ECONOMICS & Sociology

Lusy, & Hermanto, Y. B. (2026). Intellectual capital, entrepreneurial orientation and innovation: Pathways to MSME performance. *Economics and Sociology*, *19*(3), 73-93. doi:10.14254/2071-789X.2026/19-3/5

INTELLECTUAL CAPITAL, ENTREPRENEURIAL ORIENTATION AND INNOVATION: PATHWAYS TO MSME PERFORMANCE

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Received: October, 2025
1st Revision: September, 2026
Accepted: September, 2026

DOI: 10.14254/2071-789X.2026/19-3/5

ABSTRACT This study investigates the mediating role of innovation in the relationship between intellectual capital, entrepreneurial orientation, and the performance of micro, small, and medium enterprises (MSMEs). Using a quantitative approach, data were collected from 237 MSMEs in Indonesia and analyzed using structural equation modeling (SEM). The findings reveal that while intellectual capital enhances innovation, it does not directly affect MSME performance. Conversely, entrepreneurial orientation significantly influences innovation and firm performance, with innovation acting as a partial mediator. These results underscore the importance of fostering an entrepreneurial mindset and leveraging innovation to transform intellectual assets into competitive advantages. Theoretically, this research contributes to the Resource-Based View (RBV), Dynamic Capabilities Theory, and Schumpeterian Innovation Theory by emphasizing the critical role of entrepreneurial orientation in driving firm success. Practically, the study provides actionable insights for MSME managers and policymakers to prioritize strategic innovation and entrepreneurial initiatives for long-term sustainability and growth.

JEL Classification: J24, L25, L26

Keywords: intellectual capital, entrepreneurial orientation, innovation, company values

Introduction

When the COVID-19 pandemic occurred, governments worldwide introduced lockdown policies that disrupted sustainable business operations and reduced business activity, including among SMEs (Papadopoulos et al., 2017). Micro, small, and medium enterprises (MSMEs) are fundamental to global economic development, particularly in emerging markets where they contribute significantly to employment, innovation, and economic resilience (OECD, 2020). For example, in the UK, SMEs account for 99.3% of all private businesses (Federation of Small Businesses, 2014). However, MSMEs often struggle with limited financial resources, human capital constraints, and intense market competition, which makes it challenging to achieve sustainable performance (Warnecke, 2016; Ogunsade & Obembe, 2016).

In response to these challenges, businesses must strategically leverage their intellectual capital (ICA) and entrepreneurial orientation (EOR) to foster innovation, a widely recognized critical factor in enhancing firm performance (Keter et al., 2024; Yu et al., 2022).

Recent studies reinforce the importance of innovation and technological capability for SME development. In the Indonesian SME context, Sumiyana and Susilo (2021) showed that e-commerce adoption depends on sequential organizational, industrial, and national readiness, indicating that SME digital innovation requires more than the availability of technology alone. Similarly, Korcsmáros et al. (2025) emphasized that technological development is essential to SME competitiveness and sustainability, yet limited resources and expertise often constrain the adoption of new technologies. These findings support the view that MSME performance is shaped not only by internal resources but also by the ability to transform them into innovation-oriented, technology-enabled capabilities.

While existing research highlights the importance of IC and EO in driving firm success, their direct impact on MSME performance remains inconsistent. Several studies suggest that ICA alone does not significantly enhance firm value unless it is effectively translated into innovation-driven capabilities (Keter et al., 2024). Similarly, EOR can influence business growth, but its effects often depend on how well a firm leverages innovation as a competitive strategy (John et al., 2022). This raises a critical question: Does innovation serve as a mediating factor in the relationship between ICA, EOR, and MSME performance? Understanding this relationship is essential for helping MSMEs develop strategies to optimize their knowledge-based resources and entrepreneurial mindset, ensuring long-term business sustainability.

Sustainability has become fundamental to contemporary organizations and societies (Ferreira et al., 2021). It is a crucial source of competitive advantage and is essential for business survival in a rapidly evolving global market (Ferasso et al., 2020; Pieroni et al., 2019). As key economic contributors, SMEs demonstrate their sustainability through their business performance (Malesios et al., 2018). Research on 119 companies in England, France, and India suggests a strong correlation between sustainability and financial performance in SMEs (Malesios et al., 2018).

Company performance can be measured through various dimensions, one of which is ICA. ICA represents a vital intangible asset that firms must manage effectively to enhance efficiency and competitiveness (Keter et al., 2024). In addition to ICA, firm performance can also be assessed through EOR and innovation (Keter et al., 2024). To explore these factors, this study examines SMEs in East Java, particularly in Surabaya, Gresik, and Sidoarjo.

Most prior research has examined the independent effects of ICA and EOR on business performance but has overlooked the mediating role of innovation, especially within the MSME sector (Solano Acosta et al., 2018). Studies on innovation in larger enterprises have shown their potential to translate intangible assets into tangible outcomes, yet the applicability of this approach to MSMEs remains underexplored (Jansson et al., 2017; Malesios et al., 2018). Moreover, research on MSMEs has primarily focused on financial constraints and operational inefficiencies, with less emphasis on how strategic capabilities such as ICA and EOR interact with innovation to shape firm performance (Ferasso et al., 2020). This study aims to address this gap by empirically examining the extent to which innovation mediates the relationships among ICA, EOR, and company value (CVA).

Recent empirical studies also suggest that the relationship between innovation and performance may be context-dependent. Oláh et al. (2021) found that innovation contributes to financial performance, although its mediating role may not always be straightforward. From a human-technology perspective, Hernik et al. (2025) emphasized that digital transformation and process innovation depend heavily on employee engagement, effective communication, trust,

and human-centered technology adoption. Therefore, examining innovation as a mediating mechanism in MSMEs remains theoretically and empirically relevant, particularly in contexts where firms face resource constraints and varying levels of organizational readiness.

The mediating role of innovation between ICA, EOR, and CVA is critical, as these dimensions collectively drive business sustainability and competitive advantage (Malesios et al., 2018; Ferasso et al., 2020). Each element makes a distinct contribution to SME success. First, ICA, which comprises human, structural, and relational capital, is a foundational knowledge-based resource that fosters innovation and improves business efficiency (AlMulhim et al., 2024). However, its direct impact on firm performance may not always be evident, necessitating a mediator such as innovation (Yu et al., 2022). Second, EOR, characterized by proactiveness, risk-taking, innovativeness, and strategic decision-making, equips firms to explore new opportunities, adapt to market changes, and sustain long-term growth (John et al., 2022). Its influence on SME performance may be amplified through innovation (Jansson et al., 2017). Third, innovation (INN), as a transformational mechanism, translates ICA and entrepreneurial initiatives into tangible improvements in products, services, and business models (Sadikoglu & Zehir, 2010).

Several established theories underpin the relationships among these variables. The Resource-Based View (RBV) posits that ICA is a key resource for sustainable competitive advantage, particularly when it is effectively mobilized through innovation (Ferasso et al., 2020). Dynamic Capabilities Theory highlights the role of EOR in enabling firms to continuously adapt, innovate, and integrate knowledge resources for sustained success (Nguyen et al., 2018; Jansson et al., 2017). Schumpeterian Innovation Theory asserts that entrepreneurship and knowledge accumulation drive economic growth through innovation (Maurer & Fritzsche, 2024; Solano Acosta et al., 2018).

Empirical evidence suggests that ICA does not directly influence SME performance; instead, its impact is transmitted through innovation (Keter et al., 2024). Conversely, EOR, both directly and indirectly, affects SME performance through innovation (Yu et al., 2022). These findings highlight the need to foster an innovative culture to effectively translate entrepreneurial initiatives and knowledge assets into firm value (Malesios et al., 2018).

This study advances a novel perspective by examining the mediating role of INN in the relationship between ICA, EOR, and CVA. While prior research has explored the independent effects of ICA and EOR on business performance, their interplay through innovation has been largely overlooked, particularly in the SME context. The key contributions of this study are threefold. First, it integrates ICA and EOR with INN, moving beyond prior studies that treat ICA and EOR as independent drivers of firm performance by highlighting how innovation serves as a bridge between these constructs and firm success. Second, it provides empirical validation using structural equation modeling (SEM); drawing on primary data from 237 Indonesian SMEs, the study offers robust evidence that EOR significantly influences both innovation and firm performance, whereas ICA requires innovation as a conduit to contribute meaningfully to SME success. Third, it offers context-specific insights for SMEs; given their resource constraints, SMEs must strategically leverage innovation to transform knowledge assets into competitive advantages, whereas larger firms may be able to capitalize on ICA more directly.

This research provides actionable implications for SME managers and policymakers by advocating for innovation-driven strategies rather than the mere accumulation of ICA. It also underscores the need for government and financial institutions to support innovation-focused policies that enable SMEs to harness their entrepreneurial potential more effectively.

1. Literature review

The relationship between ICA, EOR, and CVA has been widely examined in management and business research. Studies suggest that ICA, comprising human, structural, and relational capital, is an essential resource for organizations, particularly for MSMEs, which often rely on knowledge-based assets rather than financial capital to sustain competitiveness (AlMulhim et al., 2024; Mishchuk et al., 2022; Zsigmond & Mura, 2023).

However, while prior studies acknowledge the importance of ICA and EOR in improving firm performance, the extent to which these factors directly contribute to MSME success remains inconclusive. Some researchers argue that their impact is not always direct but often requires a mediating mechanism - with innovation being a key channel that transforms these resources into business value (Yu et al., 2022).

1.1. Innovation as a mediating mechanism between ICA, EOR, and CVA

Innovation is widely recognized as a strategic mechanism through which firms transform intangible resources and entrepreneurial capabilities into superior organizational outcomes. In highly competitive and dynamic markets, innovation enables firms to differentiate their products and services, improve operational efficiency, respond to shifting customer needs, and strengthen their long-term competitiveness (Khalil et al., 2024; Sadikoglu & Zehir, 2010). For MSMEs, innovation is particularly important because limited financial resources, constrained managerial capacity, and intense market pressure often require firms to rely on knowledge-based assets and entrepreneurial behavior rather than scale-based advantages. In this context, innovation serves not merely as an output of internal capabilities but also as a mediating mechanism that converts intellectual capital and entrepreneurial orientation into measurable company value.

Recent evidence supports the role of innovation and technology adoption as capability-building mechanisms for SMEs. Sumiyana and Susilo (2021) demonstrated that Indonesian SMEs' e-commerce adoption follows a sequential stage model of readiness, suggesting that innovation adoption is embedded in organizational preparedness and environmental support. Korcsmáros et al. (2025) similarly showed that technological development among SMEs is influenced by firm-level characteristics and resource constraints, confirming that innovation is closely related to SMEs' ability to adapt to technological change.

The relationship between intellectual capital (ICA) and company value (CVA) is often indirect. ICA, encompassing human, structural, and relational capital, provides firms with knowledge, expertise, organizational routines, and stakeholder relationships that support the development of innovative products, services, processes, and business models. Firms with strong human capital are more likely to generate creative solutions and problem-solving capabilities, while structural capital facilitates knowledge storage, knowledge sharing, and organizational learning. Relational capital further strengthens innovation by enabling firms to access market information, customer feedback, supplier knowledge, and external collaboration opportunities (Yu et al., 2022). However, the mere possession of intellectual capital does not automatically guarantee improved firm performance or company value. Unless these knowledge-based resources are effectively mobilized into innovation, their contribution to competitiveness may remain latent or underutilized (Malesios et al., 2018). This argument is consistent with prior studies suggesting that intellectual capital enhances competitive advantage only when firms can continuously translate knowledge resources into new products, improved processes, or adaptive business practices (Bencsik & Belas, 2025; Sadikoglu & Zehir, 2010).

Similarly, entrepreneurial orientation (EOR) is closely associated with innovation, as firms with strong EOR tend to be proactive, risk-taking, and opportunity-seeking, and willing to experiment with new strategic initiatives. EOR encourages firms to identify emerging market opportunities, allocate resources to uncertain but potentially valuable activities, and respond more aggressively to changes in the competitive environment (Solano Acosta et al., 2018). Nevertheless, the effect of EOR on company value depends on whether entrepreneurial attitudes and strategic intentions are translated into actual innovation activities. Without innovation, entrepreneurial orientation may remain limited to a strategic posture and fail to fully materialize in improved financial and non-financial performance. Prior research has shown that entrepreneurial-oriented firms that prioritize innovation tend to achieve stronger performance outcomes because innovation enables them to convert opportunity recognition, risk-taking, and strategic proactiveness into tangible market value (Yu et al., 2022).

Innovation occupies a central mediating position in the relationship among ICA, EOR, and CVA. On the one hand, ICA provides the knowledge foundation required for innovation by supporting learning, creativity, coordination, and knowledge integration. On the other hand, EOR provides the behavioral and strategic impetus that motivates firms to exploit these knowledge resources in a market-oriented way proactively. When these two capabilities are combined, innovation becomes the mechanism through which MSMEs transform internal knowledge assets and entrepreneurial initiatives into improved competitiveness, customer value, productivity, and business growth (Ferasso et al., 2020; Jansson et al., 2017). This is especially relevant for MSMEs, where resource limitations often make it difficult to gain a competitive advantage through capital intensity alone.

The mediating role of innovation is also theoretically consistent with the Resource-Based View and Dynamic Capabilities Theory. From the Resource-Based View perspective, ICA is a valuable, potentially rare intangible resource, but its contribution to firm performance depends on how effectively it is deployed to create value. Innovation provides this value-creation pathway by converting knowledge assets into differentiated offerings and improved business processes. From the dynamic capabilities perspective, EOR strengthens the firm's ability to sense opportunities, seize market possibilities, and reconfigure internal resources in response to environmental change. Innovation links these dynamic entrepreneurial behaviors to company value by enabling firms to renew their products, services, and operational models in line with market demand (Ferasso et al., 2020; Jansson et al., 2017).

Accordingly, innovation should be understood as a bridge between strategic resources and firm outcomes rather than as an isolated organizational activity. ICA may enhance innovation by providing the knowledge base needed for creative and adaptive responses, while EOR may stimulate innovation by encouraging firms to pursue opportunities, tolerate uncertainty, and adopt proactive strategies. In turn, innovation can improve company value by enhancing market responsiveness, operational efficiency, customer satisfaction, and competitive differentiation. Thus, the present study positions innovation as a key mediating variable that explains how ICA and EOR contribute to CVA in the MSME context.

1.2. Hypothesis development and conceptual framework

Intellectual capital (ICA) is widely recognized as a valuable intangible resource that contributes to a firm's innovative capacity. It reflects the knowledge, skills, organizational systems, and relational networks that enable firms to generate, absorb, and apply new ideas. Companies with strong human capital tend to develop creative solutions and problem-solving capabilities, while structural capital facilitates knowledge-sharing mechanisms, organizational routines, and internal systems that support innovation. Relational capital further strengthens

innovation by enabling firms to collaborate with customers, suppliers, and other stakeholders (Tjahjadi et al., 2024). Previous studies suggest that firms with higher knowledge capabilities are better positioned to develop new products, services, and processes, indicating that ICA plays an important role in enhancing innovation (Yu et al., 2022). Recent evidence from SMEs in V4 countries further indicates that human capital, performance appraisal, motivation, and investment in employee skill development contribute to SME survival, reinforcing the role of human-capital-related resources in business continuity and innovation readiness (Belas et al., 2024). Therefore, the following hypothesis is proposed:

H1: ICA has a significant positive effect on INN.

Entrepreneurial orientation (EOR) also serves as an important antecedent of innovation. EOR reflects a firm's strategic posture regarding risk-taking, proactiveness, and innovativeness (Sadikoglu & Zehir, 2010). Firms with a high level of EOR are more likely to pursue new opportunities, invest in research and development, experiment with novel business models, and respond proactively to market changes (Yu et al., 2022). Prior research has established that EOR is a critical enabler of innovation because it encourages firms to embrace change, tolerate uncertainty, and develop competitive advantages through new products, services, or processes (Ferasso et al., 2020). In addition, innovation and strategic management have been shown to support micro-enterprises and SMEs in dealing with barriers to internationalization, indicating that entrepreneurial and strategic postures become more valuable when translated into innovation-oriented action (Virglerova et al., 2025). Based on this argument, the following hypothesis is formulated:

H2: EOR has a significant positive effect on INN.

In addition to its effect on innovation, ICA is often regarded as a key determinant of company value (CVA). Knowledge-based assets can enhance productivity, improve strategic decision-making, strengthen operational efficiency, and support long-term competitiveness (Jansson et al., 2017). Firms with strong intellectual capital are generally expected to be more adaptive and able to respond to changing market conditions. However, prior studies also indicate that ICA does not always directly improve firm performance unless it is effectively transformed into innovation-driven capabilities. Nevertheless, firms with strong ICA may still achieve higher efficiency, adaptability, and market competitiveness, thereby contributing to improved company value (Malesios et al., 2018). Accordingly, the following hypothesis is proposed:

H3: ICA has a significant positive effect on CVA.

EOR has also been widely linked to business success and company value. Firms that adopt proactive, innovative, and risk-taking behaviors are generally better at identifying new opportunities, entering emerging markets, responding to environmental uncertainty, and outperforming competitors (Solano Acosta et al., 2018). EOR enables firms to make strategic decisions under uncertain conditions and to respond effectively to market disruptions (Jansson et al., 2017). Empirical studies further confirm that EOR can significantly enhance firm performance across industries, particularly in dynamic, competitive environments where entrepreneurial behavior becomes an important source of competitive advantage (Ferasso et al., 2020). Thus, the following hypothesis is developed:

H4: EOR has a significant positive effect on CVA.

Innovation is widely recognized as a key driver of firm performance and company value because it enables firms to differentiate their offerings, improve operational efficiency, strengthen customer satisfaction, and sustain long-term growth (Khuong et al., 2025). Firms that continuously develop new technologies, services, products, and business models are more likely to achieve higher profitability, expand their market share, and improve their competitive position (Yu et al., 2022). Empirical evidence also confirms that innovation plays a crucial role

in improving MSME performance by fostering agility, adaptability, and competitiveness in changing business environments (Costa Cavalcante, 2024; Abazi-Alili et al., 2024; Rosli & Sidek, 2013). Therefore, the following hypothesis is proposed:
H5: INN has a significant positive effect on CVA.

Beyond its direct effect on company value, innovation may also function as a mediating mechanism between ICA and CVA. Although ICA provides an important foundation for firm success, its effect on performance is often indirect and depends on how effectively firms transform their knowledge-based resources into innovation (Malesios et al., 2018). Firms with high ICA but low innovation capability may struggle to convert knowledge assets into tangible business value, particularly when they fail to develop new products, improve processes, or respond to market demands (Nasir, 2017). In this regard, innovation serves as a mechanism that converts intellectual resources into competitive outcomes and strengthens the link between ICA and CVA (Dong et al., 2024). Based on this reasoning, the following hypothesis is formulated:
H6: INN mediates the relationship between ICA and CVA.

Innovation may also mediate the relationship between EOR and CVA. EOR promotes risk-taking, proactiveness, and innovativeness, but its effect on firm performance becomes stronger when entrepreneurial behavior is translated into innovation-driven strategies (Solano Acosta et al., 2018). Entrepreneurial firms that actively engage in innovation are more likely to achieve higher growth, stronger competitiveness, and long-term business success because innovation enables them to transform opportunity-seeking behavior into tangible market outcomes (Yu et al., 2022). Therefore, innovation serves as a bridge linking entrepreneurial orientation to company value by translating strategic entrepreneurial behavior into improved organizational performance (Ferreira & Coelho, 2020). Accordingly, the following hypothesis is proposed:
H7: INN mediates the relationship between EOR and CVA.

Based on the above theoretical arguments and hypotheses, this study proposes a conceptual framework in which ICA and EOR serve as antecedent variables, INN functions as a mediating variable, and CVA represents the outcome variable. The model assumes that ICA and EOR influence CVA both directly and indirectly through innovation. The research model of this study is shown in Figure 1.

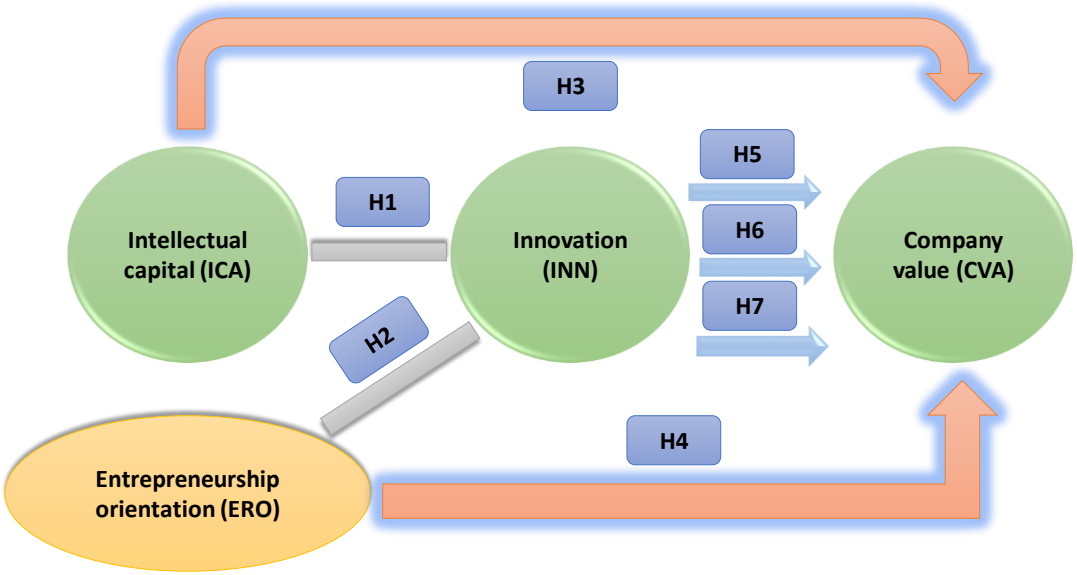


Figure 1. Conceptual model

The proposed conceptual model summarizes the theoretical relationships among intellectual capital, entrepreneurial orientation, innovation, and company value. In this framework, ICA and EOR are positioned as strategic antecedents that may influence CVA both directly and indirectly through INN. Innovation is therefore treated as a mediating mechanism that explains how knowledge-based resources and entrepreneurial behavior are translated into firm-level outcomes. This framework provides the basis for the empirical analysis conducted in the following section.

2. Research method

2.1. Research design, sample selection, measurement, and data analysis

This study employed a quantitative research design to examine the relationships among intellectual capital (ICA), entrepreneurial orientation (EOR), innovation (INN), and company value (CVA) in micro, small, and medium enterprises (MSMEs). Structural Equation Modeling (SEM) using AMOS 24 software was applied to test the proposed hypotheses and evaluate both direct and indirect relationships among the constructs. A survey-based approach was used to collect primary data from MSME owners and managers in Surabaya, Gresik, and Sidoarjo, Indonesia. These areas were selected because they represent important business centers in East Java and include diverse MSME activities across retail, manufacturing, culinary, service, and other business sectors.

The target population comprised MSMEs operating across various industries. This study used a purposive sampling technique, which allows researchers to select respondents who meet specific criteria relevant to the research objectives (Sugiyono, 2021). The respondents were MSME owners, managers, or individuals involved in strategic decision-making related to business strategy, innovation, and firm performance. This criterion was applied to ensure that the collected data reflected informed managerial perceptions of intellectual capital, entrepreneurial orientation, innovation activities, and company value. A total of 237 valid responses were obtained, consisting of 182 micro-businesses (76.8%) and 55 small businesses (23.2%). The survey was conducted over three months, from January to March 2024, using online questionnaires and direct interviews to improve response accuracy and data completeness.

All constructs were measured using validated scales adapted from prior studies and modified to fit the MSME context. A five-point Likert scale was used, ranging from 1 = strongly disagree to 5 = strongly agree. Intellectual capital was conceptualized as a valuable knowledge-based resource that may contribute to MSME competitiveness and performance. It was measured through three dimensions: human capital, structural capital, and relational capital (Tjahjadi et al., 2024). The measurement scale for intellectual capital was adapted from Yu et al. (2022). In this study, intellectual capital refers to MSMEs' ability to develop employee knowledge, protect organizational knowledge, and establish work methods and procedures that support innovation and business development.

The validity and reliability of the constructs were evaluated using Confirmatory Factor Analysis (CFA). Construct validity was assessed using standardized factor loadings; values above 0.50 were considered acceptable (Hair et al., 2023). Reliability was evaluated using Composite Reliability (CR), where values above 0.70 indicate satisfactory internal consistency. Convergent validity was examined using Average Variance Extracted (AVE), with a minimum acceptable value of 0.50 (Ghozali, 2016). Indicators that did not meet the minimum loading factor threshold were excluded from further analysis to improve the model's measurement quality. After confirming the validity and reliability of the measurement model, SEM analysis

was conducted to test the hypothesized relationships among ICA, EOR, INN, and CVA, including the mediating role of innovation.

3. Results and discussions

3.1. Respondent characteristics

The characteristics of respondents by gender are as follows: 237 respondents, of whom 145 (61.2%) are male, and 92 (38.8%) are female. The characteristics of respondents by business type are summarized in *Table 1*.

Table 1. Respondents ' business type

Category	Type	Frequency	Percentages, %
Gender	Male	145	61.2
	Female	92	38.8
Business Size	Micro Business	182	76.8
	Small Business	55	23.2
Business Location	Surabaya	94	39.7
	Gresik	72	30.4
	Sidoarjo	71	29.9
Business Type	Culinary Business	80	33.8
	Independent Work	19	8.0
	Various Shops	17	7.2
	Frozen Food Store	4	1.7
	Grocery Store	3	1.3
	Photocopy Business	3	1.3
	Cellphone Credit Business	3	1.3
	Clothing Store	2	0.8
	Workshop	2	0.8
	Other Business	82	34.6
Total		**237**	**100**

Source: *own compilation*

From Table 1, it can be seen that 80 SMEs are in the Culinary business (33.8%), while the others are diverse, including internet cafes, department stores, entrepreneurs, and others. The characteristics of the respondents' businesses were: 55 small businesses (23.2%) and 182 micro businesses (76.8%).

3.2. Results validity and reliability

In the early stages of the analysis, several indicators were excluded from the intellectual capital (ICA) model because they showed a loading factor of less than 0.50, namely ICA 4 (the company documents its projects for use in other projects), ICA 6 (customer feedback guides company activities), ICA 7 (the companies are aware of the needs of customers), and ICA 8 (company provides services that add value to customers).

As for innovation, two variables are excluded from the model: INN 4 (in introducing a new product or service, the company is often the first to present it to the market) and INN 5 (compared to competitors, the company has introduced more innovative products or services over the last few years). The entrepreneurial orientation excluded from the model is EOR 3 (the

company actively seeks opportunities), EOR 4 (the company competes aggressively to outperform competitors), and EOR 5 (the company works independently and makes decisions to advance business concepts independently).

Company values excluded from the model are CVA 4 (the company can offer products/services following customer perceptions) and CVA 5 (the company can meet customer needs). The valid ICA indicators are presented in *Table 2*.

Table 2. The results of the validity and reliability test of the research instrument for the intellectual capital variable (ICA)

Indicators	Validity test		Construct reliability	
	Loading	Note		
ICA 1 (company employees can develop new ideas in their work)	0.800	valid	0.798	0.500
ICA 2 (company employees are considered experts in their particular jobs and functions)	0.687	Valid		
ICA 3 (the company protects essential knowledge and information to avoid losses if important people leave the company)	0.702	Valid		
ICA 5 (the company has work methods and procedures to support innovation and new products)	0.624	Valid		

Source: *own compilation*

The confirmatory factor analysis results for the indicators of the intellectual capital (ICA) variable show that all loading factors exceed 0.50, indicating that the instrument indicators are convergent and valid as a measure of intellectual capital (ICA). Meanwhile, the construct reliability was 0.798, and the AVE was 0.500, indicating that the construct reliability for the construct variable, intellectual capital (ICA), has been fulfilled. The results of the validity and reliability tests for entrepreneurial orientation (EOR) are shown in *Table 3*:

Table 3. Results validity and reliability test instrument study for entrepreneurial orientation (EOR) Variables

Indicators	validity test		Construct reliability (ρπ)	AVE
	loading	Note		
EOR 1 (the company develops creativity and experimentation through the introduction of new products or services through research and development)	0.906	Valid	0.732	0.587
EOR 2 (the company allocates significant resources to venture into an uncertain environment)	0.595	Valid		

Source: *own compilation*

The confirmatory factor analysis results for the entrepreneurial orientation (EOR) indicators show that all loading factors exceed 0.50, indicating that the instrument indicators are convergent and valid as a measure of entrepreneurial orientation (EOR). Meanwhile, the construct reliability value was 0.732, and the AVE value was 0.587, so the construct reliability for the Entrepreneurial Orientation (EOR) Variable construct was fulfilled. The validity and reliability test results for innovation are shown in *Table 4*:

Table 4. Results validity and reliability test instrument study for variable innovation (INN)

Indicators	validity test		Construct reliability (ρπ)	AVE
	loading	Note		
INN 1 (the company introduces modifications to an existing product or service)	0.752	Valid	0.653	0.500
INN 2 (the company is constantly developing new products or services)	0.638	Valid		

Source: *own compilation*

The confirmatory factor analysis results for the Innovation Variable (INN) indicator show that all loading factors are greater than 0.50, indicating that the indicators are convergent and valid as a measure of Innovation (INN). Meanwhile, the construct reliability was 0.653 and the AVE was 0.500, indicating that the reliability for the innovation variable (INN) construct was fulfilled. The results of the validity and reliability tests for company value (CVA) are shown in *Table 5*.

Table 5. Results validity and reliability test instrument study for variable company value (CVA)

Indicators	validity test		Construct reliability (ρπ)	AVE
	loading	Note		
CVA 1 (the company was able to achieve the targeted profit)	0.831	Valid	0.737	0.586
CVA 2 (the company can achieve the targeted level of productivity)	0.694	Valid		

Source: *own data*

The confirmatory factor analysis results for the company value (CVA) indicator show that all loading factors are greater than 0.50, indicating that the indicators are convergent and valid as a measure of company value (CVA). While the construct reliability value was 0.737, and the AVE value was 0.586, the construct reliability for the company value (CVA) variable construct was not met.

3.3. Structural Equation Modeling (SEM) results

A goodness-of-fit overall model test was performed to determine whether the empirical data supported the hypothetical model. Some of the test results are presented in Table 6, and the output in the form of a path diagram is shown in Figure 2.

Table 6. Testing the goodness of the overall fit model

The goodness of the fit index	Cutoff Value	Analysis Results	Model Evaluation
χ^2 - chi-square	< df with α = 0.05	17.430	Good model
Sig.	≥ 0.05	0.830	Good model
RMSEA	≤ 0.08	0.000	Good model
RMR	≤ 0.10	0.015	Good model
GFI	≥ 0.90	0.986	Good model
AGFI	≥ 0.90	0.968	Good model
CMIN/DF	≤ 2.00	0.726	Good model
TLI	≥ 0.90	1.015	Good model
CFI	≥ 0.90	1.000	Good model
PNFI	> 0.60	0.523	Marginal model
PGFI	> 0.60	0.430	Marginal model

Source: *own data*

The model fit assessment assesses how well the hypothesized structural model fits the collected data. The following goodness-of-fit indices were used to determine the model's adequacy:

Chi-Square (x^2) – a ratio below 3.00 indicates a good model fit. The obtained value of 17.430 suggests a well-fitting model. Significance (p-value) – a p-value≥ 0.05 supports model validity. The model's p-value of 0.830 confirms statistical acceptance. Root Mean Square Error of Approximation (RMSEA) – A value ≤ 0.08 signifies a good fit. The model's RMSEA of 0.000 indicates an excellent fit. Root Mean Square Residual (RMR) – A value < 0.10 suggests a strong model fit. The RMR value of 0.015 confirms this. Goodness-of-Fit Index (GFI) – A GFI ≥ 0.90 indicates strong explanatory power. The obtained GFI of 0.986 supports the model's robustness.

Adjusted Goodness-of-Fit Index (AGFI) – Values ≥ 0.90 signify model adequacy. The AGFI of 0.968 confirms this. Normed Chi-Square (CMIN/DF) – A value ≤ 2.00 confirms a well-fitting model. The model's 0.726 meets this requirement. Comparative Fit Index (CFI) and Tucker-Lewis Index (TLI) – Values ≥ 0.90 indicate an acceptable model. The CFI (1.000) and TLI (1.015) show excellent fit. Parsimony Normed Fit Index (PNFI) and Parsimony Goodness-of-Fit Index (PGFI) – Values > 0.60 indicate a good model. The obtained PNFI (0.523) and PGFI (0.430) fall slightly below the threshold but still suggest a reasonable fit. These results confirm that the proposed model adequately fits the data, supporting the structural relationships tested in the study.

Table 6 shows that the SEM used to test the causal relationship between variables indicates that the model can be accepted and supported, as the goodness-of-fit index is close to or exceeds the cutoff value.

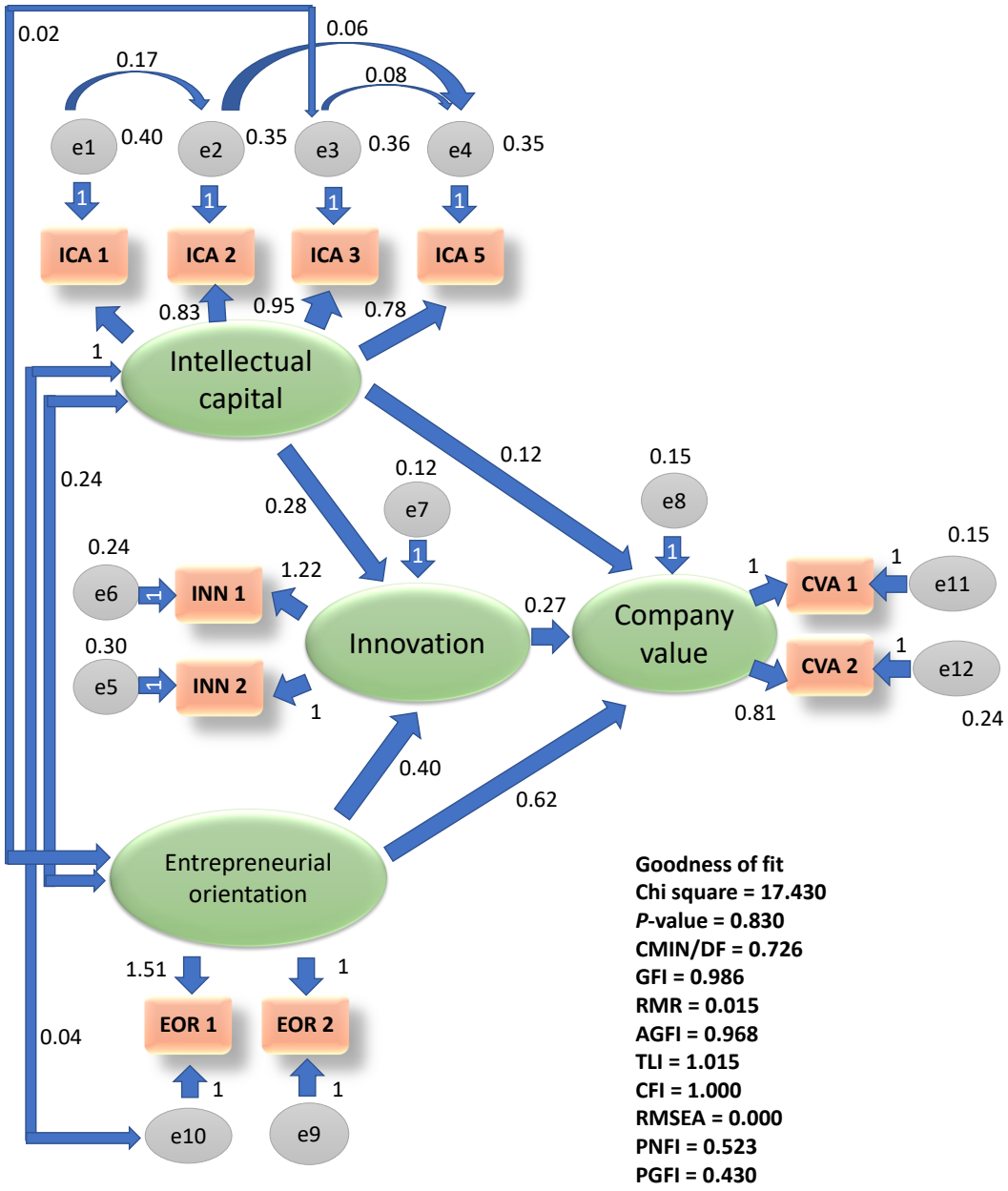


Figure 2. SEM analysis results in the path diagram.
Source: *own data*

3.4. Hypothesis testing and mediation analysis

The summary of the hypothesis testing results is shown in Table 7, while the results of the Sobel test are shown in Table 8. Table 7 presents the direct and indirect effects of ICA, EOR, and INN on CVA. The table includes standardized path coefficients (β), significance levels (p-values), and results from the mediation analysis. Direct Effects: represent the immediate impact of independent variables on dependent variables. Indirect Effects: show the mediation effect of innovation between ICA, EOR, and CVA.

Table 7. Hypothesis testing results

	Variables Independent	Variables dependent	Path Coefficient Direct Effects			Path Coefficient Indirect Effects		
			Std	*P* value	Note	Variable intervene	Non-std	Note
H 1	Intellectual Capital	Innovations	0.366	0.012	sig*	-	-	-
H 2	Entrepreneurial Orientation	Innovations	0.426	0.002	sig**	-	-	-
H 3	Intellectual Capital	Company Values	0.122	0.400	Non-sig	-	-	-
H 4	Entrepreneurial Orientation	Company Values	0.525	0.000	sig***	-	-	-
H 5	Innovations	Company Values	0.216	0.095	Non-sig	-	-	-
H 6	Intellectual Capital	Company Values	-	-	-	Innovations	0.076	Non-sig
H 7	Entrepreneurial Orientation	Company Values	-	-	-	Innovations	0.108	sig*

Note: Std is standardized, non-std is nonstandardized
Source: *own data*

Key Findings in Table 7:

1. H_1 = ICA to INN (β = 0.366, p = 0.012) ➔ Intellectual Capital has a significant positive effect on innovation, supporting H_1.
2. H_2 = EOR to INN (β = 0.426, p = 0.002) ➔ Entrepreneurial Orientation positively influences innovation, confirming H_2.
3. H_3 = ICA to CVA (β = 0.122, p = 0.400) ➔ Intellectual Capital does not significantly impact Company Value, rejecting H_3.
4. H_4 = EOR to CVA (β = 0.525, p = 0.000) ➔ Entrepreneurial Orientation has a strong positive effect on Company Value, supporting H_4.
5. H_5 = INN to CVA (β = 0.216, p = 0.095) ➔ Innovation does not significantly influence Company Value, rejecting H_5.
6. H_6 = ICA to CVA (Through INN) (β = 0.076, p = 0.059) ➔ The indirect effect is not significant, meaning innovation does not mediate the relationship between Intellectual Capital and Company Value.
7. H_7 = EOR to CVA (Through INN) (β = 0.108, p = 0.034) ➔ The mediating effect is significant, meaning innovation partially mediates the impact of Entrepreneurial Orientation on Company Value.

Table 8. Sobel test results

Indirect influences					Estimation	P-values
Company Values	<---	Innovations	<---	Intellectual Capital	0.076	0.059
		0.273		0.280		
		Innovations		Entrepreneurial Orientation	0.108	0.034
		0.273		0.397		

Source: *own data*

Table 8 presents the Sobel Test results, which assess the mediation effect of innovation on the relationship between:

1. ICA ➔ INN ➔ CVA

2. EOR ➔ INN ➔ CVA

The Sobel test calculates the significance of the Indirect Effects in a mediation model. If the p-value is ≤ 0.005, the mediation effect is significant.

Key findings in Table 8:

1. ICA – INN – CVA (p = 0.280) ➔ The mediation effect is not significant, meaning innovation does not mediate the relationship between Intellectual Capital and Company Value.
2. EOR – INN – CVA (p = 0.034) ➔ The mediation effect is significant, confirming that innovation partially mediates the effect of Entrepreneurial Orientation on Company Value.

This aligns with Table 7, reinforcing that Entrepreneurial Orientation drives Company Value directly and through innovation. However, Intellectual Capital does not significantly impact Company Value, even when mediated by innovation.

3.5. Discussion

The findings of this study provide important insights into the role of ICA, EOR, and INN in CVA. This section discusses the results in relation to the existing literature and provides theoretical and practical implications.

3.5.1. The impact of intellectual capital on innovation and company value

The results indicate that ICA significantly influences INN (H_1 supported, $\beta = 0.366$, $p = 0.012$). This finding aligns with prior research suggesting that firms with strong human, structural, and relational capital tend to develop and implement innovative strategies (Mishra & Kiran, 2024; AlMulhim et al., 2024). MSMEs that invest in employee training, knowledge-sharing systems, and strategic partnerships are better equipped to generate innovation. However, ICA does not directly impact CVA (H_3 rejected, $\beta = 0.122$, $p = 0.400$). This result contrasts with some previous studies that found a positive effect on firm success (Malesios et al., 2018; Tjahjadi et al., 2024). One possible explanation is that knowledge-based assets alone do not guarantee business success unless they are effectively transformed into competitive advantages through Innovation, market Expansion, or Operational Efficiency.

Additionally, INN does not mediate the relationship between ICA and CVA (H_6 rejected, $\beta = 0.076$, $p = 0.059$). This suggests that while Intellectual Capital supports innovation, it may not directly translate into improved financial and market performance unless combined with other strategic factors such as digital transformation, access to funding, or market differentiation (Ferasso et al., 2020).

3.5.2. The role of entrepreneurial orientation in driving company value

The study confirms that EOR strongly impacts CVA (H_4 supported, $\beta = 0.525$, $p = 0.000$). This finding aligns with prior research emphasizing that proactiveness, risk-taking, and innovativeness are key factors in sustaining business growth (Solano Acosta et al., 2018). MSMEs are willing to take calculated risks, enter new markets, and adopt innovative business models to achieve higher performance. Furthermore, EOR significantly enhances INN (H_2 supported, $\beta = 0.426$, $p = 0.002$). This result is consistent with research indicating that entrepreneurial firms actively seek new opportunities and invest in research and development

(Jansson et al., 2017). However, the effectiveness of EOR depends on the firm's ability to translate its entrepreneurial strategies into actual innovations.

Most importantly, the study finds that innovation mediates the relationship between EOR and CVA (H_7 supported, $\beta = 0.108$, $p = 0.034$). This suggests that while EOR directly drives CVA, Firms that leverage EOR to enhance innovation achieve even higher performance levels. This finding aligns with research emphasizing the importance of entrepreneur-driven innovation as a source of competitive advantage (Yu et al., 2022; Ferasso et al., 2020).

3.5.3. The limited direct impact of innovation on company value

Surprisingly, innovation does not significantly influence CVA (H_5 rejected, $\beta = 0.216$, $p = 0.095$). This finding can be interpreted in light of recent studies showing that innovation does not automatically generate performance gains unless complementary organizational conditions support it. Oláh et al. (2021), for example, found that innovation improved financial performance, but its mediating role was not always supported. Similarly, Hernik et al. (2025) showed that digital transformation requires employee engagement, clear communication, trust in technological systems, and human-centered implementation. Thus, the insignificant direct effect of innovation in the present study may reflect the fact that many MSMEs introduce product or process changes without sufficient organizational readiness, human-resource support, or market conversion capability. This result differs from prior studies that identified innovation as a key driver of firm growth, customer satisfaction, and financial success (Sadikoglu & Zehir, 2010). One possible explanation is that not all types of Innovation lead to immediate business success. For instance, while process innovation may enhance efficiency, it may not necessarily increase revenue in the short term. Similarly, product innovation may require substantial investments before generating measurable performance improvements (Nasir, 2017). Additionally, external factors such as market conditions, customer adoption rates, and access to financing may influence the extent to which innovation translates into performance gains (Malesios et al., 2018).

Conclusion

This study investigates the mediating role of innovation in the relationship between ICA, EOR, and CVA. The findings highlight the central role of EOR in driving CVA, while the direct effect of ICA on performance remains insignificant unless leveraged through Innovation and Strategic Implementation.

Key findings and theoretical implications

1. EOR has a significant impact on CVA (H_4 supported, $\beta = 0.525$, $p = 0.000$), aligning with the Dynamic Capabilities Theory, which suggests that firms must continuously adapt, innovate, and take strategic risks to remain competitive ((Zheng, 2024); (Ferasso et al., 2020); (Jansson et al., 2017)). Firms with strong EOR are more likely to explore new opportunities, innovate, and sustain long-term business growth.
2. ICA enhances INN (H_1 supported, $\beta = 0.366$, $p = 0.012$), confirming the Resource-Based View (RBV), which posits that knowledge-based assets (Human, Structural, and Relational Capital) can foster innovation when properly utilized (Yu et al., 2022). However, ICA alone does not significantly impact CVA (H_3 rejected, $\beta = 0.122$, $p = 0.400$), indicating that knowledge resources must be actively transformed into market-driven innovation to achieve tangible business success.

3. INN partially mediates the relationship between EOR and CVA (H_7 supported, $\beta = 0.108$, $p = 0.034$), reinforcing Schumpeterian Innovation Theory, which argues that entrepreneurial activity is a key driver of Innovation and Economic Growth ((Li, 2024); (Solano Acosta et al., 2018). This finding suggests that firms that leverage their entrepreneurial capabilities to enhance innovation gain a competitive advantage in the market.
4. INN does not directly improve CVA (H_5 rejected, $\beta = 0.216$, $p = 0.095$), contradicting previous studies highlighting its strong role in driving business growth (Sadikoglu & Zehir, 2010). This result suggests that not all types of innovation lead to immediate financial success, and external factors such as market conditions, customer adoption, and financial support may influence the effectiveness of innovation efforts (Malesios et al., 2018).

These findings contribute to RBV, Dynamic Capabilities Theory, and Schumpeterian Innovation Theory by demonstrating that EOR, rather than ICA alone, plays a more direct role in company performance and that INN is a crucial enabler of this relationship.

While this research provides valuable insights into company performance, several limitations should be acknowledged:

1. This study focuses on MSMEs in Surabaya, Gresik, and Sidoarjo, Indonesia, which may limit the generalizability of the findings to other regions or countries with different economic conditions. Future research could conduct cross-country comparisons to examine whether their relationships hold in different business environments.
2. The data were collected at a single point, which may not capture the dynamic nature of INN and EOR over time. A longitudinal study could provide deeper insights into how these factors evolve and impact performance over different business cycles.
3. The study focuses on product and process innovation, but other dimensions of innovation, such as business model, marketing, and digital transformation, could also play significant roles in MSME performance. Future research could explore these additional aspects.
4. The study does not account for macroeconomic conditions, government policies, or industry-specific factors that may influence MSME performance. Future studies should incorporate these moderating variables to provide a more comprehensive analysis.

To build on this study, future research could explore the following areas:

1. The Role of Digital Transformation in MSME Performance. With rapid technological advancements, it would be valuable to examine how digitalization, artificial intelligence, and e-commerce adoption influence the relationships among ICA, EOR, INN, and Firm Success (Ferasso et al., 2020).
2. Exploring Sustainable Innovation in MSMEs. As sustainability becomes a global priority, future research could investigate how green innovation, circular economy models, and ESG strategies impact MSME performance (Malesios et al., 2018).
3. Entrepreneurial Resilience and Crisis Management. Given the lessons from the COVID-19 pandemic, researchers could explore how MSMEs with strong entrepreneurial orientation and innovation capabilities navigate economic downturns and market crises (Jansson et al., 2017).
4. The Influence of Financial Access on Innovation-Driven Growth. Since many MSMEs struggle with funding constraints, future studies could examine how venture capital, microfinance, or government grants impact the ability of MSMEs to transform innovation into tangible performance improvements (Yu et al., 2022).

Future research can further refine our understanding of how MSMEs can maximize their ICA, EOR, and INN potential to achieve long-term success by addressing these areas.

This study highlights the strategic importance of entrepreneurial orientation and innovation in enhancing MSME performance. While Intellectual capital provides the

foundation for innovation, entrepreneurial orientation is the key to business success. Policymakers, business leaders, and financial institutions should support entrepreneurial-driven innovation initiatives to ensure sustainable growth and competitiveness in the MSME sector.

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