



Intellectual Capital Dimensions, Innovation Capability, and Performance of Culinary MSMEs in North Sumatra

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Abstract

Background: Culinary micro, small, and medium enterprises (MSMEs) depend substantially on knowledge-based resources and innovation to maintain competitiveness and improve business performance. However, the contributions of human, structural, and relational capital may differ, while the role of innovation capability in strengthening these relationships remains inconclusive.

Objective: This study examines the direct effects of human capital, structural capital, relational capital, and innovation capability on culinary MSME performance and evaluates whether innovation capability moderates the relationships between intellectual capital dimensions and performance.

Methods: A quantitative explanatory survey was conducted involving 350 owners or managers of culinary MSMEs in North Sumatra, Indonesia, in 2025. Respondents were selected using purposive sampling, and the research model was analyzed using Partial Least Squares Structural Equation Modeling (PLS-SEM) with SmartPLS 4.

Results: Human capital, relational capital, and innovation capability positively affect MSME performance, whereas structural capital does not have a significant direct effect. Innovation capability emerges as the strongest predictor of performance ($\beta = 0.525$), while all interaction effects involving innovation capability are nonsignificant. The model explains 65.1% of the variance in MSME performance.

Conclusion: The dimensions of intellectual capital contribute differently to culinary MSME performance, while innovation capability functions primarily as an independent strategic capability rather than as a moderator. Culinary MSMEs should prioritize human competence, external relationships, and continuous innovation while strengthening organizational systems that can convert knowledge resources into sustainable business performance.

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INTRODUCTION

Data from Indonesia's Ministry of Cooperatives and Small and Medium Enterprises indicate that culinary MSMEs account for roughly 22% of all nationally registered MSMEs and contribute 18% of employment within the sector; even so, they continue to encounter well-documented productivity barriers arising from weak process formalization, limited uptake of

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contemporary managerial practices, and restricted access to business networks obstacles that are especially pronounced in North Sumatra, where conventional production techniques and owner-dominated decision-making still prevail.

Within the management accounting and strategic management literature, intellectual capital is one lens through which disparities in firms' capacity to create value can be understood. The construct encompasses the full set of knowledge-based resources residing in individuals, in organizational structures, and in the ties a firm maintains with its stakeholders. Its relevance to management accounting lies in redirecting attention away from the sheer quantity of resources a firm holds and toward the way those resources are organized, integrated, and channeled to produce performance. Beyond supplying financial information, management accounting also assists organizations in recognizing the nonfinancial drivers of value creation. Intellectual capital is commonly divided into three dimensions: Human capital, structural capital, and relational capital. Human capital captures the knowledge, competencies, skills, experience, creativity, and learning capacity of owners, managers, and staff, and the case for the significance of intellectual capital rests on the Resource-Based View (RBV).

Although RBV accounts for why knowledge-based resources yield competitive advantage, it leaves unspecified the mechanisms by which the various dimensions of intellectual capital are transformed into tangible performance outcomes. KBV addresses this shortfall by positing that the processes of integrating and applying knowledge, innovation in particular, are indispensable for converting resource heterogeneity into measurable business results. Combining the two perspectives allows this study to argue that the effectiveness of intellectual capital is not simply a matter of possessing resources, but is contingent on organizational capabilities (specifically innovation capability) that determine how such resources are cultivated, combined, synthesized, and mobilized to secure competitive advantage and superior performance. Such an integrated framework makes it possible to predict both direct and contingent effects within a single theoretical model.

Whereas RBV clarifies why knowledge-based resources may serve as sources of competitive advantage, KBV illuminates how such knowledge is combined and deployed to produce performance. Within this framing, human capital, structural capital, and relational capital ought not to be regarded as resources that share identical value-creation mechanisms. Human capital assumes a particularly central role in culinary MSMEs, since decision-making, product development, quality control, customer service, and the resolution of operational problems tend to revolve around the owner or manager. The proprietor's knowledge and accumulated experience allow these enterprises to grasp consumer preferences, control costs, sustain quality, and adapt their offerings to shifting market conditions. Empirical findings confirm that human capital is a key ingredient in cultivating competitiveness and organizational performance; in the Indonesian MSME setting, human capital together with structural and relational capital has been shown to generate competitive advantage that subsequently feeds into organizational performance ([Astuti et al., 2023](#)).

Intellectual capital may likewise act as an engine of innovation and performance, because individual knowledge and competence constitute the point of departure for generating ideas and for processes of organizational renewal ([Hermawan et al., 2023](#)). Structural capital refers to knowledge that has become institutionalized within an organization's systems and processes, allowing a firm to preserve and draw on that knowledge even after particular individuals cease to be directly involved. Its contribution to MSMEs, however, is not invariably robust. A great many MSMEs continue to depend on informal communication, the owner's personal experience, rudimentary record-keeping, and direct supervision, so that operational knowledge frequently remains lodged in owners or selected employees rather than being fully codified into organizational procedures. Relational capital, by contrast, concerns the value generated through a firm's ties with external parties.

In culinary MSMEs, customer trust, reputation, word-of-mouth referrals, repeat patronage, supplier relationships, participation in business communities, and entry into marketing networks can bear directly on sales and on the continuity of the business. The salience of relational capital grows in a commercial environment increasingly shaped by social media and digital platforms, where customers no longer function merely as buyers but also as information

sources, reviewers, propagators of recommendations, and collaborators in product development. Despite the extensive scholarship on intellectual capital, empirical evidence about its link to performance remains complex. A number of studies report that intellectual capital relates to organizational performance either directly or by way of competitive advantage, knowledge absorptive capacity, innovation, and other organizational capabilities (Arshad et al., 2023; Astuti et al., 2023; Truong & Nguyen, 2024). Such inconsistencies constitute the first research gap.

Certain studies treat intellectual capital as a single aggregate construct, which risks masking the distinct value-creation mechanisms belonging to each dimension. This aggregated treatment has not been entirely successful in determining whether gains in performance stem primarily from human competence, from organizational systems, or from external relationships. Alongside intellectual capital, innovation capability has emerged as a strategic resource of growing importance for MSMEs. It denotes an organization's capacity to generate and implement ideas, products, processes, marketing approaches, or management methods that are novel or substantially improved, thereby enabling firms to respond to market shifts and to convert knowledge resources into economic value. Recent systematic reviews identify innovation capability as a pivotal determinant of MSME competitiveness and sustainability; nevertheless, it is conditioned by a range of internal and external factors and has not yielded an entirely consistent pattern of influence across every business context (Tsakalerou et al., 2025). This line of inquiry mirrors the work of Astuti et al. (2023) and Beltramino et al. (2020, 2022) who likewise analyzed the dimensions of intellectual capital separately; the present study, however, advances that dimensional analysis by concurrently examining innovation capability in its moderating and its independent role, a distinction left unresolved in earlier MSME research. In addition, concentrating on culinary enterprises, a setting whose knowledge intensity and actor embeddedness diverge from those of manufacturing or general services, lends further specificity.

Such divergence in how innovation capability is positioned constitutes the second research gap. One group of studies frames innovation as a mediating variable that accounts for the conversion of intellectual capital into performance, whereas another treats innovation capability as an internal resource bearing a direct relationship to performance. Testing for moderation is warranted because MSMEs possessing broadly comparable human, structural, or relational capital may nonetheless achieve differing performance when their innovation capabilities differ. Abundant human capital tends to be more productive where entrepreneurs can translate knowledge and creativity into fresh products and processes, while structural capital may contribute more substantially when systems and procedures encourage experimentation and the implementation of innovation. Alternatively, innovation capability might not reinforce the effect of intellectual capital at all, instead operating as a strategic capability that contributes to performance in its own right. This alternative is theoretically consequential, for it separates the function of innovation capability as a contingency mechanism from its function as an independent resource. From the RBV standpoint, moderation is theoretically defensible because knowledge resources (human, structural, and relational capital) furnish the basis for value creation, yet that basis becomes actionable only when a firm holds the capability to turn knowledge into marketable innovations. Under the KBV lens, innovation capability operates as the conduit through which intellectual capital is translated into organizational outcomes: ample human capital produces creative ideas, structural capital permits their systematic execution, and relational capital enables market feedback and refinement, provided that innovation processes and culture are sufficiently mature. Innovation capability is therefore expected to moderate the intellectual-capital-performance relationship by magnifying the value-creation potential of each dimension.

Should innovation capability exert a direct effect while failing to moderate the intellectual-capital-performance relationship, the two would be better understood as parallel sets of resources contributing in tandem rather than through any amplifying interaction. The third research gap is empirical in nature. Studies of intellectual capital and innovation capability have been carried out across diverse countries and industries among them Pakistani textile MSMEs, manufacturing enterprises, service firms, hospitality operators, and numerous other organizations (Arshad et al., 2023; Ashraf et al., 2023; Truong & Nguyen, 2024). Culinary MSMEs in North Sumatra Province offer a pertinent setting, as the sector relies heavily on human competence, local knowledge, product creativity, consistency of process, customer networks,

supplier relationships, and responsiveness to shifting market tastes. Notwithstanding their considerable market potential, operators of culinary MSMEs also contend with constraints in process formalization, the use of accounting information, the development of internal systems, and the implementation of innovation.

The Resource-Based View (RBV) ranks among the principal perspectives in strategic management, holding that disparities in firm performance arise from the heterogeneity of the resources each firm owns and manages. Wernerfelt (1984) and Mella-Barral (2024) advanced the notion that a firm may be conceived as a bundle of resources, and Barney (1991) and Utami et al. (2025) argued that resources can serve as the foundation for sustainable competitive advantage when they are valuable, rare, hard to imitate, and hard to substitute. A firm's advantage is consequently shaped not solely by its industry position or external circumstances but also by the quality of its internal resources and its ability to put them to use. As RBV subsequently matured, it made clear that resources do not generate competitive advantage automatically; firms must be capable of organizing, combining, and directing those resources toward the creation of value.

For MSMEs, RBV carries particular relevance, since small and medium-sized enterprises typically confront constraints in financial capital, technology, economies of scale, and market access. These constraints prompt such firms to lean on internally available resources the owner's knowledge, the workforce's skills, accumulated business experience, work systems, reputation, customer relationships, and supplier networks. Intellectual capital can thus be cast as a strategic resource within the RBV framework, in which human competence, organizational procedures, culture, databases, reputation, and relationship networks all help firms raise efficiency, develop products, preserve quality, and adapt to environmental change. Current scholarship establishes that intellectual capital is a significant wellspring of value creation for MSMEs, even though the influence of each component on performance may vary and generate findings that are not uniformly consistent (Bansal et al., 2023). RBV, moreover, can also serve to explain innovation capability.

Innovation capability is not simply an end product manifested in new goods; it is an internal capacity to detect opportunities, cultivate ideas, allocate resources, run experiments, and carry out renewal across products, processes, marketing, and business management. RBV, however, is limited in accounting for how knowledge-based resources are transformed into productive action, being more adept at describing the attributes of resources that can confer advantage than at explaining how knowledge is created, shared, integrated, and applied. To remedy this limitation, the present study supplements RBV with the Knowledge-Based View.

The Knowledge-Based View (KBV) represents an extension of RBV that elevates knowledge to the status of a firm's foremost strategic resource. Grant (1996) and Grant & Phene (2022) characterized the firm as an institution that integrates the specialized knowledge held by individuals. From this vantage point, competitive advantage derives not merely from owning knowledge but, above all, from the capacity to coordinate, combine, and channel diverse forms of knowledge into productive activity.

Knowledge may be either explicit or tacit. Explicit knowledge is comparatively straightforward to record in procedures, manuals, files, databases, and information systems. KBV contends that the value of knowledge rises once individual knowledge can be transferred, integrated, and harnessed by the organization. An owner's knowledge may constitute human capital, yet its usefulness remains confined unless it is shared with employees or embedded in work procedures. Grant and Phene (2022) maintain that KBV continues to be pertinent for explaining how firms obtain and combine knowledge from multiple sources and bring it to bear on strategic decision-making. The capacity to integrate internal and external knowledge grows ever more important as the business environment changes swiftly. KBV also underpins the link between intellectual capital and innovation capability, since innovation is fundamentally a matter of recombining existing knowledge with new information or knowledge. Integrating RBV and KBV thus enables this study to account for two distinct processes.

Intellectual capital comprises the complete array of knowledge resources, competencies, systems, and relationships that a firm can employ to create value. Bontis (1998) Bontis (2023) regards it as a multidimensional construct composed of human capital, structural capital, and customer or relational capital. Bontis et al. (2000) Bontis (2023) note that human capital spans

knowledge, skills, experience, abilities, creativity, attitudes, and the individual capacity to learn, whereas structural capital encompasses the knowledge retained within an organization through its systems, culture, procedures, technology, databases, and routines. The three components differ in character: human capital is intrinsically held by individuals and may depart the organization when a person ceases to work there. Within MSMEs, the line separating human capital from structural capital is frequently indistinct.

Owners of MSMEs are ordinarily engaged directly in nearly all strategic and operational matters, which makes organizational knowledge heavily reliant on one or a few individuals. Beltramino et al. (2022) found that human, structural, and relational capital influence both product and process innovation in MSMEs located in developing countries, while Astuti et al. (2023), working in the Indonesian context, demonstrated that the dimensions of intellectual capital can foster sustainable competitive advantage and organizational performance.

MSME performance denotes the degree to which a firm attains its economic and non-economic objectives over a given interval. Such performance can be gauged through objective indicators: Sales growth, profit, productivity, market share, and return on investment. For this reason, MSME research commonly adopts perceptual performance measurement, inviting owners or managers to appraise their firm's progress across several dimensions, including sales growth, profit, customer numbers, efficiency, product quality, productivity, and competitive standing.

Perceptual measurement affords a more comprehensive view because it captures both financial and operational outcomes. Seen through a management accounting lens, performance is the upshot of a firm's ability to manage its resources and value-creation processes. Nonfinancial metrics (quality, innovation, customer satisfaction, process efficiency, and market growth) can act as precursors to future financial results. RBV construes performance as the product of deploying strategic resources, whereas KBV frames it as the product of creating and applying knowledge. Taken together, the two perspectives imply that MSMEs capable of effectively leveraging human competence, internal systems, external relationships, and innovation capabilities should outperform those unable to manage such resources. Barney (1991) and Utami et al. (2025) clarify that the worth of resources hinges on their ability to support value-creation processes for customers and stakeholders.

Analysis grounded in RBV, therefore, cannot stop at cataloguing the resources a firm holds; it must also elucidate the mechanisms that tie those resources to organizational outcomes. These intangible assets can underpin differentiation precisely because they accrue through experience and learning that rivals find difficult to reproduce.

This setting permits a more precise examination of which dimensions of intellectual capital genuinely contribute to performance. In light of the gaps outlined above, the present study sets out to assess the effects of human capital, structural capital, relational capital, and innovation capability on MSME performance, and to evaluate whether innovation capability moderates the effects of human, structural, and relational capital on that performance. The investigation involved 350 culinary MSME operators across the regencies and cities of North Sumatra Province, with data gathered in 2025 through purposive sampling and analyzed by means of Partial Least Squares Structural Equation Modeling. The study offers three contributions. First, it brings RBV and KBV together to portray intellectual capital as a configuration of knowledge resources endowed with distinct value-creation mechanisms, RBV accounting for the strategic properties of these resources and KBV for the process of integrating and applying knowledge to yield performance.

Second, the study broadens the conversation around innovation capability by testing it both as a direct predictor of performance and as a moderating variable, thereby offering a fuller account of whether innovation capability amplifies the benefits of intellectual capital or functions instead as an independent strategic capability. Third, it contributes empirical evidence drawn from 350 culinary MSMEs in North Sumatra, extending a body of intellectual-capital research that has so far concentrated on large corporations, manufacturing firms, or MSME samples examined without separating sectoral characteristics. The central concern of this study, accordingly, is not simply whether intellectual capital bolsters MSME performance, but which of its dimensions truly create value, how innovation capability contributes to performance, and whether innovation capability can render intellectual capital more productive within the culinary MSME context.

Addressing these questions is expected to enrich the management accounting literature

concerning the management of intangible assets and knowledge-based value creation, while also yielding more context-sensitive recommendations for the development of culinary MSMEs in Indonesia. Under such circumstances, shortfalls in financial capital and in economies of scale do not invariably dictate success; rather, the capacity of MSMEs to mobilize intangible resources assumes growing importance in explaining performance differences among firms ([Barney et al., 2021](#); [Pereira & Bamel, 2021](#); [Stoian et al., 2024](#)).

Hypothesis Development

Human Capital and MSME Performance

Human capital comprises the knowledge, competencies, experience, creativity, motivation, and problem-solving abilities vested in the individuals who make up an organization. Within MSMEs, it resides chiefly in owners, managers, and the employees directly engaged in business operations. From the RBV standpoint, human capital can constitute a source of competitive advantage when the competencies and experience it embodies are valuable to the firm and hard for competitors to copy. Familiarity with recipes, production techniques, ingredient selection, cost management, customer service, and market preferences can be cultivated through protracted processes of learning. KBV holds that individuals are the principal custodians of tacit knowledge; in culinary MSMEs, such tacit knowledge surfaces in the ability to keep flavors consistent, judge the quality of raw materials, anticipate demand, tailor products to customers, and resolve production difficulties. Human capital additionally bolsters a firm's adaptive capacity.

Entrepreneurs endowed with superior knowledge and skills are generally better positioned to assess market shifts, exploit technology, and arrive at decisions more rapidly ([Arshad et al., 2023](#)).

H1: Human capital has a positive effect on culinary MSME performance.

Structural Capital and MSME Performance

Structural capital is knowledge that has become lodged within the organization and can be drawn upon relatively independently of any particular individual. It covers procedures, information systems, technology, organizational culture, databases, coordination mechanisms, documentation, routines, and control systems. RBV treats structural capital as an organizational resource capable of enhancing consistency and efficiency: documented procedures lessen reliance on specific people, and information systems supply firms with the data required for decision-making. Within the KBV perspective, structural capital functions as a vehicle for storing and integrating knowledge; once the tacit knowledge held by owners or staff is codified into procedures, guidelines, and databases, it becomes learnable and usable by other members. Structural capital likewise underpins management control, as recording systems, work standards, evaluation, and feedback mechanisms allow MSMEs to measure actual results against targets and undertake corrective action ([Beltramino et al., 2020, 2022](#)).

H2: Structural capital has a positive effect on culinary MSME performance.

Relational Capital and MSME Performance

Relational capital embodies the value generated by a firm's connections with external parties among them customer trust, corporate reputation, loyalty, collaboration with suppliers, partnership with other businesses, relations with government, community engagement, and entry to business networks. Under the RBV framework, robust ties with customers and partners can become strategic resources by virtue of being social, complex, and difficult to imitate: competitors may replicate products, prices, or promotions, yet seldom the trust and reputation a firm has accumulated over many years. KBV, for its part, portrays external networks as vital sources of knowledge, with customers furnishing information about needs, preferences, complaints, and market trends. In culinary MSMEs, relational capital plays an especially prominent part because purchasing decisions are strongly swayed by reputation, customer reviews, recommendations, and prior experience, and sound relationships can stimulate repeat purchases and word-of-mouth promotion.

Astuti et al. ([2023](#)) demonstrate that relational capital adds to both competitive advantage and organizational performance.

H3: Relational capital has a positive effect on culinary MSME performance.

Innovation Capability and MSME Performance

Innovation capability is a firm's capacity to develop and implement new ideas on an ongoing basis across products, processes, marketing, strategy, and organizational management, and it is distinct from any single innovative outcome. For culinary MSMEs, it may encompass the ability to devise new menus, upgrade quality and packaging, substitute alternative ingredients, raise production efficiency, introduce delivery services, make use of social media, adopt digital payment systems, and craft novel customer experiences. Innovation may also be incremental, taking the form of modest refinements in process, taste, service, or product design. RBV casts innovation capability as a strategic capability because it emerges from the integration of multiple resources rather than from any lone asset arising instead from the fusion of human knowledge, processes, culture, technology, relationships, and experience. KBV, meanwhile, regards innovation as the outcome of creating and recombining knowledge.

Firms gather information, interpret it, merge it with their existing knowledge, and apply it to bring about renewal. Arshad et al. (2023) found that innovation capability exerts a significant effect on MSME performance.

H4: Innovation capability has a positive effect on culinary MSME performance.

Moderation of Innovation Capability on Human Capital

This section considers the moderating role of innovation capability in the relationship between human capital and MSME performance. Human capital supplies the knowledge, creativity, experience, and skills necessary to run a business, yet the mere presence of capable individuals does not by itself translate into improved performance. Innovation capability is expected to reinforce the effect of human capital on performance by furnishing a mechanism for putting knowledge to use. In MSMEs with strong innovation capability, the ideas and competencies of owners and employees are more apt to be channeled into developing menus, enhancing service, cutting waste, or adopting technology. From the KBV standpoint, human capital is the repository of knowledge, while innovation capability is the capacity to recombine and apply that knowledge; the returns to human capital should therefore be greater where the organization fosters a culture of experimentation, receptiveness to change, and processes for implementing ideas. RBV similarly endorses the complementarity of resources, since a resource can grow more valuable when paired with other capabilities.

H5: Innovation capability strengthens the positive effect of human capital on culinary MSME performance.

Moderation of Innovation Capability on Structural Capital

Attention now turns to the moderating role of innovation capability in the relationship between structural capital and MSME performance. Within the KBV perspective, structural capital serves as a store of knowledge, whereas innovation capability deploys and recombines it; the stronger a firm's innovation capability, the likelier that information held in systems and routines is converted into product or process improvements. RBV explains that the value of structural capital rests on the firm's ability to organize and exploit it, and innovation capability can act as a complementary capability that heightens the productivity of systems, procedures, and technologies.

H6: Innovation capability strengthens the positive effect of structural capital on culinary MSME performance.

Moderation of Innovation Capability on Relational Capital

The discussion finally addresses the moderating role of innovation capability in the relationship between relational capital and MSME performance. Relational capital opens access to customers, suppliers, partners, communities, and an assortment of external knowledge sources; the information and opportunities flowing from these external ties, however, do not automatically yield performance unless the firm can interpret and apply them. Innovation capability is expected to strengthen the effect of relational capital by enhancing the ability of

MSMEs to convert external knowledge into innovation.

H7: Innovation capability strengthens the positive effect of relational capital on culinary MSME performance.

Conceptual Research Model

Drawing on both RBV and KBV, this study casts human capital, structural capital, relational capital, and innovation capability as internal resources and strategic capabilities that shape MSME performance. Human capital denotes knowledge at the individual level, structural capital denotes institutionalized knowledge, and relational capital denotes the knowledge and value secured through external relationships. The research model additionally treats innovation capability as a moderating variable, a positioning premised on the argument that the performance benefits of intellectual capital may be contingent on a firm's ability to turn knowledge into innovation. The research hypotheses are summarized below:

H1: Human capital has a positive effect on culinary MSME performance.

H2: Structural capital has a positive effect on culinary MSME performance.

H3: Relational capital has a positive effect on culinary MSME performance.

H4: Innovation capability has a positive effect on culinary MSME performance.

H5: Innovation capability strengthens the positive effect of human capital on culinary MSME performance.

H6: Innovation capability strengthens the positive effect of structural capital on culinary MSME performance.

H7: Innovation capability strengthens the positive effect of relational capital on culinary MSME performance.

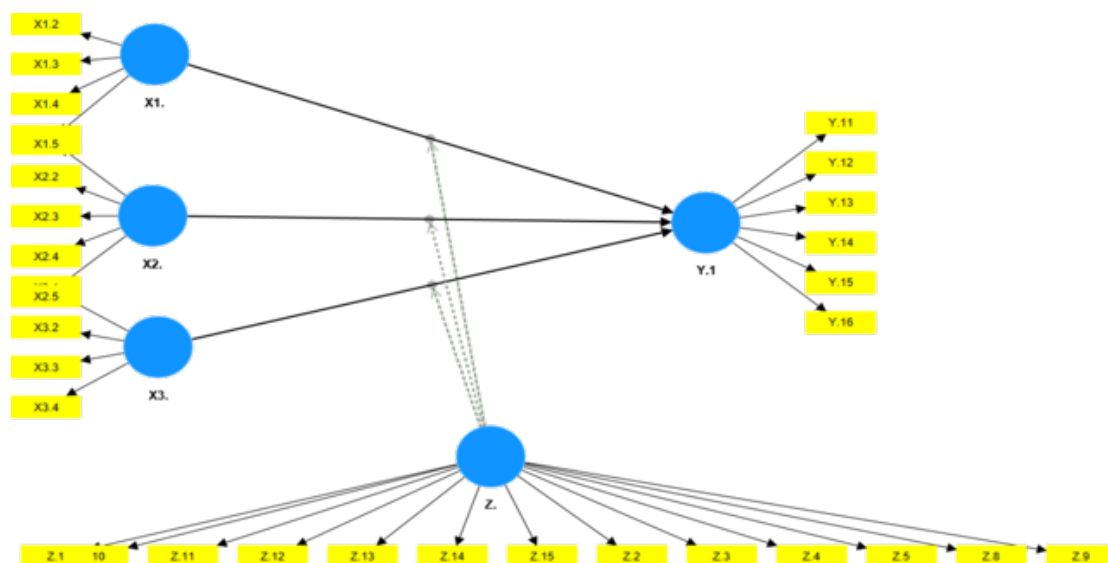


Figure 1. Conceptual model and path testing results

METHOD

This study adopted a quantitative approach framed by an explanatory design, a choice dictated by the aim of testing causal relationships among human capital, structural capital, relational capital, innovation capability, and MSME performance. The unit of analysis was the culinary-sector MSME operating in the regencies and cities of North Sumatra Province, while the unit of observation was the MSME owner or manager who was conversant with operational activities, human resources, business systems, customer and supplier relationships, innovation efforts, and business performance development. The data were primary in nature and were obtained through a survey administered using a structured questionnaire, with data collection carried out in 2025. The research model was analyzed using Partial Least Squares Structural Equation Modeling (PLS-SEM) implemented in SmartPLS 4 software.

The study population comprised all culinary-sector MSMEs operating across the regencies and cities of North Sumatra Province. This sector was selected because its operations depend

heavily on the competence of owners and workers, the consistency of production processes, relationships with customers and suppliers, and the capacity to develop products and services. Since not every member of the population possessed the requisite characteristics and information, the sample was drawn through purposive sampling, a technique that enables researchers to select respondents according to their fit with the study's objectives. The respondents were MSME owners or managers who (1) operated within the culinary sector; (2) were situated in one of the regencies or cities of North Sumatra Province; (3) were still actively running their businesses at the time of the survey; and (4) possessed sufficient knowledge of their business management and performance development. The data-collection effort produced 350 usable questionnaires for analysis, a figure deemed adequate for PLS-SEM because it far surpassed the maximum number of structural paths converging on a single endogenous construct. In the present model, MSME performance is influenced by human capital, structural capital, relational capital, innovation capability, and three interaction terms. Because a purposive, non-probability sampling procedure was used, the generalizability of the findings is confined to the characteristics of the sample reached rather than extending to the entire population of culinary MSMEs in North Sumatra. Moreover, systematic differences between responding and non-responding firms, or between registered and unregistered businesses, may give rise to selection bias.

Data were gathered using a closed-ended questionnaire distributed to the owners or managers of culinary MSMEs. The instrument contained statements pertaining to human capital, structural capital, relational capital, innovation capability, and MSME performance, with responses recorded on a five-point Likert scale ranging from 1 = strongly disagree to 5 = strongly agree. A five-point scale was chosen to provide answer options that respondents could readily understand while still permitting adequate variation in the measurement of perceptions. Prior to analysis, the data were screened to verify the completeness of responses and the consistency of respondent characteristics with the sampling criteria. Questionnaires that were incomplete, displayed irregular response patterns, or failed to satisfy the respondent criteria were excluded. Following this screening, 350 observations were retained for estimation of the PLS-SEM model.

The study was built on five principal constructs human capital, structural capital, relational capital, innovation capability, and MSME performance of which human capital, structural capital, and relational capital constituted the three dimensions of intellectual capital.

- 1) Human Capital: Human capital refers to the knowledge, skills, experience, creativity, learning ability, and competencies held by the owners, managers, and workers of MSMEs. The construct reflects the quality of human resources available for accomplishing tasks, making decisions, responding to market shifts, and generating value for the business.
- 2) Structural Capital: Structural capital is knowledge that has been incorporated into an organization's systems and processes. It comprises work procedures, information systems, technology, routines, organizational culture, databases, documentation, and mechanisms that facilitate the conduct of business activities.
- 3) Relational Capital: Relational capital denotes the value arising from an MSME's relationships with customers, suppliers, business partners, communities, government, and other stakeholders. The construct captures the degree of trust, loyalty, reputation, and cooperation attained, together with the capacity to secure information and resources through external ties.
- 4) Innovation Capability: Innovation capability is an MSME's ability to generate and implement new ideas or substantial improvements in products, processes, marketing, services, and business management. It is evidenced not by the appearance of a single new product but by the firm's capacity to renew itself repeatedly in response to market change.
- 5) MSME Performance: MSME performance characterizes business attainment in both financial and non-financial terms and may be reflected in sales growth, profit, customer base, productivity, efficiency, product quality, and competitive position. A summary of the variable measurement is provided in Table 1.

Table 1

Research Variable Operationalization

Construct	Indicator Code	Number
Human capital	X1.2-X1.5	4
Structural capital	X2.1-X2.5	5
Relational capital	X3.1-X3.4	4
Innovation capability	Z.1-Z.5; Z.8-Z.15	13
MSME performance	Y.11-Y.16	6

The structural model encompassed four direct relationships and three moderating relationships. The direct relationships concerned the effects of human capital, structural capital, relational capital, and innovation capability on MSME performance. The structural equation of the study was expressed as follows:

$$KP = \beta_0 + \beta_1 HC + \beta_2 SC + \beta_3 RC + \beta_4 IC + \beta_5 (HC \times IC) + \beta_6 (SC \times IC) + \beta_7 (RC \times IC) + \varepsilon$$

In which:

KP = MSME performance

HC = Human capital

SC = Structural capital

RC = Relational capital

IC = Innovation capability

(HC × IC) = Interaction of human capital and innovation capability

(SC × IC) = Interaction of structural capital and innovation capability

(RC × IC) = Interaction of relational capital and innovation capability

β_0 = Constant

β_1 - β_7 = Path coefficients

ε = Residual error

The data were analyzed using PLS-SEM with SmartPLS 4. Several considerations informed the choice of PLS-SEM. First, the research was directed toward both explaining and predicting MSME performance.

Evaluation of the measurement model was undertaken to confirm that the indicators employed possessed adequate validity and reliability. As all constructs were specified reflectively, the assessment covered convergent validity, internal consistency reliability, and discriminant validity.

Convergent validity reflects the degree to which indicators belonging to the same construct account for shared variance. It was examined through outer loading values and the Average Variance Extracted (AVE).

Construct reliability was appraised using Cronbach's alpha, rho_A, and composite reliability, with values ranging from 0.70 to 0.95 signaling adequate internal consistency.

Discriminant validity denotes the extent to which a construct is empirically distinguishable from other constructs, and it was evaluated using the Heterotrait-Monotrait Ratio (HTMT).

Once the measurement model satisfied the validity and reliability requirements, the analysis proceeded to the evaluation of the structural model, encompassing collinearity, path coefficients, the coefficient of determination, effect size, predictive relevance, and, where applicable, model fit.

Collinearity among the predictor variables was assessed using the Variance Inflation Factor (VIF). VIF values below 5 indicate that the model is free of critical collinearity problems.

RESULTS AND DISCUSSION

Measurement Model Evaluation

Evaluation of the measurement model was performed to verify that the indicators could measure the constructs of human capital, structural capital, relational capital, innovation capability, and MSME performance in a valid and reliable manner. Because every principal construct in the study is modeled reflectively, this evaluation comprises convergent validity, internal consistency reliability, discriminant validity, and indicator collinearity.

Convergent Validity

Convergent validity was judged on the basis of outer loading values and the Average Variance Extracted (AVE). Hair Jr. et al. (2022) advise that outer loadings exceed 0.70 and AVE values exceed 0.50. As reported in Table 2, the indicators of all principal constructs display outer loadings above 0.70: human capital loadings span 0.732 to 0.822, structural capital 0.721 to 0.812, relational capital 0.727 to 0.823, MSME performance 0.755 to 0.815, and innovation capability 0.705 to 0.793.

Table 2

Reliability and Convergent Validity

Construct	Cronbach's α	CR	AVE
Human capital	0.769	0.852	0.591
Structural capital	0.813	0.869	0.572
Relational capital	0.771	0.854	0.594
MSME performance	0.876	0.906	0.617
Innovation capability	0.930	0.940	0.545

These findings indicate that every indicator bears a strong association with the construct it is intended to measure. Indicator X1.3 records the highest loading on human capital at 0.822, X2.3 the highest on structural capital at 0.812, and X3.3 the highest on relational capital at 0.823. All constructs likewise exhibit AVE values above 0.50, ranging from 0.545 to 0.617, which means that each construct accounts for more than 50 percent of the variance in its indicators.

Internal Consistency Reliability

Internal consistency reliability was examined through Cronbach's alpha, rho_A, and composite reliability. As Table 2 shows, Cronbach's alpha values fall between 0.769 and 0.930, rho_A between 0.770 and 0.931, and composite reliability between 0.852 and 0.940. Innovation capability attains the highest reliability, with a composite reliability of 0.940; because this figure stays below 0.95, the construct retains very good internal consistency without signaling excessive similarity among its indicators.

Discriminant Validity

Discriminant validity was tested by means of the Heterotrait-Monotrait Ratio (HTMT), which gauges whether each construct can be empirically separated from the others. Henseler et al. (2015) and Cheung et al. (2024) advise HTMT values below 0.90, and the results confirm that every HTMT value among the main constructs falls beneath this threshold. The largest value, 0.849, pertains to the relationship between innovation capability and MSME performance; though comparatively high, it remains under the 0.90 ceiling. An HTMT of 0.849 signals a strong empirical association between the two constructs, yet not one strong enough to imply that they are identical. This outcome aligns with the conceptual model, which frames innovation capability as an organizational capability closely tied to performance while retaining its own conceptual domain.

Indicator and Construct Collinearity

Indicator collinearity was inspected using the outer VIF, with all principal indicator values lying between 1.331 and 2.507. Collinearity within the structural model was likewise checked via the inner VIF, whose values range from 1.662 to 2.411. On the whole, the measurement-model evaluation establishes that every main construct satisfies the criteria for convergent validity,

internal consistency reliability, discriminant validity, and collinearity, so the analysis may advance to evaluation of the structural model.

Structural Model Evaluation

Evaluation of the structural model embraces the coefficient of determination, path coefficients, statistical significance, confidence intervals, effect size, and model fit. The significance of the paths was assessed through the bootstrapping procedure (Statistik, 2026).

Coefficient of Determination

The R^2 for MSME performance stands at 0.651 and the adjusted R^2 at 0.644. These figures indicate that human capital, structural capital, relational capital, innovation capability, and the three interaction terms jointly account for 65.1 percent of the variance in MSME performance, leaving the remaining 34.9 percent to factors outside the model. An R^2 of 0.651 reflects substantial explanatory power within behavioral and management research, and the modest gap of 0.007 between R^2 and adjusted R^2 further suggests that adding predictors does not unduly inflate the model's explanatory capacity. Although the model explains a considerable share of the variation in MSME performance, this does not imply that intellectual capital and innovation capability are the sole determinants; factors such as entrepreneurial orientation, financial literacy, marketing strategy, access to financing, the intensity of competition, and digital capabilities may still account for the residual variance.

Hypothesis Testing

The outcomes of the hypothesis tests appear in Table 3. Decisions on each hypothesis rest on path coefficients, t-statistics, p-values, and 95 percent confidence intervals, with a relationship deemed significant when its p-value is below 0.05 and its confidence interval excludes zero.

Table 3

Hypothesis Testing Results

Path	β	t	p	Decision
HC → Performance	0.189	3.253	0.001	Supported
SC → Performance	0.073	1.447	0.148	Not supported
RC → Performance	0.144	3.050	0.002	Supported
IC → Performance	0.525	7.635	<0.001	Supported
IC×HC → Performance	0.052	1.180	0.238	Not supported
IC×SC → Performance	-0.017	0.390	0.697	Not supported
IC×RC → Performance	-0.010	0.219	0.827	Not supported

Effect of Human Capital on MSME Performance

Human capital exerts a positive and significant effect on MSME performance, with a path coefficient of 0.189, a t-statistic of 3.253, and a p-value of 0.001; the confidence interval, spanning 0.071 to 0.298, does not encompass zero. The positive coefficient signifies that gains in knowledge, skills, experience, creativity, and human-resource abilities are accompanied by gains in culinary MSME performance. Relative to structural and relational capital, human capital produces the largest direct effect among the three dimensions of intellectual capital. Even so, a coefficient of 0.189 indicates that the effect is not dominant: human capital does contribute to performance, yet its contribution must still be interpreted within the wider configuration of organizational resources, especially in comparison with the effect of innovation capability.

Effect of Structural Capital on MSME Performance

Structural capital registers a positive coefficient of 0.073, but its effect is not statistically significant, as evidenced by a t-statistic of 1.447 and a p-value of 0.148, with a confidence interval from -0.020 to 0.178 that includes zero. The positive sign of the coefficient points to a tendency whereby improvements in systems, procedures, technology, and organizational routines may coincide with gains in performance. The empirical evidence, however, is not yet sufficiently strong to claim that this effect holds consistently across the population of culinary MSMEs examined. The

lack of significance further implies that the mere presence of structural capital does not directly translate into economic benefits.

Effect of Relational Capital on MSME Performance

Relational capital is shown to have a positive and significant effect on MSME performance. A coefficient of 0.144 demonstrates that ties with customers, suppliers, partners, communities, government, and other stakeholders make a genuine contribution to performance.

Effect of Innovation Capability on MSME Performance

Innovation capability yields the strongest positive effect on MSME performance. A path coefficient of 0.525 together with an effect size of 0.328 indicates that innovation capability is not merely statistically significant but also substantively meaningful. This result lends support to H4 and establishes innovation capability as the foremost capability in the research model.

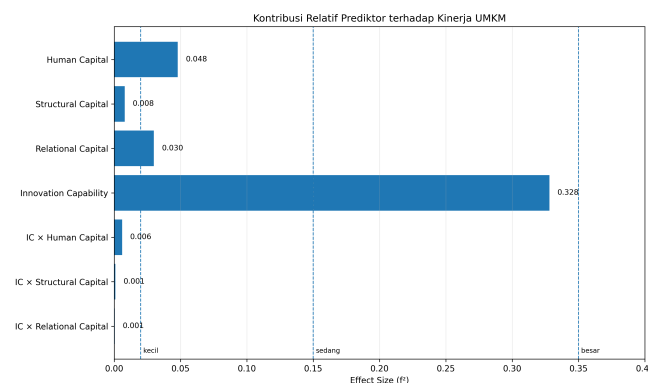


Figure 2. Effect size of each predictor

Discussion

This study investigates the effects of human capital, structural capital, relational capital, and innovation capability on the performance of culinary MSMEs in North Sumatra, and additionally tests whether innovation capability moderates the relationship between each dimension of intellectual capital and MSME performance. The analysis yields a noteworthy empirical pattern: human capital and relational capital are shown to affect MSME performance positively, whereas structural capital exhibits no significant effect. Collectively, this pattern reveals that the creation of performance in culinary MSMEs is not determined solely by the presence of intellectual capital conceived as a unified bundle of resources, for the contribution of each dimension is uneven. Human knowledge and skills, along with external relationships, carry more immediate economic value, while internal systems and structures have not yet been able to deliver performance gains. These results enrich both the Resource-Based View and the Knowledge-Based View by demonstrating that knowledge-based resources do not confer benefits automatically.

The strategic worth of intellectual capital is contingent on the form the resources take, the characteristics of the organization, the manner of their use, and their nearness to value-creation activities. Within culinary MSMEs, human capital and relational capital seem more tightly bound to operational and market processes, whereas structural capital continues to encounter constraints on its institutionalization.

Effect of Human Capital on MSME Performance

The results reveal that human capital has a positive and significant effect on culinary MSME performance. A path coefficient of 0.189 indicates that increases in the knowledge, skills, experience, creativity, and learning abilities of owners and workers are matched by improvements in business performance. This finding accords with the Resource-Based View, which treats knowledge, skills, and experience as strategic resources when they are valuable, hard to imitate, and cultivated through firm-specific learning. In culinary MSMEs, human competence extends beyond the technical skills of making products; because most of this knowledge is tacit,

human capital proves difficult to reproduce. Competitors may copy product forms or prices, yet they can rarely replicate an owner's experience in refining flavors, earning customer trust, or resolving operational problems. The findings therefore reinforce the RBV proposition that human resources can underlie performance differences when knowledge and skills are directly connected to value-creation processes.

From the Knowledge-Based View, human capital is the primary site in which individual knowledge is held, and the knowledge possessed by owners and workers forms the foundation for decision-making, problem-solving, and organizational learning. The present results concur with Astuti et al. (2023), who found that human, structural, and relational capital help build sustainable competitive advantage in Indonesian MSMEs and stressed that intellectual capital is a vital element of value creation in small businesses within developing countries. Although significant, the effect size of human capital in this study is comparatively modest, implying that strengthening human competence, while undeniably important, is not sufficient on its own as a strategy for improving performance. This carries notable implications for MSME management: the development of human capital should not be restricted to technical training. Human capital thus serves as a foundation for value creation, but its benefits must be realized through concrete activities. The findings support both RBV and KBV while simultaneously affirming that possessing knowledge is not the same as utilizing it, a distinction that explains why the effect of human capital is positive yet smaller than that of innovation capability.

Effect of Structural Capital on MSME Performance

Contrary to the hypothesis advanced, structural capital does not significantly affect MSME performance. The path coefficient of 0.073 points in a positive direction, but the relationship received no statistical support, and the very small effect size indicates that structural capital's unique contribution to the model's explanatory power is negligible. This does not mean that systems, procedures, technology, documentation, and organizational culture are unimportant; the result is more aptly read as showing that the structural capital present in culinary MSMEs has not yet attained the quality, intensity of use, or depth of institutionalization needed to produce a direct effect on performance. Put differently, the existence of structure is not necessarily equivalent to its effectiveness. Under RBV, a resource is strategic only if it can generate value and is organized effectively; recording systems, production procedures, digital technology, and the division of labor may be available and yet go unused in actual decision-making.

When procedures remain merely informal, documentation goes unrevised, information systems fail to yield relevant information, or technology serves only basic administrative purposes, structural capital has not yet acquired the attributes of a strategic resource. The nature of MSMEs offers a compelling explanation for this result, as many culinary MSMEs are still owner-centered. The Knowledge-Based View draws a line between individual knowledge and knowledge that has been integrated into the organization, and structural capital ought to be the means of converting tacit knowledge into explicit knowledge that can be stored, shared, and reused. That codification, however, demands investment, disciplined documentation, technology, and routines of evaluation. The present findings depart from those of Beltramino et al. (2020, 2022), who reported that intellectual capital, structural capital included, contributes to product innovation, process innovation, and MSME performance in developing countries, and who showed that systems, culture, processes, and information management can serve as infrastructure for innovation.

Such divergences in results may stem from differences in the degree of formality, the type of industry, organizational maturity, and the character of the structural capital held by the sample. In more established firms, systems and procedures have long functioned as instruments of coordination, learning, control, and replication; by contrast, in culinary MSMEs run directly by their owners, systems may remain rudimentary and have yet to become sources of advantage. The non-significance of structural capital may also be attributed to possible time lags, since investment in accounting systems, standard operating procedures, technology, recipe documentation, and customer databases does not necessarily improve performance at once benefits may surface only after a system is used consistently and woven into organizational routines. A further explanation concerns the orientation of performance measurement: structural

capital may first enhance consistency, transparency, risk control, and operational sustainability before it registers in sales or profit growth.

Where performance indicators emphasize economic and market outcomes, the early gains from structural capital may not be immediately apparent. Theoretically, this finding complicates the simple reading of RBV, since not every intangible resource turns automatically into a source of advantage. Structural capital creates value only when the underlying system is relevant, actually used, integrated, and aligned with business objectives. For MSMEs, the result implies that formalization should not be pursued merely to possess procedures or technology; systems must instead be designed around business needs and put to active use. Recipe standardization, cost recording, inventory control, customer databases, sales monitoring, and supplier evaluation all need to be linked to decision-making.

Effect of Relational Capital on MSME Performance

Relational capital is shown to have a positive and significant effect on MSME performance. A coefficient of 0.144 reveals that relationships with customers, suppliers, partners, communities, government, and other stakeholders make a tangible contribution to performance a finding highly pertinent to the character of the culinary sector, where performance depends greatly on repeat purchases, reputation, customer reviews, word-of-mouth referrals, continuity of supply, the quality of raw materials, and market access. From the RBV standpoint, relational capital can become a strategic resource because it is forged through a history of interaction, trust, and reputation; such relationships are socially complex and hard to imitate. Competitors may copy products or promotions but cannot swiftly reproduce customer loyalty, supplier trust, or a reputation accumulated through repeated dealings. The Knowledge-Based View offers a further explanation, portraying external relationships as important conduits for acquiring knowledge. This result is consistent with Astuti et al. (2023) , who found that relational capital enhances sustainable competitive advantage in Indonesian MSMEs.

This finding likewise agrees with Beltramino et al. (2020, 2022) , who situate relational capital among the dimensions of intellectual capital that bear on innovation and MSME performance. The effect size of relational capital is relatively small, indicating that although networks and relationships are indeed important, broad relationships do not necessarily generate meaningful benefits unless they are productive. For culinary MSMEs, relational capital must be managed as a strategic asset: customer relationships can be cultivated through the recording of preferences, responsiveness to reviews, loyalty programs, and digital communication. The result also shows that the organizational boundaries of MSMEs are comparatively porous, with value created not only through internal resources but also through ties to the surrounding ecosystem. RBV, with its focus on internal resources, therefore needs to be read alongside KBV, which acknowledges the significance of integrating external knowledge.

Effect of Innovation Capability on MSME Performance

Innovation capability produces the strongest positive effect on MSME performance. A path coefficient of 0.525 and an effect size of 0.328 show that it is not only statistically significant but also of considerable substantive importance. This result supports H4 and marks innovation capability as the principal capability in the research model, indicating that the capacity to renew products, processes, marketing, services, and business management is the most decisive factor differentiating the performance of culinary MSMEs. In a setting marked by shifting consumer preferences and intense competition, merely sustaining existing routines is inadequate. Within RBV, innovation capability can be classified as an organizational capability that arises from combining a variety of resources; it is lodged not in a single individual or technology but in the organization's ability to integrate knowledge, creativity, procedures, relationships, and experience. Since it takes shape through learning processes and intricate resource configurations, innovation capability is hard to imitate, an observation that likewise supports the Knowledge-Based View.

Innovation is the product of recombining established knowledge with new information. MSMEs able to detect market information, interpret customer needs, blend these with internal experience, and apply the result to renewal will create greater value. The findings align with

Arshad et al. (2023), who identified innovation capability and intellectual capital as important internal resources for MSME performance and showed that innovation capability makes a strategic contribution to the sustainability of performance, with the influence of resources potentially hinging on external environmental conditions. This study provides a firm basis for the contention that innovation capability is a capability in its own right rather than a mere by-product of intellectual capital. The result is also consistent with Beltramino et al. (2020, 2022), who demonstrated that intellectual capital is linked to product and process innovation as well as organizational performance, and with Rustiarini et al. (2022), whose study of MSMEs found that intellectual capital drives innovation, sustainability, and financial performance, with innovation emerging as a key mechanism in the value-creation process. The sizable effect of innovation capability relative to the dimensions of intellectual capital offers important insights.

Effect of Moderation of Innovation Capability on Human Capital

Human capital provides MSMEs with knowledge, skills, experience, creativity, and problem-solving abilities, but these resources do not necessarily generate superior performance unless they are effectively transformed into new products, processes, services, or business practices. The moderation results for H5 therefore indicate whether innovation capability strengthens the extent to which human capital contributes to culinary MSME performance. From the Resource-Based View (RBV), human capital represents a valuable intangible resource, while innovation capability can be understood as an organizational capability that enables the firm to mobilize, combine, and exploit such resources. Accordingly, the value of human capital should be greater when MSMEs possess the capability to transform employee and owner knowledge into commercially useful innovations.

The present finding is supported by Selivanovskikh (2023), who found that human capital and innovation capability positively and significantly contribute to SME performance and that human capital also strengthens innovation capability. The findings demonstrate that knowledge and skills possessed by SME actors can become more productive when supported by the capacity to innovate. Similarly, Hanifah et al. (2022) found that intellectual capital and innovation capability are significant determinants of SME performance, emphasizing that intangible resources and organizational capabilities jointly contribute to sustainable business development. These findings reinforce the argument that human capital should not be considered independently from the organizational capabilities that enable its utilization.

The moderating role of innovation capability is particularly relevant to culinary MSMEs because competition in this sector is often characterized by rapidly changing consumer preferences, product imitation, price competition, and the need for continuous adaptation. Skilled employees may produce high-quality food, but firms with stronger innovation capability are more likely to convert their knowledge and experience into differentiated products and improved customer experiences. Thus, the presence of innovation capability can increase the economic value generated from human capital by creating an environment in which ideas are tested, adapted, and implemented. This complements the RBV perspective that competitive advantage is generated not merely by possessing valuable resources but by effectively organizing and exploiting those resources.

Effect of Moderation of Innovation Capability on Structural Capital

Structural capital refers to the organizational systems, procedures, routines, databases, technologies, documentation, and knowledge infrastructure that remain within the organization even when individual employees leave. Such resources can improve consistency, efficiency, coordination, and organizational learning. Nevertheless, structural capital does not automatically produce superior performance. Its contribution depends on the firm's ability to use and continuously improve the systems and knowledge embedded within the organization. Innovation capability therefore represents an important complementary capability because it allows MSMEs to modify, recombine, and exploit their structural resources in response to changing market conditions.

From the KBV perspective, structural capital represents an important organizational repository through which individual knowledge becomes embedded in routines and

organizational processes. Knowledge contained in standard operating procedures, production methods, customer databases, digital systems, and organizational routines can reduce dependence on individual employees and support more consistent business operations. However, routines can also become rigid if they are not periodically reviewed and improved. Innovation capability enables structural capital to remain dynamic by encouraging MSMEs to question existing procedures, introduce new technologies, redesign processes, and develop more efficient ways of operating.

Empirical evidence supports the broader relationship between intellectual capital, structural resources, innovation, and SME performance. Sugianto et al. (2024), examining Indonesian MSMEs, found that human capital, structural capital, customer capital, and innovation were positively associated with MSME performance. Their findings are relevant because they demonstrate that structural resources can constitute an important component of MSME performance alongside innovation. In a broader SME context, Costa et al. (2014) found that SMEs with stronger intellectual capital—including human, structural, and relational dimensions—demonstrated stronger radical and incremental innovation performance. This evidence indicates that organizational knowledge resources can provide an important foundation for innovation activities.

Effect of Moderation of Innovation Capability on Relational Capital

Relational capital encompasses the value embedded in relationships with customers, suppliers, business partners, communities, institutions, and other external stakeholders. These relationships provide MSMEs with access to information, market opportunities, resources, feedback, trust, and external knowledge. Nevertheless, relationships alone do not guarantee superior performance. The information and opportunities obtained through networks must be recognized, interpreted, integrated, and translated into business actions. Innovation capability is therefore expected to strengthen the performance value of relational capital by enabling MSMEs to transform external knowledge and relationships into innovative products, services, processes, and market strategies.

The KBV provides a strong explanation for this relationship. Knowledge relevant to an MSME does not exist solely within the organization; valuable knowledge can also originate from customers, suppliers, competitors, communities, business associations, and other external stakeholders. Relational capital provides access to these external knowledge sources, while innovation capability determines the firm's ability to absorb and apply the knowledge obtained through those relationships. For culinary MSMEs, customer feedback may reveal changing tastes, suppliers may introduce new ingredients or production technologies, and business partners may provide access to new distribution channels. However, these opportunities become valuable only when the MSME can convert them into actionable improvements.

Recent empirical evidence illustrates the importance of considering innovation capability together with relational and intellectual resources. Cahyaningati et al. (2026) found that intellectual capital and relational capital positively influenced MSME performance and that innovation capability itself was an important predictor of performance. Their study is particularly relevant because it directly considers innovation capability in relation to intellectual and relational capital. Although their findings regarding the moderating effect were not significant, the results demonstrate that the relationship between relational resources and MSME performance cannot be separated from the firm's broader innovation capability. This provides an important basis for interpreting the present finding and suggests that the value of relational capital may depend on how effectively firms mobilize and utilize the knowledge obtained through external relationships.

CONCLUSION

Using PLS-SEM, this study examined how human capital, structural capital, relational capital, and innovation capability affect the performance of 350 culinary MSMEs in North Sumatra, and also tested the moderating role of innovation capability. The findings indicate that human capital and relational capital exert positive and significant effects on MSME performance, whereas structural capital shows no significant direct effect. Innovation capability records the largest path

coefficient and effect size, signaling that the ability to develop products, refine processes, harness technology, and renew marketing practices plays a central role in raising MSME performance. Innovation capability does not, however, moderate the relationships between human capital, structural capital, relational capital, and MSME performance, which suggests that it operates more as an independent strategic capability than as a factor amplifying or dampening the effects of intellectual capital.

The findings bolster the Resource-Based View and the Knowledge-Based View by showing that the dimensions of intellectual capital contribute unequally to value creation and that knowledge embedded in individuals and in external relationships can be translated into MSME performance more directly than knowledge embedded in organizational systems. In practical terms, MSME owners would do well to strengthen human-resource competencies, stakeholder relationships, innovation activities, digital capabilities, and the use of nonfinancial performance indicators, while local governments and business-support institutions should foster training, business networking, innovation programs, digital transformation, and managerial assistance. Even so, the cross-sectional design confines the study to relationships observed at a single moment in time; future research might consequently adopt longitudinal designs to trace changes in intellectual capital, innovation capability, and MSME performance over time.

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AUTHOR CONTRIBUTION STATEMENT

Putri Kemala Dewi Lubis, Atikah Rahmi, Namira Ufrida Rahmi, and Irna Triannur Lubis jointly contributed to the conception and development of the study and to the preparation of the manuscript. All authors took part in interpreting the findings and approved the final version of the manuscript.

REFERENCES

- Arshad, M. Z., Arshad, D., Lamsali, H., Alshuaibi, A. S. I., Alshuaibi, M. S. I., Albashar, G., Shakoob, A., & Chuah, L. F. (2023). Strategic resources alignment for sustainability: The impact of innovation capability and intellectual capital on SMEs' performance Moderating role of external environment. *Journal of Cleaner Production*, 417, 137884. <https://doi.org/10.1016/j.jclepro.2023.137884>
- Ashraf, S., Sadiq, M., Ferreira, P., & Almeida, A. M. (2023). Intellectual capital and a firm's sustainable performance and growth before and during the COVID-19 crisis: A comparative analysis of small and large European hospitality firms. *Sustainability*, 15(12), 9743. <https://doi.org/10.3390/su15129743>
- Astuti, P. D., Datrini, L. K., & Chariri, A. (2023). Understanding the antecedents and consequences of sustainable competitive advantage: Testing intellectual capital and organizational performance. *Economies*, 11(4), 120. <https://doi.org/10.3390/economies11040120>
- Bansal, S., Garg, I., Jain, M., & Yadav, A. (2023). Improving the performance/competency of small and medium enterprises through intellectual capital. *Journal of Intellectual Capital*, 24(3), 830–853. <https://doi.org/10.1108/JIC-07-2021-0189>
- Barney, J. B. (1991). Firm resources and sustained competitive advantage. *Journal of Management*, 17(1), 99–120. <https://doi.org/10.1177/014920639101700108>
- Barney, J. B., Ketchen Jr., D. J., & Wright, M. (2021). Resource-based theory and the value creation framework. *Journal of Management*, 47(7), 1936–1955. <https://doi.org/10.1177/01492063211021655>
- Beltramino, N. S., García-Pérez-de-Lema, D., & Valdez-Juárez, L. E. (2020). The structural capital, the innovation and the performance of the industrial SMEs. *Journal of Intellectual Capital*, 21(6), 913–945. <https://doi.org/10.1108/JIC-01-2019-0020>
- Beltramino, N. S., García-Pérez-de-Lema, D., & Valdez-Juárez, L. E. (2022). The role of intellectual capital on process and products innovation: Empirical study in SMEs in an emerging country.

- Journal of Intellectual Capital*, 23(4), 741–764. <https://doi.org/10.1108/JIC-07-2020-0234>
- Bontis, N. (1998). Intellectual capital: An exploratory study that develops measures and models. *Management Decision*, 36(2), 63–76. <https://doi.org/10.1108/00251749810204142>
- Bontis, N. (2023). Intellectual Capital: An Exploratory Study That Develops Measures and Models. In *The Strategic Management of Intellectual Capital and Organizational Knowledge* (pp. 643–655). Oxford University PressNew York, NY. <https://doi.org/10.1093/oso/9780195138665.003.0036>
- Bontis, N., Chua Chong Keow, W., & Richardson, S. (2000). Intellectual capital and business performance in Malaysian industries. *Journal of Intellectual Capital*, 1(1), 85–100. <https://doi.org/10.1108/14691930010324188>
- Cahyaningati, R., Chandrarin, G., Cahyaningsih, D. S., & Duta, M. R. R. (2026). Sustaining MSME Competitiveness through Innovation: The Mediating Effect of Innovation on Intellectual Capital and Corporate Social Responsibility. *Architecture Image Studies (AIS)*, 7(1), 1513.
- Cheung, G. W., Cooper-Thomas, H. D., Lau, R. S., & Wang, L. C. (2024). Reporting reliability, convergent and discriminant validity with structural equation modeling: A review and best-practice recommendations. *Asia Pacific Journal of Management*, 41(2). <https://doi.org/10.1007/s10490-023-09871-y>
- Costa, R. V., Fernández-Jardon Fernández, C., & Figueroa Dorrego, P. (2014). Critical elements for product innovation at Portuguese innovative SMEs: an intellectual capital perspective. *Knowledge Management Research & Practice*, 12(3), 322–338.
- Grant, R. M. (1996). Toward a knowledge-based theory of the firm. *Strategic Management Journal*, 17(S2), 109–122. <https://doi.org/10.1002/smj.4250171110>
- Grant, R. M., & Phene, A. (2022). The knowledge-based view and global strategy: Past impact and future potential. *Global Strategy Journal*, 12(1), 3–30. <https://doi.org/10.1002/gsj.1399>
- Hair Jr., J. F., Hult, G. T. M., Ringle, C. M., & Sarstedt, M. (2022). *A primer on partial least squares structural equation modeling (PLS-SEM)* (3rd ed.). SAGE Publications. <https://search.worldcat.org/title/1268396160>
- Hanifah, H., Abd Halim, N., Vafaei-Zadeh, A., & Nawaser, K. (2022). Effect of intellectual capital and entrepreneurial orientation on innovation performance of manufacturing SMEs: mediating role of knowledge sharing. *Journal of Intellectual Capital*, 23(6), 1175–1198.
- 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. <https://doi.org/10.1007/s11747-014-0403-8>
- Hermawan, S., Fediyanto, N., Hariyanto, W., Utomo, P., & Dini, A. N. (2023). How intellectual capital can develop innovation and performance of accounting study program? *Jurnal Reviu Akuntansi Dan Keuangan*, 13(3), 546–569. <https://doi.org/10.22219/jrak.v13i3.26598>
- Mella-Barral, P. (2024). A resource-based view of entrepreneurial spin-outs. *Review of Financial Economics*, 42(3). <https://doi.org/10.1002/rfe.1207>
- Pereira, V., & Bamel, U. (2021). Extending the resource and knowledge-based view: A critical analysis into its theoretical evolution and future research directions. *Journal of Business Research*, 132, 557–570. <https://doi.org/10.1016/j.jbusres.2021.04.021>
- Rustiarini, N. W., Bhagawati, D. A. S., & Mendra, N. P. Y. (2022). Does green innovation improve SME performance? *Economies*, 10(12), 316. <https://doi.org/10.3390/economies10120316>
- Selivanovskikh, L. (2023). Exploring firm innovation capability as the 'black box' between human capital and performance in Russian SMEs. *Journal of Developmental Entrepreneurship*, 28(01), 2350007.
- Statistik, B. P. (2026). *Indonesia's economic growth in 2025 was 5.11 percent*. Badan Pusat Statistik. <https://www.bps.go.id/en/pressrelease/2026/02/05/2546/indonesia-s-economic-growth-in-2025-was-5-11-percent.html>
- Stoian, M. C., Tardios, J. A., & Samdanis, M. (2024). The knowledge-based view in international business: A systematic review of the literature and future research directions. *International Business Review*, 33(2). <https://doi.org/10.1016/j.ibusrev.2023.102239>
- Sugianto, N. A. P., Pratama, B. C., Hariyanto, E., & Hapsari, I. (2024). The mediating role of knowledge sharing in the relationship between human capital, structural capital, spiritual capital, and MSMEs innovation. *Journal of Enterprise and Development (JED)*, 6(1), 64–76.

- Truong, B. T. T., & Nguyen, P. V. (2024). Driving business performance through intellectual capital, absorptive capacity, and innovation: The mediating influence of environmental compliance and innovation. *Asia Pacific Management Review*, 29(1), 64–75. <https://doi.org/10.1016/j.apmr.2023.06.004>
- Utami, W., Pernamasari, R., Chairunisa, M., & Tanjung, J. (2025). Competitive Advantage in Moderating the Three Pillars of ESG on Firm Value. *International Journal of Economics and Financial Issues*, 15(4). <https://doi.org/10.32479/ijefi.19099>
- Wernerfelt, B. (1984). A resource-based view of the firm. *Strategic Management Journal*, 5(2), 171–180. <https://doi.org/10.1002/smj.4250050207>