies tracking MSMEs across multiple time points would strengthen causal inference regarding education's performance effects and illuminate dynamic processes through which human capital accumulation translates into business growth over entrepreneurial lifecycles. Qualitative investigations could explore specific mechanisms through which education influences performance decisions, potentially revealing cognitive processes, network activation patterns, or bias reduction pathways not captured by quantitative constructs. Comparative studies across multiple secondary cities varying in infrastructure development, institutional capacity, and market characteristics would establish whether education's primacy and orientation's ineffectiveness represent universal patterns in secondary urban contexts or context-specific phenomena unique to Mojokerto. Research examining threshold effects could determine minimum education levels necessary for performance benefits to materialize, informing targeted program design. Finally, intervention studies evaluating educational programs' causal effects through quasi-experimental or randomized designs would provide the strongest evidence guiding policy investments and resource allocation decisions for urban MSME development initiatives.

#### AUTHOR CONTRIBUTIONS

Ade Setia Pratama contributed to the research conception and design, data collection, data analysis, and drafting of the manuscript. Sudarmiati provided conceptual guidance, supervised the research process, and critically reviewed the manuscript for important intellectual content. Ery Tri Djatmika contributed to the development of the research framework, methodology refinement, and validation of the analysis. Cipto Wardoyo contributed to the interpretation of results, manuscript revision, and final approval of the version to be published. All authors have read and approved the final manuscript.

#### ACKNOWLEDGEMENT

The authors would like to express their gratitude to the Department of Management, Faculty of Economics and Business, Universitas Negeri Malang, for aca-

demetic support and a conducive research environment. The authors also thank all parties who contributed to this study, either directly or indirectly. Any remaining errors are the sole responsibility of the authors.

#### CONFLICT OF INTEREST

The authors declare no potential conflict of interest regarding the publication of this work. In addition, the authors have acknowledged the ethical issues, including plagiarism, informed consent, misconduct, data fabrication and/or falsification, double publication and/or submission, and redundancy, which have been fully addressed.

#### OPEN ACCESS

©2026 The author(s). This article is licensed under a Creative Commons Attribution 4.0 International License, which permits use, sharing, adaptation, distribution, and reproduction in any medium or format, as long as you give appropriate credit to the original author(s) and the source, provide a link to the Creative Commons license, and indicate if changes were made. The images or other third-party material in this article are included in the article's Creative Commons license unless indicated otherwise in a credit line to the material. If material is not included in the article's Creative Commons license and your intended use is not permitted by statutory regulation or exceeds the permitted use, you will need to obtain permission directly from the copyright holder. To view a copy of this license, visit: <http://creativecommons.org/licenses/by/4.0/>

#### PUBLISHER NOTE

Tehran Urban Research & Planning Centre (TURPC) takes a neutral position about claims on disputed territories, place names, international boundaries, jurisdiction in published maps, and institutional affiliations. TURPC is committed to retracting a paper after its publication if it becomes apparent that there are serious problems in its content, in terms of research and publication ethics (<https://www.ijhcum.net/journal/process?ethics>).

#### ABBREVIATIONS (NOMENCLATURE)

| Abbreviation | Definition                 |
|--------------|----------------------------|
| AGI          | Strategic Agility          |
| AGI1         | Environmental Adaptability |

|                |                                                    |
|----------------|----------------------------------------------------|
| AGI2           | Operational Responsiveness                         |
| AGI3           | Strategic Flexibility                              |
| AGI4           | Innovation Speed                                   |
| AVE            | Average Variance Extracted                         |
| BUMDes         | Badan Usaha Milik Desa (Village-Owned Enterprises) |
| CAP            | Business Capital                                   |
| CAP1           | Access to Capital                                  |
| CAP2           | Operational Sufficiency                            |
| CAP3           | Financial Stability                                |
| CAP4           | Growth Capacity                                    |
| CI             | Confidence Interval                                |
| CR             | Composite Reliability                              |
| EDU            | Owner's Education                                  |
| EDU1           | Formal Education                                   |
| EDU2           | Managerial Knowledge                               |
| EDU3           | Technical Skills                                   |
| EDU4           | Financial Literacy                                 |
| EO             | Entrepreneurial Orientation                        |
| EO1            | Risk-Taking                                        |
| EO2            | Innovation                                         |
| EO3            | Proactive Behavior                                 |
| EO4            | Decision Autonomy                                  |
| EO5            | Competitive Aggressiveness                         |
| f <sup>2</sup> | Effect Size (Cohen's f-squared)                    |
| GDP            | Gross Domestic Product                             |
| H              | Hypothesis                                         |
| H1-H10         | Hypothesis 1 through Hypothesis 10                 |
| HTMT           | Heterotrait-Monotrait Ratio                        |
| IDR            | Indonesian Rupiah (Currency)                       |
| MSMEs          | Micro, Small, and Medium Enterprises               |
| PERF           | MSME Performance                                   |
| PERF1          | Revenue Growth                                     |
| PERF2          | Market Expansion                                   |
| PERF3          | Profitability                                      |
| PERF4          | Operational Efficiency                             |
| PLS-SEM        | Partial Least Squares Structural Equation Modeling |

|          |                                      |           |
|----------|--------------------------------------|-----------|
| $Q^2$    | Predictive<br>(Stone-Geisser $Q^2$ ) | Relevance |
| $R^2$    | Coefficient of Determination         |           |
| SMEs     | Small and Medium Enterprises         |           |
| $\alpha$ | Alpha (Significance Level)           |           |
| $\beta$  | Beta (Standardized Coefficient)      |           |

## REFERENCES

- Al-Hakimi, M.A.; Saleh, M.H.; Borade, D.B., (2021). Entrepreneurial orientation and supply chain resilience of manufacturing SMEs in Yemen: the mediating effects of absorptive capacity and innovation. *Heliyon.*, 7(10): e08145 **(12 pages)**
- Al-Momani, L.; Haddad, S.; Sharabati, A.A.A.; Abu Hashesh, M., (2023). The moderation role of entrepreneurial orientation on the influence of innovation on pharmaceutical SMEs' performance. *Journal of Open Innovation: Technology, Market, and Complexity.*, 9(2): 100074 **(3 pages)**
- Amankwah-Amoah, J.; Khan, Z.; Wood, G., (2021). COVID-19 and business failures: The paradoxes of experience, scale, and scope for theory and practice. *European Management Journal.*, 39(2): 179–184 **(6 pages)**
- Audretsch, D.B.; Belitski, M., (2021). Knowledge complexity and firm performance: evidence from the European SMEs. *Journal of Knowledge Management.*, 25(4): 693–713 **(21 pages)**
- Belitski, M.; Guenther, C.; Kritikos, A.S.; Thurik, R., (2022). Economic effects of the COVID-19 pandemic on entrepreneurship and small businesses. *Small Business Economics.*, 58(2): 593–609 **(17 pages)**
- Brislin, R.W., (1970). Back-translation for cross-cultural research. *Journal of Cross-Cultural Psychology*, 1(3): 185–216 **(32 pages)**
- Chen, J.; Saarenketo, S.; Puimalainen, K., (2016). Internationalization and value orientation of entrepreneurial ventures—a Latin American perspective. *Journal of International Entrepreneurship*, 14(1): 32–51 **(20 pages)**
- Cohen, J., (1988). *Statistical Power Analysis for the Behavioral Sciences*. Routledge **(567 pages)**
- Doz, Y.L.; Kosonen, M., (2010). Embedding strategic agility. *Long Range Planning.*, 43(2–3): 370–382. **(12 Pages)**
- Fang, C. and Yu, D., (2017). Urban agglomeration: An evolving concept of an emerging phenomenon. *Landscape and Urban Planning.*, 162: 126–136 **(11 pages)**
- Faridi, M.Z.; Nawaz, S.; Bibi, S., (2022). Islamic microfinance and women entrepreneurial success: Mediating role of human capital. *Journal of Accounting and Finance in Emerging Economies.*, 8(1): 1–12 **(13 pages)**
- Fornell, C.; Larcker, D.F., (1981). Evaluating structural equation models with unobservable variables and measurement error. *Journal of Marketing Research.*, 18(1): 39–50 **(12 pages)**
- Fowler, F.J., (2014). *Survey Research Methods*. SAGE Publications. **(171 pages)**
- Hair, J.F.; Hult, G.T.M.; Ringle, C.M.; Sarstedt, M., (2022). A primer on partial least squares structural equation modeling (PLS-SEM). *International Journal of Research & Method in Education.*, 38(2): 220–221 **(1 page)**
- Hair, J.F.; Hult, G.T.M.; Ringle, C.M.; Sarstedt, M.; Danks, N.P.; Ray, S., (2021). *Partial Least Squares Structural Equation Modeling (PLS-SEM) Using R*. Springer International Publishing. **(208 pages)**
- Geisser, S. (1974). A predictive approach to the random effect model. *Biometrika.*, 61(1): 101–107 **(7 pages)**
- Glaeser, E.L.; Hausman, N., (2020). The spatial mismatch between innovation and joblessness. *Innovation Policy and the Economy.*, 20: 233–299 **(66 pages)**
- Guerrero, M.; Liñán, F.; Cáceres-Carrasco, F.R., (2021). The influence of ecosystems on the entrepreneurship process: a comparison across developed and developing economies. *Small Business Economics.*, 57(4): 1733–1759 **(27 pages)**
- Henseler, J.; Ringle, C.M.; Sarstedt, M., (2015). A new criterion for assessing discriminant validity in variance-based structural equation modeling. *Journal of the Academy of Marketing Science*, 43(1): 115–135 **(21 pages)**
- Hosen, C., (2022). The influence of agile strategies and methods on MSMEs in Indonesia. *International Journal of Human Capital Management.*, 6(2): 82–94 **(13 pages)**
- Kayani, U.N.; Gan, C.; Choudhury, T.; Arslan, A., (2025). Working capital management and firm performance: evidence from emerging African markets. *International Journal of Emerging Markets*, 20(4): 1530–1547 **(18 pages)**
- Kurniawan, J.H.; Nuringih, K., (2022). Pengaruh orientasi pasar, orientasi kewirausahaan, dan media sosial terhadap kinerja UMKM makanan khas Jambi. *Jurnal Muara Ilmu Ekonomi dan Bisnis*, 6(1): 176–187 **(12 pages)**
- Lechner, C.; Gudmundsson, S.V., (2014). Entrepreneurial orientation, firm strategy and small firm performance. *International Small Business Journal.*, 32(1): 36–60 **(25 pages)**
- Linnenluecke, M., (2021). Resilience in business and management research: A review of influential publications and a research agenda **(51 pages)**
- Lumpkin, G.T.; Dess, G.G., (1996). Clarifying the entrepreneurial orientation construct and linking it to performance. *Academy of Management Review.*, 21(1): 135–172 **(38 pages)**
- Mahendra, A.M.; Djatmika, E.T.; Hermawan, A., (2017). The Effect of Entrepreneurship Education on Entrepreneurial Intention Mediated by Motivation and Attitude among Management Students, State University of Malang, Indonesia. *International Education Studies.*, 10(9): 61–69 **(9 pages)**
- Maria, F.; Sandi, P.H.; Soleha, E.; Hidayah, Z.Z.; Zed, E.Z., (2024). Does entrepreneurship education matter for students' business success? The mediating role of entrepreneurial mindset. *Almana: Jurnal Manajemen dan Bisnis.*, 8(2): 288–296 **(9 pages)**
- Marvel, M.R.; Davis, J.L.; Sproul, C.R., (2016). Human capital and entrepreneurship research: A critical review and future directions. *Entrepreneurship Theory and Practice.*, 40(3): 599–626 **(28 pages)**
- Mezei, J.; Brush, C.; Liguori, E.W.; Nikou, S., (2025). A configurational perspective on comparative international entrepreneurship: A new approach to examining entrepreneurial activity combining clustering and qualitative comparative analysis. *International Journal of Entrepreneurial Behaviour and Research.*, 31(7): 1647–1674 **(28 pages)**
- Neumeyer, X.; Santos, S.C., (2020). A lot of different flowers make a bouquet: The effect of gender composition on technology-based entrepreneurial student teams. *International Entrepreneurship and Management Journal.*, 16(1): 93–114 **(22 pages)**
- Nitzl, C.; Roldan, J.L.; Cepeda, G., (2016). Mediation analysis in partial least squares path modeling. *Industrial Management and Data Systems.*, 116(9): 1849–1864 **(16 pages)**
- Rahmayanti, P.L.D.; Pratiwi, K.A., (2023). Pengembangan keunggulan bersaing UMKM sektor fashion di Kota Denpasar berbasis digitalisasi dan kapabilitas inovasi: Peran mediasi organizational agility. *Ekuitas: Jurnal Pendidikan Ekonomi.*, 11(2): 315–325 **(11 pages)**
- Rauch, A.; Wiklund, J.; Lumpkin, G.T.; Frese, M., (2009). Entrepreneurial orientation and business performance: An assessment of past research and suggestions for the future. *Entrepreneurship Theory and Practice.*, 33(3): 761–787 **(27 pages)**

- Sancono, B.A.W.; Kertati, I., (2023). Impact evaluation of COVID-19 technical and financial assistance policies on micro, small and medium enterprises (MSMEs) in Surakarta City. *International Journal of Social Science and Human Research.*, 6(1): 1-7 **(7 Pages)**
- Saoula, O.; Abid, M.F.; Ahmad, M.J.; Shamim, A., (2024). What drives entrepreneurial intentions? Interplay between entrepreneurial education, financial support, role models and attitude towards entrepreneurship. *Asia Pacific Journal of Innovation and Entrepreneurship.*, 19(2): 128–148 **(21 pages)**
- Saputra, R.; Havlicek, T., (2025). Village-owned enterprises in Indonesian rural development: Trends in research design and data analysis. *Baskara: Journal of Business and Entrepreneurship.*, 8(1): 1-18 **(18 pages)**
- Siregar, M.R.; Daulay, P.B.M., (2024). Analisis hubungan antara kepemimpinan kewirausahaan, transformasi digital, dan kinerja UMKM. *Jurnal Bisnis & Kewirausahaan.*, 20(1): 1-7 **(7 pages)**
- Soetanto, D.; Jack, S.L., (2018). Slack resources, exploratory and exploitative innovation and the performance of small technology-based firms at incubators. *Journal of Technology Transfer.*, 43(5): 1213–1231 **(19 pages)**
- Spigel, B.; Vinodrai, T., (2021). Meeting its Waterloo? Recycling in entrepreneurial ecosystems after anchor firm collapse. *Entrepreneurship and Regional Development.*, 33(7–8): 599–620 **(22 pages)**
- Srirejeki, K., (2018). Empowering the role of village-owned enterprise (BUMDes) for rural development: Case in Indonesia. *Jurnal Akuntansi Manajemen dan Ekonomi* **(6 pages)**
- Stam, E.; van de Ven, A., (2021). Entrepreneurial ecosystem elements. *Small Business Economics.*, 56(2): 809–832 **(27 pages)**
- Stone, M., (1974). Cross-validatory choice and assessment of statistical predictions. *Journal of the Royal Statistical Society: Series B (Statistical Methodology).*, 36(2): 111–133 **(23 pages)**
- Syafi'i, I.; Susanti, S.; Harti, H., (2021). Pengaruh kinerja keuangan, tingkat pendidikan dan kemampuan manajemen pemilik terhadap pertumbuhan UMKM di Kabupaten Sidoarjo. *Journal of Economic, Business and Accounting (COSTING).*, 5(1): 530–541 **(12 pages)**
- Teece, D. and Pisano, G. (1994). The dynamic capabilities of firms: An introduction. *Industrial and Corporate Change.*, 3(3): 537–556 **(20 pages)**
- Unger, J.M.; Rauch, A.; Frese, M.; Rosenbusch, N., (2011). Human capital and entrepreneurial success: A meta-analytical review. *Journal of Business Venturing.*, 26(3): 341–358 **(18 pages)**
- Wahyudi, A.S.; Yulivan, I.; Rahman, A., (2024). The role of micro, small, and medium enterprises (MSMEs) in supporting Indonesia's economic resilience. *Jurnal Pertahanan.*, 10(2): 297–307 **(11 pages)**
- Widjaja, S.U.M.; Wibowo, A.; Narmaditya, B.S.; Wardoyo, C.; Saptano, A., (2022). Identifying factors affecting entrepreneurship education and entrepreneurial intention among Indonesian university students. *Entrepreneurial Business and Economics Review.*, 10(2): 89-103 **(16 pages)**
- Weber, Y.; Tarba, S., (2014). Strategic agility: A state-of-the-art introduction to the special section on strategic agility. *California Management Review* **(7 pages)**
- Yaskun, M.; Sudarmiatin, S.; Hermawan, A.; Rahayu, W.P., (2023). The Effect of Market Orientation, Entrepreneurial Orientation, Innovation and Competitive Advantage on Business Performance of Indonesian MSMEs. *International Journal of Professional Business Review.*, 8(4): 01-21 **(21 pages)**
- Zhao, X.; Lynch, J.G.; Chen, Q., (2010). Reconsidering Baron and Kenny: Myths and truths about mediation analysis. *Journal of Consumer Research.*, 37(2): 197–206 **(10 pages)**

#### COPYRIGHTS

©2026 The author(s). This is an open-access article distributed under the terms of the Creative Commons Attribution (CC BY 4.0), which permits unrestricted use, distribution, and reproduction in any medium, as long as the original authors and source are cited. No permission is required from the authors or the publishers.



#### HOW TO CITE THIS ARTICLE

Pratama, A.S.; Sudarmiatin, S.; Djatmika, E.T.; Wardoyo, C., (2026). Human capital as a key driver of micro-small-medium-enterprises performance: Examining the roles of entrepreneurial orientation, business capital, and strategic agility. *Int. J. Hum. Capital. Urban Manage.*, 11(4): 776–794

DOI: 10.22034/IJHCUM.2026.04.09

URL: [https://www.ijhcum.net/article\\_735860.html](https://www.ijhcum.net/article_735860.html)

