

From Entrepreneurial Capacity to Financial Performance: The Mediating Role of Competitiveness among MSMEs in South Sulawesi, Indonesia

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ARTICLE INFO



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Keywords: Competitiveness;
Entrepreneurial capacities; Financial
performance; MSMEs; Technological
mastery

DOI:

<https://doi.org/10.33096/jmb.v13i2.1255>

ABSTRACT

This study examines how distinct entrepreneurial capacities are associated with owner-reported financial performance among micro, small, and medium enterprises (MSMEs), with competitiveness considered as a market-level intervening mechanism. A cross-sectional survey of 240 MSME owners and managers in South Sulawesi, Indonesia, was conducted during November–December 2025 using proportionate regional quotas and non-probability respondent selection. Entrepreneurial knowledge, skills, attitude and behavior, technological mastery, competitiveness, and financial performance were measured using five-point Likert scales. Two multiple-regression models were estimated, and indirect associations were assessed using product-of-coefficients and Sobel tests. Entrepreneurial knowledge and technological mastery were positively associated with competitiveness. Entrepreneurial skills, technological mastery, and competitiveness were positively associated with financial performance, while knowledge showed no significant direct association. Entrepreneurial attitude and behavior showed a small negative conditional association. The indirect association of knowledge through competitiveness was positive but statistically marginal, whereas technological mastery showed significant direct and indirect associations. Skills and attitude/behavior showed no significant indirect associations. The findings support capacity heterogeneity and selective resource conversion, indicating that entrepreneurial capacities operate through different pathways to financial outcomes.

ABSTRAK

Penelitian ini mengkaji bagaimana kapasitas kewirausahaan yang berbeda berhubungan dengan kinerja keuangan yang dilaporkan oleh pemilik pada usaha mikro, kecil, dan menengah (UMKM), dengan daya saing diposisikan sebagai mekanisme perantara pada tingkat pasar. Survei cross-sectional dilakukan terhadap 240 pemilik dan manajer UMKM di Sulawesi Selatan, Indonesia, pada November–Desember 2025 dengan alokasi kuota regional proporsional dan pemilihan responden nonprobabilitas. Pengetahuan kewirausahaan, keterampilan, sikap dan perilaku kewirausahaan, penguasaan teknologi, daya saing, dan kinerja keuangan diukur menggunakan skala Likert lima poin. Dua model regresi berganda diestimasi, sedangkan hubungan tidak langsung diuji menggunakan pendekatan product-of-coefficients dan uji Sobel. Pengetahuan kewirausahaan dan penguasaan teknologi berhubungan positif dengan daya saing. Keterampilan kewirausahaan, penguasaan teknologi, dan daya saing berhubungan positif dengan kinerja keuangan, sedangkan pengetahuan tidak menunjukkan hubungan langsung yang signifikan. Sikap dan perilaku kewirausahaan menunjukkan hubungan kondisional negatif yang kecil. Hubungan tidak langsung pengetahuan melalui daya saing bersifat positif tetapi marginal secara statistik, sedangkan penguasaan teknologi menunjukkan hubungan langsung dan tidak langsung yang signifikan. Temuan mendukung perspektif heterogenitas kapasitas dan konversi sumber daya selektif.



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1. INTRODUCTION

Micro, small, and medium enterprises (MSMEs) remain central to Indonesia's productive structure. Government estimates commonly attribute approximately 60% of national gross domestic product and almost 97% of employment to the sector, yet its scale has not automatically translated into equivalent levels of productivity, formalization, market access, or technological capability (Coordinating Ministry for Economic Affairs of

the Republic of Indonesia, 2025). This challenge is particularly relevant outside Java, where many business owners operate with limited managerial systems, fragmented support services, uneven digital infrastructure, and highly localized markets. The strategic issue is therefore not simply the number of MSMEs, but whether owners possess the entrepreneurial capacities needed to convert available resources into stronger market positions and, ultimately, improved financial outcomes.

South Sulawesi provides a relevant setting in which to examine this resource-conversion problem. Provincial administrative data identify approximately 1.5 million MSMEs, with micro enterprises constituting the dominant segment. The same administrative records indicate that only about 525,000 enterprises had integrated technology into their operations, suggesting substantial heterogeneity in technological capability. At the same time, South Sulawesi recorded year-on-year economic growth of 5.01% in the third quarter of 2025, while agriculture, trade, construction, and manufacturing jointly accounted for 65.21% of regional output. Online retail and marketplace transactions also increased during the period (BPS-Statistics of Sulawesi Selatan Province, 2025). This combination of expanding market opportunities and uneven firm-level capabilities makes the province a useful context for examining why some entrepreneurial resources may be associated with stronger competitiveness and financial performance while others may not.

The entrepreneurial-capacity literature generally treats knowledge, skills, entrepreneurial disposition, and technological competence as resources that can contribute to firm performance. Human Capital Theory explains why knowledge and skills may improve decision quality, problem solving, and productive efficiency (Becker, 1964; Unger et al., 2011). Research on entrepreneurial orientation and behavior similarly associates initiative, persistence, opportunity seeking, and risk taking with business outcomes, although the magnitude and direction of these relationships vary across contexts (Rauch et al., 2009). More recent MSME research emphasizes technological and digital capabilities as means of improving market reach, coordination, and information-based decision making (Wulandari et al., 2024; Evinita et al., 2025). However, these streams of research do not necessarily explain whether different entrepreneurial capacities become financially consequential through the same mechanism.

This distinction is important because resource possession does not automatically imply superior market or financial outcomes. The Resource-Based View (RBV) argues that resources generate value when they are effectively organized, deployed, and combined in ways that support an advantageous competitive position (Barney, 1991). The resource-orchestration perspective further emphasizes that managers must structure, bundle, and leverage resources before those resources can contribute to firm outcomes (Sirmon et al., 2011). For MSMEs, such resource conversion may be reflected in lower operating costs, differentiated offerings, faster customer response, broader market access, or stronger innovation relative to competitors. In this study, these market-level outcomes are represented by competitiveness, conceptualized as the firm's relative competitive position rather than as an organizational capability or another label for financial performance. Competitiveness therefore represents a potential market-level pathway through which selected entrepreneurial capacities may become associated with financial outcomes.

Such a distinction also implies that entrepreneurial capacities should not automatically be treated as interchangeable elements of a homogeneous competence bundle. Entrepreneurial knowledge may be particularly relevant for interpreting customers, competitors, costs, and market opportunities, but its financial relevance may depend on whether that knowledge is translated into a stronger competitive position. Entrepreneurial skills, by contrast, may be more directly associated with operational execution through negotiation, inventory management, cost control, and problem solving. Technological mastery may be associated with both operational efficiency and competitiveness by improving transaction processes, information use, market reach, and responsiveness. Entrepreneurial attitude and behavior are potentially more complex because persistence and opportunity seeking may be beneficial, whereas poorly calibrated risk taking or excessive confidence may generate resource overcommitment and financial strain (Koellinger et al., 2007; Invernizzi et al., 2017). These differences suggest that entrepreneurial capacities may vary not only in the magnitude of their relationships with performance, but also in the pathways through which those relationships emerge.

Against this background, three gaps motivate the present study. First, much of the Indonesian MSME literature treats entrepreneurial competence as an aggregate or composite predictor of performance. Such aggregation may obscure theoretically meaningful differences among knowledge, skills, entrepreneurial disposition, and technological mastery and makes it difficult to determine whether these capacities are associated with performance through the same or different pathways. This constitutes the primary theoretical gap addressed in this study. Second, empirical evidence from MSMEs outside Java remains relatively limited, despite substantial regional differences in infrastructure, market density, technology adoption, and institutional support. South Sulawesi therefore provides an important context in which to examine whether established relationships are observed in a region characterized by both large MSME participation and uneven capability development. Third, mediation in MSME research is sometimes inferred from the significance of separate regression paths rather than evaluated through an explicit test of the indirect effect. This study therefore evaluates the indirect relationship between each entrepreneurial capacity and financial performance through competitiveness rather than assuming that competitiveness operates as a universal mediator.

Accordingly, this study addresses four research questions: (1) Which entrepreneurial capacities are associated with MSME competitiveness? (2) Which capacities are directly associated with owner-reported financial performance after the other capacities are taken into account? (3) Is competitiveness associated with owner-reported financial performance beyond the contribution of entrepreneurial capacities? and (4) Which capacity-performance relationships exhibit statistically supported indirect effects through competitiveness? By addressing these questions, the study makes two related contributions. First, it advances a capacity-heterogeneity perspective by examining entrepreneurial knowledge, skills, attitude/behavior, and technological mastery as distinct capacities rather than as interchangeable elements of a single entrepreneurial-competence construct. Second, it develops a selective resource-conversion perspective by examining whether competitiveness functions as an intervening market-level mechanism for some entrepreneurial capacities but not necessarily for others.

The practical relevance of this distinction lies in the design of MSME capacity-building programs. Interventions often combine business knowledge, managerial skills, entrepreneurial motivation, and technological training under a broad capacity-development framework, implicitly assuming that these inputs contribute to performance in comparable ways. If different entrepreneurial capacities are associated with financial outcomes through different pathways, a more differentiated approach may be warranted. Knowledge-oriented interventions may need to be linked to market analysis and positioning, skills development may be evaluated through operational outcomes, and technological training may need to connect tool mastery with customer acquisition, efficiency, and market expansion. By distinguishing these pathways, the study seeks to provide a more precise basis for understanding how different forms of entrepreneurial capacity may be associated with competitiveness and owner-reported financial performance.

2. LITERATURE REVIEW AND HYPOTHESIS DEVELOPMENT

2.1 Resource Conversion, Human Capital, and Competitiveness

Human Capital Theory provides the foundation for explaining why owner-level knowledge and skills are relevant to MSME outcomes. In owner-managed enterprises, the boundary between individual and organizational resources is relatively narrow because owners frequently make strategic, operational, financial, and marketing decisions themselves. Their knowledge, experience, and applied skills can therefore shape how the firm identifies opportunities, solves problems, allocates resources, and responds to market conditions (Becker, 1964; Unger et al., 2011). However, the possession of human capital does not necessarily translate directly into superior market or financial outcomes. Its economic relevance depends on how effectively these resources are applied within the business.

The Resource-Based View (RBV) and the resource-orchestration perspective provide a complementary explanation of this conversion process. The RBV emphasizes that resources contribute to superior outcomes when they are valuable and effectively deployed in support of the firm's competitive position (Barney, 1991). Resource orchestration further explains that managers must structure, bundle, and leverage resources before those resources can become economically consequential (Sirmon et al., 2011). This logic is especially relevant to MSMEs, where resource constraints increase the importance of how limited knowledge, skills, and technological resources are utilized. An owner may possess substantial business knowledge but fail to translate it into product differentiation, customer responsiveness, or broader market access. Conversely, the effective use of technology may simultaneously improve internal efficiency and strengthen the firm's position relative to competitors.

Accordingly, this study conceptualizes competitiveness as a market-level competitive position rather than as an organizational capability. It reflects the extent to which an MSME is able to achieve relative advantages through efficiency, differentiation, responsiveness, market access, innovation, and customer value. Competitiveness is therefore positioned as

a potential intervening mechanism between selected entrepreneurial capacities and owner-reported financial performance. In this framework, entrepreneurial capacities represent owner-level resources, competitiveness represents their possible manifestation in the marketplace, and financial performance represents a subsequent firm-level outcome.

Importantly, the model does not assume that all entrepreneurial capacities are equally associated with competitiveness or financial performance. Some capacities may be more directly related to day-to-day operational execution, whereas others may be more relevant to market positioning. This distinction is central to the study because aggregating entrepreneurial capacities into a single composite construct may conceal meaningful differences in how knowledge, skills, entrepreneurial disposition, and technological mastery relate to firm outcomes. The empirical model therefore examines these capacities separately and allows their direct and indirect relationships with financial performance to differ.

2.2 Entrepreneurial Knowledge

Entrepreneurial knowledge refers to an owner's understanding of business planning, financial management, customers, competitors, markets, and operating requirements. Such knowledge provides an informational basis for evaluating alternatives, interpreting market signals, identifying opportunities, and coordinating business resources. From a human-capital perspective, knowledge can improve the quality of entrepreneurial judgment and decision making, but its value depends on whether it is effectively applied to business activities (Becker, 1964; Unger et al., 2011). Bawono et al. (2022) similarly highlight the relevance of knowledge-management capability, financial literacy, and problem-solving capacity for SME performance, while Kadiyono and Susanto (2025) show that different components of human capital do not necessarily contribute to entrepreneurial outcomes through identical mechanisms.

Entrepreneurial knowledge is expected to be positively associated with competitiveness because informed owners are better positioned to understand customer needs, assess competitor behavior, recognize cost implications, and identify market opportunities. These informational advantages may support more effective product positioning, market responsiveness, differentiation, and resource allocation. However, possessing knowledge alone does not guarantee improved financial outcomes. Knowledge must be applied through decisions and actions that generate market or operational value. Its relationship with financial performance may therefore occur directly, indirectly through stronger competitiveness, or through a combination of both pathways. On this basis, the following hypotheses are proposed:

H1: Entrepreneurial knowledge is positively associated with MSME competitiveness.

H5: Entrepreneurial knowledge is positively associated with owner-reported MSME financial performance.

2.3 Entrepreneurial Skills

Entrepreneurial skills refer to the applied abilities required to implement business decisions and manage day-to-day activities, including negotiation, operational coordination, problem solving, employee management, purchasing, selling, and customer service. Whereas entrepreneurial knowledge reflects what an owner understands, entrepreneurial skills capture the owner's ability to translate that understanding into effective action. This distinction is particularly important in MSMEs because owners are often directly involved in both strategic decisions and routine operational activities.

Previous research generally associates human-resource competence and applied entrepreneurial capabilities with SME performance (Alatas et al., 2024; Yusuf & Soelaiman, 2022). Strong entrepreneurial skills may improve operational efficiency, cost control, negotiation outcomes, service quality, and execution reliability. These improvements may be associated directly with financial performance because they influence how effectively resources are used in routine business activities.

The relationship between entrepreneurial skills and competitiveness is theoretically less straightforward. Many managerial and operational skills may be necessary for effective business functioning without necessarily creating a distinctive market position. Skills that are widely shared across firms may improve execution but provide limited differentiation from competitors. Nevertheless, superior execution may still contribute to competitiveness when it produces faster responsiveness, more reliable service, greater cost efficiency, or higher customer value. For this reason, the study examines both the relationship between entrepreneurial skills and competitiveness and their direct relationship with owner-reported financial performance. Accordingly, the following hypotheses are proposed:

H2: Entrepreneurial skills are positively associated with MSME competitiveness.

H6: Entrepreneurial skills are positively associated with owner-reported MSME financial performance.

2.4 Entrepreneurial Attitude and Behavior

Entrepreneurial attitude and behavior refer to the owner's disposition and behavioral tendencies in pursuing business opportunities, sustaining effort, and making decisions under uncertainty. In this study, the construct encompasses persistence, opportunity orientation, and risk-related disposition. These elements capture how owners approach entrepreneurial challenges and opportunities rather than the knowledge or technical abilities they possess. This distinction is important because entrepreneurial disposition may shape how other resources are mobilized and how owners respond to changing market conditions.

Research on entrepreneurial orientation generally associates proactive, opportunity-seeking, and risk-taking behavior with favorable business outcomes, although the strength of these relationships varies substantially across contexts (Rauch et al., 2009). Persistence

may help owners sustain effort when facing market uncertainty, while opportunity orientation may support the identification and exploitation of emerging demand. A willingness to accept calculated risk may also facilitate market entry, investment, or experimentation when potential returns justify such decisions.

However, entrepreneurial disposition is not necessarily beneficial under all conditions. Behavioral entrepreneurship research indicates that confidence and optimism can become problematic when they are accompanied by weak risk calibration, excessive commitment, or decisions that exceed the resource capacity of the firm (Koellinger et al., 2007; Invernizzi et al., 2017). This does not imply that entrepreneurial attitude and behavior should be expected to reduce performance. Rather, it indicates that the economic relevance of entrepreneurial disposition may depend on how such tendencies are translated into market and operational decisions. Because the present construct is designed to capture constructive entrepreneurial disposition rather than overconfidence or cognitive bias specifically, the theoretical expectation remains positive.

Entrepreneurial attitude and behavior may be associated with competitiveness when persistence, opportunity orientation, and appropriately calibrated risk taking support greater responsiveness to market opportunities, stronger customer engagement, or differentiated competitive actions. These dispositions may also be associated with financial performance by influencing the continuity, intensity, and quality of entrepreneurial decision making. The study therefore examines both relationships separately. Accordingly, the following hypotheses are proposed:

H3: Entrepreneurial attitude and behavior are positively associated with MSME competitiveness.

H7: Entrepreneurial attitude and behavior are positively associated with owner-reported MSME financial performance.

2.5 Technological Mastery

Technological mastery refers to an owner's ability to adopt, operate, and apply relevant production and digital technologies within business activities. It extends beyond the possession of technological devices, applications, or online accounts and instead reflects the ability to integrate technology into transactions, communication, marketing, production, record keeping, and decision making. In MSMEs, where owners often exercise direct control over both operational and strategic activities, such mastery can influence how efficiently technologies are converted into business value.

Previous studies associate digital capability and technological literacy with MSME transformation and performance in Indonesia (Wulandari et al., 2024), while evidence from North Sulawesi also links digitalization and innovation with financial outcomes (Evinita et al., 2025). These findings suggest that technological resources become relevant not simply through adoption, but through their effective use in business processes. For MSMEs,

technological mastery may therefore support both internal operations and external market activities.

From an operational perspective, technological mastery may be associated with financial performance through more efficient transactions, improved record accuracy, faster communication, better process coordination, and more effective use of business information. From a market perspective, it may strengthen competitiveness by broadening market access, improving responsiveness, generating better customer information, and facilitating differentiation. Technological mastery may therefore exhibit both a direct relationship with financial performance and an indirect relationship through stronger market-level competitiveness. Accordingly, the following hypotheses are proposed:

H4: Technological mastery is positively associated with MSME competitiveness.

H8: Technological mastery is positively associated with owner-reported MSME financial performance.

2.6 Competitiveness and Financial Performance

Competitiveness refers to an MSME's relative market position as reflected in its ability to perform favorably compared with competitors through cost efficiency, differentiation, responsiveness, market access, innovation, and customer value. In this study, competitiveness is conceptually distinct from organizational capability and financial performance. Entrepreneurial capacities represent owner-level resources, whereas competitiveness reflects the market-level position associated with how effectively those resources are deployed.

This distinction is consistent with the Resource-Based View and resource-orchestration perspective. Resources do not become economically consequential merely because they are possessed; their relevance depends on how effectively they are organized and used to establish a favorable position in the marketplace (Barney, 1991; Sirmon et al., 2011). An MSME may therefore possess substantial knowledge, managerial skills, or technological resources without necessarily achieving superior competitiveness if those resources do not translate into greater efficiency, differentiation, responsiveness, or customer value.

A stronger competitive position may, in turn, be positively associated with financial outcomes. Greater cost efficiency may support margins, differentiation may increase customers' willingness to purchase, responsiveness may strengthen customer retention, and broader market access may expand potential revenue opportunities. Previous Indonesian research has similarly examined competitive advantage as an intervening mechanism connecting human capital, digitalization, and business performance (Chandra et al., 2022; Sari & Sari, 2022). These arguments suggest that competitiveness may represent one market-level pathway through which entrepreneurial capacities become associated with owner-reported financial performance. Accordingly, the following hypothesis is

proposed: *H9: MSME competitiveness is positively associated with owner-reported financial performance.*

2.7 The Mediating Role of Competitiveness

The preceding arguments suggest that entrepreneurial capacities need not be associated with financial performance through identical pathways. Some capacities may have relatively direct relationships with financial outcomes, whereas others may become economically relevant primarily when they are reflected in a stronger competitive position. Competitiveness is therefore examined as a **selective intervening mechanism** rather than assumed to mediate uniformly between every entrepreneurial capacity and financial performance.

Contemporary mediation analysis emphasizes that an indirect relationship should be evaluated directly rather than inferred solely from the statistical significance of individual paths. A statistically supported indirect effect may exist even when the corresponding direct relationship is weak or non-significant (Zhao et al., 2010; Hayes, 2022). This principle is particularly relevant to the present study because the four entrepreneurial capacities represent conceptually distinct resources and may therefore exhibit different direct and indirect patterns.

For entrepreneurial knowledge, the proposed indirect pathway reflects the possibility that information concerning markets, customers, competitors, and business operations becomes financially relevant when it is associated with a stronger competitive position. Entrepreneurial skills may also contribute to competitiveness through superior execution, responsiveness, or cost efficiency, although some of their financial relevance may arise more directly from operational activities. Entrepreneurial attitude and behavior may be indirectly associated with financial performance when persistence, opportunity orientation, and appropriately calibrated risk taking contribute to stronger market positioning. Technological mastery may exhibit both pathways because effective technology use may support operational efficiency while simultaneously strengthening market access, responsiveness, and differentiation.

The study therefore tests four capacity-specific indirect relationships. Rather than assuming that competitiveness operates as a universal mediator, the analysis evaluates whether evidence for an indirect association through competitiveness differs across entrepreneurial knowledge, skills, attitude/behavior, and technological mastery. Indirect effects should be assessed using bootstrapped confidence intervals, which provide a more appropriate basis for inference than relying solely on normal-theory tests of the product of coefficients. Accordingly, the following hypotheses are proposed:

H10a: Entrepreneurial knowledge is positively associated with owner-reported MSME financial performance indirectly through competitiveness.

H10b: Entrepreneurial skills are positively associated with owner-reported MSME financial performance indirectly through competitiveness.

H10c: Entrepreneurial attitude and behavior are positively associated with owner-reported MSME financial performance indirectly through competitiveness.

H10d: Technological mastery is positively associated with owner-reported MSME financial performance indirectly through competitiveness.

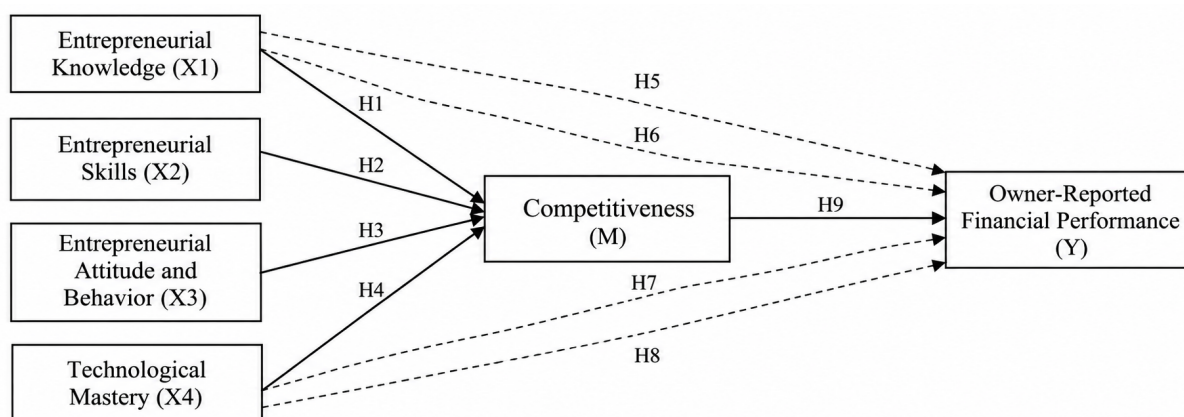


Figure 1. Conceptual framework

Note: Solid arrows represent the relationships between entrepreneurial capacities and competitiveness and between competitiveness and owner-reported financial performance. Dashed arrows represent the direct relationships between entrepreneurial capacities and owner-reported financial performance.

Figure 1 Conceptual Model

3. RESEARCH METHOD

3.1 Research Design and Context

This study employed a quantitative, explanatory, cross-sectional survey design to examine the relationships among entrepreneurial capacities, competitiveness, and owner-reported financial performance. The MSME served as the unit of analysis, while the owner or manager acted as the key informant because these respondents were expected to possess direct knowledge of the enterprise's operational, market, technological, and financial conditions. Data were collected in South Sulawesi Province during November and December 2025 using a structured self-administered questionnaire. The cross-sectional and observational nature of the study should be considered when interpreting the estimated relationships. Although regression coefficients are used to evaluate the hypothesized associations among the constructs, they do not establish temporal ordering or definitive causal effects. Accordingly, the empirical findings are interpreted primarily as statistical associations that are consistent, or inconsistent, with the proposed theoretical relationships. South Sulawesi provides a relevant empirical context because the province combines a large and predominantly micro-enterprise population with substantial variation in technological adoption and market conditions. MSMEs operate across agriculture, trade, manufacturing, services, and other locally oriented activities, exposing firms to different degrees of competitive pressure and resource constraint. These characteristics make the

province suitable for examining whether owner-level entrepreneurial capacities are associated with market-level competitiveness and owner-reported financial performance.

3.2 Population, Sample, and Sampling Procedure

The study population consisted of MSMEs operating across the regencies and cities of South Sulawesi Province. Provincial administrative records identified approximately 1.5 million MSMEs, with micro enterprises accounting for about 91% of the population. A total of 240 usable responses were included in the analysis. To improve geographical coverage, regional quotas were allocated proportionally according to the distribution of registered MSMEs reported by the Provincial Office of Cooperatives and MSMEs and the SatuData Sulawesi Selatan portal. Within each regional quota, eligible respondents were recruited from MSMEs that met the study criteria. Eligibility required that the enterprise met the applicable Indonesian MSME criteria, had operated for at least one year, and that the respondent was an owner or manager with sufficient knowledge of the firm's operational and financial conditions. Because a complete enterprise-level sampling frame was unavailable, respondent selection within the regional quotas did not constitute probability sampling. Consequently, the proportional quota procedure improved geographical coverage but does not justify statistical generalization of the sample to the entire MSME population of South Sulawesi. The findings should therefore be interpreted within the characteristics and limitations of the observed sample. Sample adequacy was evaluated using statistical power analysis rather than relying solely on rules of thumb or Slovin's formula. For a multiple-regression model with five predictors, a significance level of .05, statistical power of .80, and a medium effect size of $f^2=.15$, the approximate minimum required sample is 92 observations (Faul et al., 2009). With 240 usable responses, the study exceeds this minimum requirement and provides adequate statistical power for the reported regression models. However, adequate statistical power does not eliminate the representativeness limitation associated with non-probability respondent selection.

3.3 Constructs and Measurement

All constructs were measured using multi-item scales with a five-point Likert response format ranging from 1 (*strongly disagree*) to 5 (*strongly agree*). The measurement items were developed from the theoretical dimensions of the respective constructs and adapted to the operating context of MSMEs in South Sulawesi. Content relevance and clarity were evaluated by three academic experts with expertise in entrepreneurship, MSME development, and cooperative economics. The expert review produced approximately 90% agreement regarding item relevance and construct alignment. Given the small number of expert judges, this percentage is treated as descriptive evidence of expert agreement rather than as a formal Content Validity Ratio assessment under Lawshe's (1975) critical-value procedure.

Entrepreneurial knowledge was operationalized through seven items reflecting understanding of business planning, financial management, markets, and operations. Entrepreneurial skills were measured using seven items capturing applied managerial, negotiation, and problem-solving abilities. Entrepreneurial attitude and behavior were represented by seven items relating to persistence, opportunity orientation, and risk-related disposition. Technological mastery was measured using four items reflecting the ability to adopt and use relevant production and digital technologies. Competitiveness was operationalized using nine items reflecting the MSME's relative market position through efficiency, differentiation, responsiveness, and innovation. Consistent with the theoretical framework, competitiveness is treated as a market-level construct rather than as an organizational capability. Owner-reported financial performance was measured using five perceptual items concerning revenue growth, profitability, and capital adequacy. Because these measures were based on respondents' assessments rather than audited financial records, the outcome is consistently referred to as owner-reported financial performance.

Table 1 *Operationalization of research variables*

Code	Construct	Items	Operational meaning	Model role
X1	Entrepreneurial knowledge	7	Understanding of planning, finance, markets, and operations	Exogenous
X2	Entrepreneurial skills	7	Applied managerial, negotiation, and problem-solving ability	Exogenous
X3	Entrepreneurial attitude and behavior	7	Persistence, opportunity orientation, and risk-related disposition	Exogenous
X4	Technological mastery	4	Ability to adopt and use relevant production/digital technology	Exogenous
M	Competitiveness	9	Relative market position through efficiency, differentiation, responsiveness, and innovation	Mediator
Y	Owner-reported financial performance	5	Perceived revenue growth, profitability, and capital adequacy	Outcome

3.4 Measurement Quality and Regression Assumptions

Preliminary measurement quality was evaluated using corrected item-total correlations and Cronbach's alpha. An item-total correlation of .30 was used as the minimum criterion for item retention, while Cronbach's alpha was used to assess internal consistency. All observed alpha coefficients exceeded .80, which is above the commonly applied .70 benchmark for acceptable internal consistency (Hair et al., 2019). These procedures provide evidence of item discrimination and internal consistency but should not be interpreted as establishing the full construct validity of the measurement model. In

particular, item-total correlations and Cronbach's alpha do not by themselves demonstrate convergent validity, discriminant validity, or unidimensionality. The item-level coefficients are reported in Appendix A, while construct-level reliability results are presented in the main text. Regression assumptions were evaluated separately for each regression equation. Approximate residual normality was assessed through visual inspection of Normal P-P plots. Multicollinearity was evaluated using tolerance and variance inflation factor (VIF) statistics, with VIF values below 5 interpreted as indicating no problematic multicollinearity. Standardized residual scatterplots were inspected for visible patterns of heteroscedasticity. A Durbin-Watson statistic was also reported for the financial-performance equation; however, because the data are cross-sectional rather than time-series observations, serial correlation is not a central diagnostic concern in the present study.

3.5 Analytical Strategy

The empirical analysis was conducted in two stages using ordinary least squares multiple regression. The first equation estimated the relationship between the four entrepreneurial capacities and competitiveness. The second equation estimated the relationships between the four entrepreneurial capacities, competitiveness, and owner-reported financial performance. The regression models were specified as follows:

$$\text{Equation 1: } M = a_0 + a_1X_1 + a_2X_2 + a_3X_3 + a_4X_4 + e_M$$

$$\text{Equation 2: } Y = c_0 + c_1'X_1 + c_2'X_2 + c_3'X_3 + c_4'X_4 + bM + e_Y$$

The indirect effect for each capacity equals $a_i \times b$. Sobel standard errors were computed as $\sqrt{(b\text{-squared SE}(a_i)\text{-squared} + a_i\text{-squared SE}(b)\text{-squared})}$, using the reported unstandardized coefficients and standard errors. Two-tailed z tests and normal-approximation 95% confidence intervals were calculated for all four pathways. This approach is more informative than relying only on causal-step significance patterns, but it remains weaker than nonparametric bootstrapping because the product of coefficients is often non-normally distributed (Preacher & Hayes, 2008; Hayes, 2022). The absence of raw data prevented a bootstrap re-estimation in this revision.

4. RESULT and DISCUSSION

4.1 Result

4.1.1 Preliminary Measurement Quality

All 39 indicators exceeded the minimum item-total correlation criterion of .30. The lowest item-total correlation was .486 for the entrepreneurial-skills scale, whereas the highest was .930 for the owner-reported financial-performance scale. Cronbach's alpha coefficients ranged from .802 to .926, indicating satisfactory to strong internal consistency across the six constructs. As shown in Table 4, entrepreneurial knowledge, entrepreneurial skills, entrepreneurial attitude and behavior, technological mastery, competitiveness, and owner-reported financial performance all exceeded the conventional .70 threshold for internal consistency. Competitiveness produced the highest Cronbach's alpha (.926),

followed by owner-reported financial performance (.894). These statistics provide evidence of item discrimination and internal consistency; however, they should not be interpreted as establishing convergent or discriminant validity. In particular, the relatively high internal consistency of the nine-item competitiveness scale does not by itself demonstrate that the construct is unidimensional.

Table 2 *Construct-level measurement quality*

Construct	Items	Item-total correlation range	Cronbach alpha	Assessment
Entrepreneurial knowledge	7	.605-.791	.802	Acceptable
Entrepreneurial skills	7	.486-.869	.838	Good
Entrepreneurial attitude and behavior	7	.663-.824	.850	Good
Technological mastery	4	.768-.884	.853	Good
Competitiveness	9	.603-.914	.926	Excellent
Owner-reported financial performance	5	.677-.930	.894	Good

4.1.2 Regression Diagnostics

The available regression diagnostics did not indicate major violations of the assumptions underlying the ordinary least squares models. Visual inspection of the Normal P-P plots suggested no substantial departure from approximate residual normality, while standardized residual scatterplots did not display a pronounced funnel-shaped or systematic pattern indicative of severe heteroscedasticity. Because these assessments were based on visual diagnostics, they should be regarded as indicative rather than definitive tests of model assumptions. For Equation 2, tolerance values ranged from .722 to .823 and variance inflation factor (VIF) values ranged from 1.216 to 1.385. These values are well within commonly accepted thresholds and indicate no evidence of problematic multicollinearity among entrepreneurial knowledge, entrepreneurial skills, entrepreneurial attitude and behavior, technological mastery, and competitiveness. The Durbin-Watson statistic for Equation 2 was 1.487. Given the cross-sectional nature of the data, this statistic is reported for completeness rather than treated as a central diagnostic criterion.

Table 3 *Multicollinearity diagnostics for Equation 2*

Predictor	Tolerance	VIF
X1 Entrepreneurial knowledge	.823	1.216
X2 Entrepreneurial skills	.722	1.385
X3 Attitude and behavior	.793	1.260

Predictor	Tolerance	VIF
X4 Technological mastery	.769	1.300
M Competitiveness	.747	1.338

4.1.3 Entrepreneurial Capacities Associated with Competitiveness

Equation 1 was statistically significant, $F(4,235)=19.882$, $p<.001$. The four entrepreneurial capacities jointly explained 25.3% of the variance in competitiveness ($R^2=.253$; adjusted $R^2=.240$). Entrepreneurial knowledge showed a positive and statistically significant association with competitiveness ($B=.158$, $SE=.058$, $\beta=.165$, $p=.007$), supporting H1. Technological mastery was also positively and significantly associated with competitiveness ($B=.594$, $SE=.104$, $\beta=.344$, $p<.001$), supporting H4. Among the four entrepreneurial capacities, technological mastery had the largest standardized coefficient.

Entrepreneurial skills were positively but not significantly associated with competitiveness ($B=.129$, $SE=.077$, $\beta=.111$, $p=.094$); therefore, H2 was not supported. Entrepreneurial attitude and behavior also showed a positive but non-significant association with competitiveness ($B=.107$, $SE=.084$, $\beta=.080$, $p=.205$), and H3 was likewise not supported. The non-significant coefficients for entrepreneurial skills and entrepreneurial attitude and behavior should not be interpreted as evidence that these capacities are irrelevant to MSME outcomes. Rather, after the other entrepreneurial capacities were statistically controlled, neither construct explained a statistically distinguishable share of variation in competitiveness in this sample.

Table 4 Multiple regression results for competitiveness (Equation 1)

Predictor	B	SE	Beta	t	p	95% CI for B
Constant	15.456	2.540	-	6.086	<.001	10.478 to 20.434
X1 Knowledge	.158	.058	.165	2.702	.007	.044 to .272
X2 Skills	.129	.077	.111	1.679	.094	-.022 to .280
X3 Attitude/behavior	.107	.084	.080	1.270	.205	-.058 to .272
X4 Technological mastery	.594	.104	.344	5.715	<.001	.390 to .798

Note: $R = .503$; $R\text{-squared} = .253$; adjusted $R\text{-squared} = .240$; $F(4,235) = 19.882$, $p < .001$. Confidence intervals were calculated from the reported B and SE values.

4.1.4 Entrepreneurial Capacities and Competitiveness Associated with Owner-Reported Financial Performance

Equation 2 was statistically significant, $F(5, 234) = 29.226$, $p < .001$. The five predictors explained 38.4% of the variance in owner-reported financial performance (adjusted $R\text{-squared} = .371$). Entrepreneurial skills, technological mastery, and competitiveness had significant positive coefficients. Entrepreneurial skills was the strongest standardized

predictor ($\beta = .358$), followed by technological mastery ($\beta = .306$) and competitiveness ($\beta = .173$). Entrepreneurial knowledge had no significant direct effect.

Entrepreneurial attitude and behavior had a small negative coefficient ($\beta = -.119$, $p = .039$). This finding rejects the positive direction proposed in H7. Because the construct combines attitudes and behaviors and the design is cross-sectional, the coefficient cannot be treated as direct evidence that a favorable entrepreneurial attitude reduces performance. It indicates a conditional negative association after the other predictors are controlled. Potential explanations include poorly calibrated risk taking, construct heterogeneity, omitted variables, or a suppression pattern that cannot be diagnosed without the correlation matrix and item-level data.

Table 5 Multiple regression results for financial performance (Equation 2)

Predictor	B	SE	Beta	t	p	95% CI for B
Constant	2.386	1.795	-	1.329	.185	-1.132 to 5.904
X1 Knowledge	.033	.039	.047	.838	.403	-.043 to .109
X2 Skills	.300	.051	.358	5.935	<.001	.200 to .400
X3 Attitude/behavior	-.115	.056	-.119	-2.071	.039	-.225 to -.005
X4 Technological mastery	.381	.073	.306	5.236	<.001	.238 to .524
M Competitiveness	.125	.043	.173	2.914	.004	.041 to .209

Note: $R = .620$; $R\text{-squared} = .384$; $\text{adjusted } R\text{-squared} = .371$; $F(5,234) = 29.226$, $p < .001$; $\text{Durbin-Watson} = 1.487$. Confidence intervals were calculated from the reported B and SE values.

4.1.5 Indirect Associations through Competitiveness

Indirect associations between each entrepreneurial capacity and owner-reported financial performance through competitiveness were evaluated using the product-of-coefficients approach. All four indirect pathways were examined irrespective of whether the corresponding first-stage coefficient was statistically significant. The indirect association between entrepreneurial knowledge and owner-reported financial performance through competitiveness was positive and statistically significant under the normal-theory approximation ($ab = .0198$, $SE = .0099$, $z = 1.988$, $p = .047$). The corresponding 95% confidence interval ranged from .0003 to .0392. Because the lower bound was close to zero, this result should be regarded as statistically marginal and interpreted cautiously.

The indirect association for technological mastery was also positive and statistically significant ($ab = .0743$, $SE = .0287$, $z = 2.591$, $p = .010$), with a 95% confidence interval from .0181 to .1304. By contrast, the indirect associations for entrepreneurial skills ($ab = .0161$, $p = .147$) and entrepreneurial attitude and behavior ($ab = .0134$, $p = .243$) were not statistically significant because their confidence intervals included zero. Under the terminology of Zhao et al. (2010), the pattern for entrepreneurial knowledge is consistent with indirect-only mediation, because the estimated indirect association was statistically significant whereas

the controlled direct association was not. The technological-mastery pattern is consistent with complementary mediation, because both the direct and indirect associations were positive and statistically significant. However, these classifications should be treated as provisional because the indirect effects were evaluated using normal-theory confidence intervals rather than nonparametric bootstrap confidence intervals.

Table 6 *Product-of-coefficients tests of indirect effects*

Hyp.	Indirect pathway	ab	Sobel SE	z	p	95% CI	Decision
H10a	X1 Knowledge → M → Y	.0198	.0099	1.988	.047	.0003 to .0392	Supported
H10b	X2 Skills → M → Y	.0161	.0111	1.452	.147	-.0056 to .0379	Not supported
H10c	X3 Attitude/behavior → M → Y	.0134	.0115	1.167	.243	-.0091 to .0358	Not supported
H10d	X4 Technological mastery → M → Y	.0743	.0287	2.591	.010	.0181 to .1304	Supported

Note: Indirect effects and confidence intervals were calculated from the unstandardized coefficients and standard errors reported in Equations 1 and 2. The intervals use the normal approximation; bootstrap intervals are preferable when raw data are available.

4.1.6 Hypothesis Decisions

Hypothesis	Tested relationship	Decision
H1	Entrepreneurial knowledge → Competitiveness	Supported
H2	Entrepreneurial skills → Competitiveness	Not supported
H3	Entrepreneurial attitude and behavior → Competitiveness	Not supported
H4	Technological mastery → Competitiveness	Supported
H5	Entrepreneurial knowledge → Owner-reported financial performance	Not supported
H6	Entrepreneurial skills → Owner-reported financial performance	Supported
H7	Entrepreneurial attitude and behavior → Owner-reported financial performance	Not supported; significant coefficient in the opposite direction
H8	Technological mastery → Owner-reported financial performance	Supported
H9	Competitiveness → Owner-reported financial performance	Supported
H10a	Knowledge → Competitiveness → Financial performance	Provisionally supported under normal-theory test
H10b	Skills → Competitiveness → Financial performance	Not supported

Hypothesis	Tested relationship	Decision
H10c	Attitude/behavior → Competitiveness → Financial performance	Not supported
H10d	Technological mastery → Competitiveness → Financial performance	Supported under normal-theory test

4.2 Discussion

4.2.1 Knowledge and Technological Mastery in Relation to Competitiveness

The first major finding is that entrepreneurial knowledge and technological mastery were positively associated with competitiveness, whereas entrepreneurial skills and entrepreneurial attitude and behavior were not. This pattern is consistent with the study's resource-conversion argument: different entrepreneurial capacities do not necessarily translate into market-level competitiveness in the same way. Knowledge may help owners interpret customer needs, competitor behavior, cost structures, and emerging market opportunities, while technological mastery may facilitate the use of such information through improved communication, transactions, production processes, and market access.

Technological mastery showed the largest standardized coefficient in the competitiveness model ($\beta = .344$), compared with entrepreneurial knowledge ($\beta = .165$). This pattern is consistent with the possibility that, in an environment characterized by uneven technological adoption, the ability to use production and digital technologies may be particularly relevant to differences in market reach, responsiveness, transaction convenience, and customer interaction. The finding is broadly consistent with Wulandari et al. (2024), who associate digital capability and literacy with MSME transformation and perceived performance, and with Evinita et al. (2025), who report positive relationships among digitalization, competitiveness, and financial outcomes.

The non-significant association between entrepreneurial skills and competitiveness should not be interpreted as evidence that skills are unimportant. Entrepreneurial skills displayed the strongest positive association with owner-reported financial performance in the second regression model. One possible interpretation is that the skills captured in this study—such as negotiation, operational coordination, and problem solving—may be more closely related to effective execution than to relative market positioning. From an RBV and resource-orchestration perspective, resources may be economically useful without necessarily producing a distinctive competitive position. Skills that are commonly available among firms may improve operations while providing limited differentiation from competitors.

Similarly, entrepreneurial attitude and behavior were not significantly associated with competitiveness. This finding suggests that persistence, opportunity orientation, and risk-related disposition, as captured by the combined construct, were not sufficient to explain differences in competitive position after the other entrepreneurial capacities were considered. Taken together, the findings support the broader argument that

entrepreneurial capacities should not be treated as interchangeable elements of a homogeneous resource bundle.

4.2.2 Distinct Relationships with Owner-Reported Financial Performance

The second major finding concerns the different patterns associated with entrepreneurial knowledge and entrepreneurial skills. Entrepreneurial knowledge was positively associated with competitiveness but showed no statistically significant direct association with owner-reported financial performance. Entrepreneurial skills displayed the opposite pattern: they were not significantly associated with competitiveness but had the largest positive standardized coefficient in the financial-performance model. This asymmetry illustrates why aggregating entrepreneurial capacities into a single composite score may conceal theoretically meaningful differences.

The observed pattern is consistent with entrepreneurial knowledge functioning primarily as an informational or strategic resource. Knowledge concerning customers, competitors, finance, and business planning may support better market positioning, but possessing such knowledge alone does not necessarily correspond to stronger financial outcomes. Entrepreneurial skills, in contrast, may be more directly associated with operational execution through negotiation, cost control, service delivery, problem solving, and routine business coordination. The findings therefore suggest that different forms of entrepreneurial capacity may be associated with financial outcomes through different empirical pathways.

Competitiveness remained positively associated with owner-reported financial performance after entrepreneurial knowledge, skills, attitude and behavior, and technological mastery were statistically controlled ($\beta = .173$, $p = .004$). This finding supports H9 and is consistent with the proposed resource-conversion logic. A relatively favorable market position—reflected in efficiency, differentiation, responsiveness, innovation, and related market advantages—may represent one pathway through which entrepreneurial resources become financially consequential. Importantly, however, the findings do not imply that competitiveness performs this role uniformly for every entrepreneurial capacity.

Technological mastery showed another distinctive pattern. It was positively associated with both competitiveness and owner-reported financial performance. The direct association is consistent with operational benefits such as more efficient transactions, improved record keeping, faster communication, and more effective process coordination. Its association with competitiveness is also consistent with broader market access, improved responsiveness, and differentiation. Thus, technological mastery appears to be relevant to both operational and market-level aspects of MSME performance.

4.2.3 Interpreting the Negative Entrepreneurial Attitude and Behavior Coefficient

The negative coefficient for entrepreneurial attitude and behavior requires particularly cautious interpretation. The construct was positively but non-significantly associated with competitiveness, while its coefficient in the financial-performance model was small, negative, and statistically significant ($\beta = -.119$, $p = .039$). Because H7 proposed a positive relationship, the hypothesized direction was not supported.

This result should not be interpreted as evidence that entrepreneurial attitude itself reduces financial performance. The construct combines persistence, opportunity orientation, and risk-related disposition, which may not necessarily operate in the same direction or with the same intensity. Moreover, the questionnaire did not directly measure overconfidence, optimism bias, risk miscalibration, or escalation of commitment. Explanations based on these concepts therefore remain possibilities rather than findings demonstrated by the present data.

Several methodological explanations also remain plausible. Because the negative coefficient emerged after entrepreneurial knowledge, skills, technological mastery, and competitiveness were statistically controlled, a suppression or sign-reversal pattern cannot be excluded without examining the zero-order correlation matrix and item-level relationships. The cross-sectional design also leaves open the possibility of reverse-direction relationships; for example, owners experiencing weaker financial outcomes may report greater persistence or stronger effort because their businesses are under pressure. In addition, owner-reported financial performance may reflect subjective evaluations that are influenced by expectations and individual perceptions.

The most defensible interpretation is therefore limited to the estimated regression model: higher scores on the combined entrepreneurial attitude and behavior construct were associated with slightly lower owner-reported financial performance after the other predictors were controlled. The finding should primarily be viewed as a construct-specification issue that warrants more precise examination of persistence, opportunity orientation, risk taking, and related entrepreneurial dispositions in future research.

4.2.4 Indirect Patterns and Theoretical Contribution

The indirect-effect analysis provides further evidence that entrepreneurial capacities are associated with financial performance through different pathways. For entrepreneurial knowledge, the controlled direct association with owner-reported financial performance was not statistically significant, whereas the estimated indirect association through competitiveness was positive and statistically significant under the normal-theory product-of-coefficients test. This pattern is consistent with the possibility that knowledge becomes financially relevant when it is reflected in a stronger competitive position.

However, this finding should be interpreted cautiously. The estimated indirect association for entrepreneurial knowledge was small ($ab = .0198$), with $p = .047$, and its

normal-approximation confidence interval only narrowly excluded zero. Accordingly, the pattern is consistent with indirect-only mediation under the current analytical procedure, but it should not be treated as conclusive evidence of mediation until confirmed using nonparametric bootstrap confidence intervals.

Technological mastery exhibited a different pattern. Both its direct association with owner-reported financial performance and its indirect association through competitiveness were positive and statistically significant. Under the current analytical specification, this pattern is consistent with complementary mediation. Conceptually, technological mastery may be associated with financial outcomes through operational efficiencies while also corresponding to a stronger competitive position through improved market reach, responsiveness, information use, and differentiation.

By contrast, the indirect associations for entrepreneurial skills and entrepreneurial attitude and behavior were not statistically significant. These findings are theoretically important because they indicate that competitiveness should not be regarded as a universal intervening mechanism between all entrepreneurial capacities and financial performance. Skills may be more closely associated with financial performance through operational execution, whereas the combined attitude and behavior construct did not show evidence of a positive direct or indirect pathway in the present model.

Taken together, the findings support two related theoretical implications. First, they reinforce a capacity-heterogeneity perspective: entrepreneurial knowledge, skills, attitude and behavior, and technological mastery should not automatically be modeled as interchangeable elements of a homogeneous entrepreneurial-capacity bundle because they exhibit different empirical relationships with competitiveness and financial performance. Second, they support a selective resource-conversion perspective: competitiveness appears to represent a market-level intervening mechanism for some entrepreneurial capacities more clearly than for others. This distinction extends the combined Human Capital Theory and RBV/resource-orchestration logic by emphasizing that the economic relevance of entrepreneurial resources depends not only on resource possession, but also on the particular pathway through which those resources are associated with market and financial outcomes.

5. CONCLUSION, REMARKS & IMPLICATION

This study offers two main theoretical implications. First, it advances a capacity-heterogeneity perspective by showing that entrepreneurial knowledge, skills, attitude and behavior, and technological mastery exhibit different empirical relationships with competitiveness and owner-reported financial performance. This pattern challenges the treatment of entrepreneurial capacity as a homogeneous resource bundle. From a Human Capital Theory perspective, owner-level knowledge and skills constitute potentially productive resources, but the findings suggest that their relevance to firm outcomes

depends on the particular form of capacity involved. Entrepreneurial knowledge was associated with competitiveness but not directly with financial performance, whereas entrepreneurial skills showed the opposite pattern. Technological mastery was associated with both competitiveness and financial performance, while the combined attitude and behavior construct did not display the expected positive pattern. These differences indicate that entrepreneurial capacities should be theorized as distinct resources rather than assumed to operate through a common performance pathway.

Second, the study develops a selective resource-conversion perspective by integrating Human Capital Theory with the Resource-Based View and resource-orchestration logic. The findings are consistent with the proposition that possessing entrepreneurial resources is not sufficient for generating favorable financial outcomes; what also matters is whether particular resources are associated with a stronger position in the marketplace. Competitiveness, conceptualized here as a relative market position reflected in efficiency, differentiation, responsiveness, and innovation, was positively associated with owner-reported financial performance. However, the indirect-effect results suggest that this intervening role is not uniform across entrepreneurial capacities. The evidence is more consistent with competitiveness operating as a selective rather than universal pathway linking entrepreneurial resources with financial outcomes.

Technological mastery further illustrates this distinction. Rather than treating technology merely as an external condition or as a binary adoption decision, the study conceptualizes technological mastery as an owner-level entrepreneurial capacity reflecting the ability to apply production and digital technologies within business activities. Its positive associations with both competitiveness and financial performance suggest that the theoretical relevance of technology lies not only in access or adoption, but also in the owner's ability to use technology in ways that support operational activities and market positioning. This perspective helps explain why technology availability alone may be insufficient to differentiate MSME outcomes.

The unexpected negative coefficient for entrepreneurial attitude and behavior should be interpreted more cautiously. Rather than constituting a separate theoretical contribution, it identifies an important construct-specification boundary. The combined measurement of persistence, opportunity orientation, and risk-related disposition may conceal dimensions that operate differently in relation to business outcomes. This finding therefore points to the need for greater conceptual and measurement precision in future research rather than supporting a general claim that entrepreneurial disposition is detrimental to performance.

This study examined how entrepreneurial knowledge, skills, attitude and behavior, and technological mastery are associated with owner-reported financial performance among MSMEs in South Sulawesi, both directly and indirectly through competitiveness. The findings indicate that entrepreneurial capacities do not exhibit uniform relationships with firm outcomes. Entrepreneurial knowledge and technological mastery were positively

associated with competitiveness, whereas entrepreneurial skills showed the strongest positive association with financial performance. Technological mastery and competitiveness were also positively associated with financial performance, while entrepreneurial attitude and behavior showed a small negative conditional association. The indirect-effect results further suggest different pathways across capacities: the knowledge pathway through competitiveness was small and statistically marginal under the normal-theory test, whereas technological mastery showed a clearer combination of direct and indirect associations.

Overall, the findings support a capacity-heterogeneity perspective in which different entrepreneurial capacities are associated with MSME outcomes through different empirical pathways. They also support a selective resource-conversion perspective, suggesting that competitiveness may function as a market-level intervening mechanism for some entrepreneurial capacities rather than as a universal bridge between all owner-level resources and financial performance. For practice, this implies that MSME capacity-development initiatives may benefit from aligning knowledge, skills, entrepreneurial disposition, and technological mastery with the specific operational or market outcomes they are intended to support.

Several limitations should be considered when interpreting the findings. First, the cross-sectional design does not establish temporal ordering or causal relationships among entrepreneurial capacities, competitiveness, and financial performance. Longitudinal or panel designs would provide stronger evidence about whether changes in entrepreneurial capacities precede changes in competitiveness and subsequent financial outcomes. Second, all variables were reported by the same owner or manager, creating potential common-method and perceptual biases. Future studies could combine survey responses with accounting records, transaction data, customer-based indicators, or other independent measures of business performance (Podsakoff et al., 2003). In addition, although regional quotas improved geographical coverage, the non-probability selection of respondents within those quotas limits statistical generalization to the wider population of South Sulawesi MSMEs.

The study also has measurement and analytical limitations. Owner-reported financial performance may not fully correspond to objective financial outcomes, and the entrepreneurial attitude and behavior construct combines persistence, opportunity orientation, and risk-related disposition that may represent distinct dimensions. Future research should therefore use more differentiated measures of entrepreneurial disposition and triangulate perceptual performance measures with objective indicators such as sales growth, profit margins, cash flow, or asset growth. The present measurement assessment relies primarily on item-total correlations and internal-consistency estimates, so future research should further examine convergent, discriminant, and dimensional validity using a more comprehensive measurement model. Finally, the indirect effects were evaluated

using a normal-theory product-of-coefficients procedure; therefore, particularly the small knowledge-related indirect association should be interpreted cautiously until replicated using bootstrap confidence intervals. Future models may also examine additional determinants such as access to finance, market orientation, innovation capability, network strength, government support, and environmental turbulence to explain the remaining variance in competitiveness and financial performance.

STATEMENT OF USE OF GENERATIVE AI

In preparing this manuscript, the authors employed generative AI tools for limited editorial purposes, including language improvement, structural organization, and formatting assistance. No AI-generated output was accepted without author review and verification. Responsibility for the study design, data analysis, theoretical reasoning, interpretation of findings, references, and final text rests entirely with the authors.

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