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The Role of Resource Allocation in Linking Enterprise Risk Management to Competitive Advantage of Small and Medium-Sized Enterprises

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ABSTRACT

The purpose of this study was to examine the role of resource allocation (RA) in linking enterprise risk management (ERM) to competitive advantage (CA) among medium-sized manufacturing enterprises in Shanghai, China, while exploring the moderating effect of innovation capability (IC). The study aimed to provide empirical insights into how ERM practices can be transformed into sustained organizational performance through effective resource deployment in a highly competitive and dynamic industrial context. A quantitative research design was adopted, and primary data were collected from 214 operations managers and business supervisors using structured questionnaires. The measurement scales were adapted from validated instruments in prior studies. Data analysis was conducted using SPSS, including descriptive statistics, reliability analysis, correlation analysis, and multiple regression to test direct, mediating, and moderating effects among the constructs. The results indicate that ERM has a significant positive impact on CA both directly and indirectly through RA. Furthermore, IC was found to strengthen the effect of RA on CA significantly. These findings emphasize the strategic importance of integrating risk management with resource deployment and fostering innovation to achieve sustained competitive performance. This study contributes to the literature by examining SMEs in Shanghai, highlighting the combined mediating and moderating mechanisms linking ERM, RA, and innovation to CA. Practically, it offers guidance for managers to implement risk-informed resource strategies and enhance IC to maintain resilience and competitiveness in emerging market contexts.

Keywords: Enterprise Risk Management, Resource Allocation, Competitive Advantage, Innovation Capability, Small and Medium-Sized Enterprises
JEL Classifications: G32, L25, O32

1. INTRODUCTION

With substantial impacts on employment, innovation, and overall manufacturing production, SMEs play a key role in driving China's economic growth. They, however, disproportionately shoulder the responsibility of risk management and competitiveness in uncertain markets. Higher technology advances, global competition, and regulatory changes have all created volatility and complexity in the Chinese economy in the past few years (Ahmad Jaber and Mohammed Shah, 2024). As explained by (AL-Dosari and Fetais, 2023), this places the necessity for good ERM in SMEs. Chinese SMEs generally lack significant financial and human capital in comparison to large corporations, which have huge capital. Therefore, they are exposed to disruptions in operation, economic turbulence, as well as external shocks like pandemics or supply chain ambiguity (Zhu et al., 2023). ERM is vital to SMEs aiming to attain sustainable performance as well as long-lasting competitiveness. ERM allows for a systematic as well as all-inclusive approach to recognizing, analyzing, as well as responding to opportunity as well as risk (Chen et al., 2024). Without sufficient investment in product innovation, capability building, as well as market orientation initiatives, risk management will not augment performance in isolation. Thus, the success of ERM is heavily dependent on the allocation strategy for resources

(Crawford and Jabbour, 2024). The connection between ERM, resource allocation, as well as competitiveness advantage, is a promising area of research. The connection is between risk management, strategy management, as well as entrepreneurship for Chinese SMEs, where companies compete in the conditions of resource scarcity to gain market distinctness (Kulinich et al., 2023).

Literature studies have also outlined the strategic significance of ERM in boosting the competitiveness of businesses in diverse environments. Research has confirmed that institutions that adopt risk management strategies are likely to preserve development as well as stability (Meiryani, 2024; Saeidi et al., 2024; Zhu et al., 2023). Companies that possess sophisticated ERM systems, for example, are likely to have superior financial performance, trust from stakeholders, as well as operating performance in comparison to companies that possess diffuse or ad hoc risk processes as observed in European as well as American environments (Kuděj et al., 2023). Asian SMEs that use ERM frameworks are capable of navigating technological changes, regulatory concerns, as well as the volatility in global supply value chains better as per current studies (Ahmad Jaber and Mohammed Shah, 2024). Besides, research has illustrated that resource deployment works effectively in achieving ERM into tangible competitiveness results. Firms that are quick in committing funds to customer initiatives, innovations, as well as digitalization are more profitable as well as responsive (Crawford and Jabbour, 2024). Additionally, research indicates that IC provides a mediator between resource deployment as well as CA in that companies that are good in their innovation orientation are in a position to reap deployed resource value by translating deployed resource value into unique market offerings distinct from competition (Mehmood et al., 2025). Together, these results underscore the importance of exploring the interactive dynamics among ERM, RA, and innovation in accounting for SME competitiveness.

Despite the growing empirical literature, the conceptualization of ERM as a CA for SMEs remains largely unknown, especially in the Chinese context. Although SMEs are vital to China's economy, most previous research has concentrated on large multinational firms with established organizational forms and a wealth of resources (Gao, 2024). Few have studied the mechanisms of this relationship, particularly the mediating role of RA, despite studies proving the causative impact of ERM on business performance. Managers' choices on how to resource based on ERM insights become the essence of whether risk management is actually realized in competitive positioning in SMEs, by definition of limited human, financial, and technical resources (Dou and Ishaq, 2025). Second, there has been a lack of empirical studies on how these dynamics operate in emerging economies such as China, where SMEs experience institutional uncertainty, regulatory limitations, and external pressures that impact their strategic choices differently from those of corporations in developed economies (Wang et al., 2024). The scant examination of IC as a contextual variable that influences the extent to which resources are utilized to generate CA is another critical gap. Few analyses have been conducted of IC's moderation function in the SME sector in China, where innovation is generally hindered by financial constraints and dependence on external aid systems, despite innovations in advanced economies revealing that IC enhances the performance impacts of resource expenditure (Olaleye et al., 2024). Furthermore, most existing literature has a myopic financial view of ERM, overlooking other broader non-financial aspects of CA, such as customer satisfaction, market responsiveness, and operational flexibility, which are especially important for SMEs operating in highly competitive markets (Olaleye et al., 2024). Empirical research has similarly concentrated on samples specific to sectors, such as manufacturing or financial services, with minimal cross-sectoral comparisons of SMEs across different industries in China (Huang and Ichikohji, 2024). The absence of broader research means that related questions about how ERM, RA, and IC interact to influence SME competitiveness in a rapidly changing Chinese economy remain unanswered. The objective of this research is to explore the role of RA in connecting ERM with the CA of small and medium-sized businesses in Shanghai, China, while also examining the moderating effect of IC. More particularly, this study aims at answering the following research questions: first, to investigate the direct impact of ERM on CA; second, to evaluate the connection between ERM and RA; third, to test the effect of RA in affecting CA; fourth, to study the mediating role of RA between ERM and CA; and lastly, to test the moderating role of IC on the relationship between RA and CA.

Given that it fills a significant gap in information regarding the effective transferability of ERM to sustainable SME CA in China, the research has both theoretical and practical significance. Through the identification of IC as a moderator variable and RA as a mediating process, this theoretical framework adds to the resource-based view and dynamic capabilities theories, leading to a more sophisticated explanation of the link between risk management and performance (Barney, 1991; Teece et al., 1997). Empirically, it produces context-specific data from Shanghai. This region poses challenges as well as opportunities to SMEs due to the complicated institutional setting, stringent competition pressure, and globalization (Chen et al., 2024). The research places significance on integrating ERM and RA decision-making and the construction of IC in order to remain competitive under ambiguous situations. The research has practical functional meanings for SME managers. Secondly, policymakers are given recommendations on how to improve SMEs' resilience and growth. These are framed in establishing institutional conditions that can enhance the application of risk management as well as spending on innovation (Al Koliby et al., 2024). Overall, the study promotes knowledge and recommends practical strategies in supporting the long-term competitiveness as well as sustainability of Chinese SMEs.

2. LITERATURE REVIEW

ERM is an essential strategic asset for SMEs dealing with uncertain environments, with a focus on integrated management of financial, operational, strategic, and compliance risks. ERM's broad-based orientation in comparison to conventional risk management minimizes risks as well as identifies value-creation prospects (Zuhroh and Rini, 2024). ERM also facilitates SMEs in leveraging their limited resources to the fullest, enhancing transparency, as well as building stronger stakeholder confidence (Al Nuaimi et al., 2024). However, due to the resource limitations

of SMEs, sophisticated risk management is not easy; therefore, the link between CA and ERM is ambiguous (Crawford and Jabbour, 2024). RA therefore plays an important role in allowing ERM to provide long-term strategic value. By focusing limited financial, human, as well as technical, resources on most important risks, SMEs are capable of connecting risk strategies to business objectives, enabling innovation, performance, as well as resilience (Moschella et al., 2023).

RA is how ERM provides sustainable CA, especially for SMEs that strike a balance between flexibility and efficiency. The resource-based view (RBV) suggests that the competitive position arises from rare, valuable, inimitable, and non-substitutable resources (Barney, 1991). ERM helps SMEs identify and prioritize these strategic resources (Gong et al., 2024). This is particularly important for Chinese SMEs dealing with intense institutional competition as well as market competition (Jiang and Li, 2024). Various studies indicate that combining ERM with focused RA enhances SME innovation, market responsiveness, customer satisfaction, as well as competitiveness (Tang et al., 2024). Incorporating RA in ERM processes also makes risk management a source of sustained growth as well as strategic renewal (Horvey and Odei-Mensah, 2023). Combining ERM and RA therefore helps SMEs adapt, stay resilient, as well as maintain CA in times of ambiguity.

2.1. Hypothesis Development

Previous studies repeatedly underscore that ERM is vital in helping companies gain their competitive advantage in risky business environments (Crawford and Jabbour, 2024; Horvey and Odei-Mensah, 2023; Zhu et al., 2023). Through the inclusion of risk factors in the process of strategic planning, ERM helps companies predict, evaluate, and mitigate both opportunities and threats in an integrated manner (Kuděj et al., 2023). Implanting ERM across the organization facilitates innovation, asset safeguarding, and long-term performance (Kulinich et al., 2023). SMEs are particularly in need of this, given their susceptibility to external shocks as well as their resource limitations (Ahmad Jaber and Mohammed Shah, 2024). Observational findings correlate advanced ERM practices with market agility, stakeholder trust, and operational effectiveness that give rise to long-term CA (Otache, 2024). Overall, then, ERM is framed not only as a risk control mechanism, but as a prime driver of sustained competitive advantage.

- H_1: ERM has a significant impact on CA.

Literature has irretrievably demonstrated the connection between RA and ERM, where risk management frameworks guide limited organizational resources (Dou and Ishaq, 2025; Mohammad and Abbas, 2024; Saeidi et al., 2024). In order to make sure that financial, human, and technical resources are deployed where they are most required in order to reduce vulnerabilities and take advantage of opportunities, ERM empowers decision-makers with insights regarding high-risk vulnerability pockets and strategic significance areas (Dewi and Sari, 2024). The ability of ERM to impact allocation decisions is more critical in the scenario of SMEs, where restricted resources are a common issue (Wang and Zhang, 2025). Research has proven that through identification of areas for strategic investment, such as efficiency, innovation, or compliance, ERM provides alignment between the company objectives and RA (Al Nuaimi et al., 2024; Chen and Wang, 2024; Dou and Ishaq, 2025). Through reduction of wasteful expenditures and investing in value-generating projects, the alignment enhances not only organizational resilience but also optimizes efficiency (Ringo et al., 2024). ERM has an important role in guiding effective RA programs that optimize the overall performance and long-term viability of SMEs.

- H_2: ERM has a significant impact on RA.

CA has been discovered to be considerably affected by RA alone, especially if the resource-based view (RBV) is considered. From RBV, companies can achieve long-term success by correctly applying scarce, valuable, rare, and inimitable resources (Barney, 1991). Companies can focus their actions on activities that generate value and differentiate the company, such as customer relationship management, capability development, and innovation, through strategic (Challoumis, 2024). The ability of SMEs to compete effectively in highly uncertain and changing environments relies on their capacity to utilize resources efficiently (Dou and Ishaq, 2025). Empirical studies indicate that firms implementing effective RA practices exhibit improvements in customer satisfaction, market reactivity, and flexibility, all of which contribute to enhanced CA (Agustian et al., 2023; Olaleye et al., 2024; Wiredu et al., 2024). In addition, effective strategic resource allocation ensures that companies continually enhance core competency while venturing into new areas of growth (Grant, 1991). As a result, SMEs apply efficient RA as an essential tool to translate strategic intent into long-term competitive advantage.

- H_3: RA has a significant impact on CA.

ERM provides companies with the information to identify key risks and opportunities; however, unless financial, human, and technological resources are allocated to the proper areas, the value of ERM remains unrealized (Kulinich et al., 2023). RA serves as the connecting link that brings ERM strategies to fruition by ensuring that organizational priorities align with risk-informed decisions (Jiang and Li, 2024). In SMEs, this mediating function is paramount, as resource constraints necessitate the prudent prioritization of investment opportunities that can optimize returns and build resilience (Chen et al., 2024). Evidence suggests that as companies implement ERM and allocate resources strategically, they achieve increased innovation, market sensitivity, and customer confidence, which in turn lead to CA (Zaman et al., 2025). Thus, RA can be regarded as the central mechanism by which ERM drives competitive positioning, furthering the argument that the mediating role of ERM is pivotal in realizing sustainable performance in resource-scarce settings.

- H_4: RA mediates the relationship between ERM and CA.

IC is known to be a moderator that can either enhance or reverse the relationship between RA and CA, because the efficient utilization of resources relies on how far a firm can convert them into innovative outputs (Hayaeian and Hesarzadeh, 2024). As

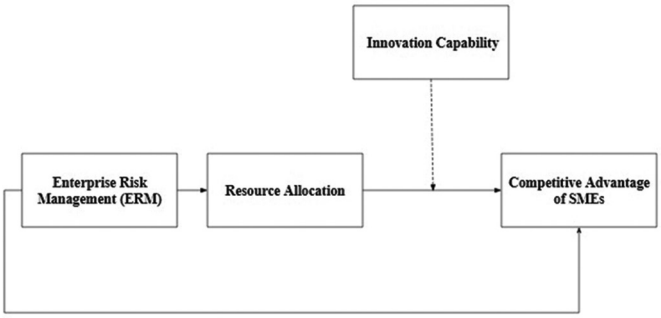
(Barney, 1991) maintains, the RBV emphasizes that resources will not constitute a long-term advantage on their own unless they are complemented by dynamic attributes that ensure adaptation and renewal. Liu and Suzuki (2024) argue that IC represents a gauge of a firm's ability to bring together knowledge, implement new technologies, and create innovative solutions to transform RA into market-oriented goods, routines, and services. Based on studies, companies with high innovation capabilities can more easily leverage their resources for long-term growth and differentiation, whereas companies with low innovation capabilities may struggle to utilize resource investments (Chen and Wang, 2024; Huang and Ichikohji, 2024; Wang and Zhang, 2025). This role of moderation is vital for SMEs because innovation offers a way to overcome resource and size limitations, enabling them to compete with larger companies on the grounds of flexibility and niche market positioning (Budiarti and Firmansyah, 2024). Therefore, IC is a vital contingency factor in the link between resources and performance, consolidating the relationship between RA effectiveness and CA output.

- H_5: IC moderates the relationship between RA and CA.

2.2. Theoretical Framework Supporting the Research

This research is based on the resource-based view (RBV). RBV states that companies gain lasting advantages by using resources that are valuable, rare, hard to copy, and have no substitutes (Barney, 1991). According to this view, enterprise risk management (ERM) is a strategic process. ERM helps firms use assets more effectively by identifying, assessing, managing risks, and finding new opportunities (Kulinich et al., 2023). However, as RA is the framework used to allocate limited financial, human, and technological resources to projects that enhance firm competitiveness, ERM cannot, on its own, ensure CA if its findings are not reflected in RA (Mikes and Kaplan, 2015). In emphasizing that organizational performance is not only about having resources but also about applying resources strategically to facilitate capabilities and grab market opportunities, this mediating function of resource deployment is consistent with RBV (Gatzert and Martin, 2015). In addition, the model identifies IC as an important moderating variable in line with dynamic capacities theory, which emphasizes the ability of companies to respond to changing environmental circumstances and shift resources (Teece et al., 1997). Since it allows for the conversion of investments into innovative products, processes, and services that make the company unique and generate long-term value, IC also enhances RA's efficiency (Lawson and Samson, 2001). For Shanghai SMEs, facing the conditions of market competition intensification and institutional vagueness, this integrated approach highlights how ERM guides RA decisions, how RA intervenes between the line and CA, and how innovation capacity enhances the connection between resource deployment and sustainable positioning in the marketplace. Consequently, the theoretical framework informing this study is shown in Figure 1, which shows ERM as the antecedent, RA as both an outcome and mediator, CA as the primary dependent variable, and IC as a moderator, providing a comprehensive explanation for how strategic risk management and resource use come together to improve the competitiveness of SMEs.

Figure 1: Conceptual framework



3. METHODOLOGY

3.1. Research Design

The current research employed a quantitative research design, as the primary purpose was to empirically test the hypothesized relationships between ERM, resource allocation, IC, and CA in Chinese SMEs. Quantitative research was deemed suitable since it enables the measurement of constructs using standardized tools, provides objectivity in variable assessment, and facilitates the generalization of results within the specified population (Cresswell, 2013). A cross-sectional survey research strategy was employed, which entailed gathering information at a single point in time to specifically record the perceptions and practices of SME managers regarding ERM and its related outcomes. This design was suitable because it enabled the examination of relationships among variables in real-world organizational contexts, offering insights into how ERM and RA interact to shape CA in Shanghai's SME sector.

3.2. Population

The study population consisted of medium-sized manufacturing enterprises, defined here as firms with 100–300 employees, operating within industrial parks in Shanghai, China. Manufacturing SMEs were selected for their central role in China's industrialization. These firms are sensitive to operational risks (such as supply chain disruptions), resource management issues (such as allocation of materials and personnel), and a strong need for innovation in a highly competitive market. Using medium-sized firms ensured that respondents had formalized operations and established managerial routines. This made them relevant for studying ERM and strategic decision-making procedures. The research targeted operations managers and business supervisors within these companies. These individuals play direct roles in risk management, RA decisions, and strategy implementation. Their input was highly beneficial to the research goals.

3.3. Sample Size and Sampling Technique

Two hundred fourteen usable responses were collected for analysis, a suitable sample size for quantitative research using regression-based methods (Hair and Alamer, 2022). The sample met statistical requirements for hypothesis testing and ensured representativeness of medium-sized manufacturing SMEs. Purposive sampling was used to recruit respondents who held specialized roles directly linked to the research topics. Specifically, operations managers and business supervisors were selected for their primary

responsibilities in operational decision-making, risk assessment, and resource allocation related to the study's focus areas. Targeting this group ensured that the data captured was informed in terms of views on how ERM, RA, and CA correlate with each other.

3.4. Data Collection

Primary data were collected through a structured questionnaire distributed to operations managers and business supervisors across medium-sized manufacturing enterprises in Shanghai's industrial parks. The questionnaire was designed to capture perceptions of ERM, RA practices, IC, and CA using standardized scales adopted from prior validated research works. Items used to measure ERM were sourced from (Florio and Leoni, 2017). RA scales were adapted from (Gatzert and Martin, 2015). IC items were derived from (Lawson and Samson, 2001). Measures of CA were taken from Barney (1991). All items were rated on a five-point Likert scale, ranging from "strongly disagree" to "strongly agree," which enabled the quantification of respondents' perceptions. The questionnaires were sent in both electronic and hard copy versions to maximize accessibility and response, with explicit instructions for accurate completion. Among the responses obtained, 214 were found to be complete and valid for use in analysis, and these constituted the final dataset used in the study.

3.5. Data Analysis

The data collected were analyzed using the Statistical Package for the Social Sciences (SPSS), which enabled the application of both descriptive and inferential statistical methods to test the hypothesized associations. The demographic profile of the respondents and a general overview of the data were obtained by first calculating descriptive statistics, including frequencies, means, and standard deviations. Reliability was assessed through Cronbach's alpha to confirm the internal consistency of the measurement scales. Correlation analysis was used to test the direction and strength of the relationships between the constructs. Multiple regression analyses were used to test the direct, mediating, and moderating hypotheses of ERM, RA, IC, and CA. Mediation was tested after the procedures advocated by Baronand Kenny (1986), while moderation effects were examined by placing interaction terms in the regression models. SPSS usage enabled the stringent testing of the conceptual framework and yielded empirical information to address the study's research goals.

4. RESULTS

Table 1 reports the descriptive statistics of the four key constructs under study in this paper: ERM, RA, IC, and CA. There is an indication that ERM received a mean rating of 3.72 with a standard deviation of 0.61, implying that the vast majority of the respondents perceived a relatively high level of ERM activities in the firms they worked for. RA had a mean of 3.68 with a standard deviation of 0.65 and also registered a relatively high level of awareness of effective RA in the SMEs. IC recorded the highest mean at 3.81, with a standard deviation of 0.70, revealing the importance accorded to innovation as a strategic capability in the sampled enterprises. CA received a mean of 3.75 and a standard deviation of 0.67, indicating that most respondents perceived the firms in which they worked as capable of sustaining favorable CAs in the market. Minimum and maximum values across constructs reveal that the responses fell within a range of low to high perceptions, indicating a spectrum of experiences across the sampled firms.

Table 2 presents the normality test results for the constructs, using the values of skewness and kurtosis. The statistics of skewness for ERM, RA, IC, and CA fell between −0.142 and −0.263, and therefore fell within the acceptable range of ±1. Hence, no severe departure from normality was detected. Likewise, the values of the constructs' kurtosis fell between −0.276 and −0.489, which is within the acceptable range of ±1, thereby further supporting the assumption of normality. These results indicate that the data distributions are relatively symmetric and do not deviate significantly from a peak or plateau, thereby supporting the appropriateness of the dataset for subsequent parametric tests, such as regression and path analysis. These results, based on the standard errors of the skewness and kurtosis, confirm the robustness of the estimation of these statistics.

Table 3 presents the internal consistency of the measurement scales as assessed using Cronbach's alpha. All the constructs demonstrated high reliability, with alpha values above the recommended cut-off level of 0.70 for reliability assessment. Specifically, the ERM with six items had an alpha of 0.871, resulting in very high internal consistency among the items. RA with five items yielded a Cronbach's alpha of 0.856, indicating high reliability. IC with six items presented the highest reliability coefficient of 0.889 and therefore showed excellent consistency. CA, with five items, presented an alpha of 0.874, similarly

Table 1: Descriptive statistics

Construct	N	Minimum	Maximum	Mean	Standard deviation
ERM	214	1.80	4.95	3.72	0.61
Resource allocation	214	1.60	4.85	3.68	0.65
Innovation capability	214	1.90	5.00	3.81	0.70
Competitive advantage	214	1.75	4.90	3.75	0.67

Table 2: Normality assessment

Construct	Skewness	Standard error	Kurtosis	Standard error
ERM	−0.215	0.167	−0.489	0.334
Resource Allocation	−0.198	0.167	−0.352	0.334
Innovation Capability	−0.142	0.167	−0.276	0.334
Competitive Advantage	−0.263	0.167	−0.318	0.334

demonstrating the strength of the measuring instrument. These collectively imply that the adapted scales from existing literature demonstrate very high reliability in measuring the perceptions of SME managers and supervisors in the Chinese environment.

Table 4 illustrates the outer loadings of the individual measurement items on their respective constructs. All outer loadings were above the recommended threshold of 0.70, indicating that each item made a significant contribution to its underlying construct. For ERM, the six items recorded loadings ranging from 0.768 to 0.822, suggesting strong convergent validity. RA items had loadings between 0.754 and 0.811, confirming that each measure was well aligned with the construct. IC items demonstrated loadings from 0.774 to 0.836, the highest among all constructs, reflecting the strong explanatory power of these items in capturing innovation-related practices. CA items had loadings between 0.778 and 0.826, which also indicate robust item reliability. These findings confirm that the constructs were measured accurately, and the items used in the questionnaire were effective indicators of the underlying latent variables.

Table 3: Reliability analysis

Construct	No. of items	Cronbach's alpha
ERM	6	0.871
Resource allocation	5	0.856
Innovation capability	6	0.889
Competitive advantage	5	0.874

Table 4: Outer loadings of measurement items

Construct	Items	Outer loading
ERM	ERM1	0.782
	ERM2	0.801
	ERM3	0.768
	ERM4	0.822
	ERM5	0.795
	ERM6	0.813
Resource allocation	RA1	0.754
	RA2	0.789
	RA3	0.811
	RA4	0.776
	RA5	0.802
Innovation capability	IC1	0.805
	IC2	0.823
	IC3	0.792
	IC4	0.818
	IC5	0.774
	IC6	0.836
Competitive advantage	CA1	0.787
	CA2	0.809
	CA3	0.826
	CA4	0.778
	CA5	0.812

Table 5: Correlation analysis

Constructs	ERM	RA	IC	CA
ERM	1			
Resource allocation	0.621**	1		
Innovation capability	0.534**	0.587**	1	
Competitive advantage	0.648**	0.671**	0.593**	1

**Correlation is significant at the 0.01 level (2-tailed)

Table 5 presents the correlation matrix between ERM constructs, RA, IC, and CA. The outcomes reveal statistically significant positive correlations between all variables at the 0.01 level. ERM was significantly correlated with RA (r = 0.621) and CA (r = 0.648), implying that higher ERM practice levels were associated with superior resource management and higher competitiveness. RA had the highest correlation with CA (r = 0.671), suggesting that resource deployment plays a crucial role in achieving market advantage. IC also had moderate to high correlations with ERM (r = 0.534), RA (r = 0.587), and CA (r = 0.593). The implication is that innovation capacity undergirds the efficiency of risk management and resource deployment in building firm performance. These outcomes offer preliminary empirical support for the proposed relationships and confirm the usefulness of the constructs in explaining the competitiveness of SMEs.

Table 6 presents the results of the path analysis, which tested the study's hypotheses. The results show that ERM has a direct and significant impact on CA ($\beta = 0.284$, $t = 4.912$, $P < 0.001$), supporting H_1. ERM highly and significantly impacted RA ($\beta = 0.502$, $t = 9.156$, $P < 0.001$), in support of H_2. RA favorably and significantly impacted CA ($\beta = 0.416$, $t = 7.328$, $P < 0.001$), in support of H_3. Mediation analysis revealed that RA partially mediated the relationship between ERM and CA ($\beta = 0.209$, $t = 5.347$, $P < 0.001$), supporting H_4. Moreover, IC moderated the relationship between RA and CA significantly ($\beta = 0.167$, $t = 3.145$, $P = 0.002$), supporting H_5. Overall, the outcomes indicate that ERM not only directly improves competitiveness but also indirectly does so through RA, with the impact further accentuated when firms enjoy superior innovation capabilities.

5. DISCUSSION

The findings of this study provide a comprehensive understanding of the strategic relationships concerning ERM, resource allocation, innovation capability, and competitive performance of medium-sized manufacturing firms in Shanghai. The study contributes to the literature on how risk management enhances performance in resource-constrained environments by experimentally investigating such connections. Results underscore that ERM is a strategic facilitator that maps the allocation of resources and builds capabilities for competitive advantage. ERM is a risk mitigation or compliance tool only to an extent. The study reveals that the

Table 6: Path analysis

Hypothesis	Path	β (Coefficient)	t-value	P-value	Result
H_1	ERM → CA	0.284	4.912	0.000	Supported
H_2	ERM → RA	0.502	9.156	0.000	Supported
H_3	RA → CA	0.416	7.328	0.000	Supported
H_4	ERM → RA → CA	0.209	5.347	0.000	Partial Mediation
H_5	RA×IC → CA	0.167	3.145	0.002	Supported

efficacy of RA hinges on a company's innovation capability, which is an indicator of the dynamism of strategy execution in the turbulent industrial environment. Analyzing how companies exploit internal resources and capabilities, the research employs the Resource-Based View (RBV), Dynamic Capabilities Theory (DCT), and knowledge-based theories. The findings offer empirical support and managerial implications for small and medium-sized enterprises (SMEs) operating in increasingly changing markets.

The research results showed that ERM made a significant positive contribution to CA, thereby supporting the first hypothesis. The result supports the premise that companies that are able to identify, assess, and control risks are in a stronger position to exploit opportunities, safeguard their assets, and improve their competitive position (Saeidi et al., 2024). The outcome is aligned with the RBV, which argues that unique in-house procedures, in this instance, solid risk management procedures, are scarce, valuable, and difficult to replicate assets generating CA over a period of time (Barney, 1991). By consistently embedding ERM into their organizational strategy, Chinese manufacturing firms can effectively respond to uncertainties while simultaneously forging resilience that sets them apart from the competition. This is especially important in the case of industrial parks in Shanghai, where medium-sized firms face both high competition and vulnerability to changing market dynamics, rendering ERM an integral strategic competence rather than a compliance instrument.

Also, the second hypothesis was supported, reaffirming that ERM has a significant impact on RA. This information suggests that ERM plays a crucial mediating role in shaping organizational decisions regarding the allocation of human, technological, and financial resources. Apart from conserving money and reducing exposure, proper risk management ensures that funds are only distributed to projects that, at a minimum, achieve long-term strategic objectives (Ahmad Jaber and Mohammed Shah, 2024). Such an observation is corroborated by contingency theory, which posits that organizational designs, processes, and resource allocation should be responsive to external forces to enhance performance (Gong et al., 2024). Organizations can allocate resources more effectively for innovation, operational efficiency, and building capabilities by integrating ERM into their decision-making processes. Building on this idea, ERM can be seen as a conceptual framework for ensuring specific critical resources behave in a direction that enhances resilience and long-term viability, rather than being a one-off managerial method.

Furthermore, strategic and practical RA unilaterally enhances a firm's CA, as proposed by the third hypothesis, which tested the impact of RA on CA. The outcome describes how RA is the bridge between performance consequences and strategy intention, guaranteeing the development and utilization of capabilities for final market impact (Tang et al., 2024). The RBV hypothesis that says resources are transformed into strategic assets that lead to innovation and differentiation through being employed optimally can once more explain the outcome (Al Nuaimi et al., 2024). Moreover, Dynamic Capabilities Theory (DCT) reinforces this evidence in stating that firms are required to constantly reorganize and realign their pool of resources to respond to varying environmental conditions, in addition to having valuable assets. As an example, successful RA gives medium-sized industrial firms in Shanghai the opportunity to strive towards new technologies, increase their innovation capability, and make them more responsive to customers' needs all of which enhance sustainable competitiveness. Altogether, these arguments are in favor of affirming that, within the Chinese manufacturing environment, the complementary functions of ERM and RA are highly correlated with enhanced organizational performance.

Lastly, the fourth hypothesis was strongly confirmed since the research had strong evidence for RA as an essential mediator variable in the relationship between ERM and CA, highlighting the importance of RA as a variable to link ERM and CA. This suggests that ERM alone is not always being read as a competitive advantage unless its outcomes are responded to through the successful utilization of human, financial, and technological capital. According to Saeidi et al. (2024), RA is how strategic ERM intentions are converted into tangible outcomes, managing expenditure towards activities maximizing corporate performance. This result aligns with the Resource-Based View, which posits that to develop sustainable CA, it is crucial to utilize optimal capabilities, such as formal risk management procedures (Barney, 1991). This mediating role suggests that Shanghai's medium-sized manufacturing firms are well-positioned to innovate, expand their market influence, and enhance operational effectiveness by strategically defining RA with the aid of ERM's insights. By focusing on RA as an avenue for ERM, the paper highlights the importance of aligning risk management with operations and strategic priorities, further emphasizing that CA arises not only from risk awareness but also from the strategic utilization of organizational resources.

The fifth hypothesis, which tested the moderating effect of IC on the link between RA and CA, was also found to be valid, showing that IC enhances the impact of RA on competitive outcomes. Firms possessing greater capabilities for innovation are more capable of converting resources assigned to them into new products, processes, and services that distinguish them in competitive markets, as the DCT predicts (Teece et al., 1997). This result suggests that RA, as critical as it is, is inadequate to provide maximum CA unless supported by the ability to innovate and modify resources to accommodate shifting market conditions. The outcome also aligns with the knowledge-based perspective, which emphasizes that the efficient integration of knowledge and innovation capabilities enables businesses to utilize resources more effectively and achieve enduring differentiation (Wang and Zhang, 2025). A good innovation capability enables Shanghai SMEs to transform human and financial resources distributed through ERM-influenced plans into competitive products, thereby enhancing their adaptability to market changes and customer demands. In total, this research provides evidence for the mutually reinforcing and interdependent functions of IC, RA, and ERM in supporting CA.

All the tested hypotheses empirically support the idea that strategic risk management can considerably enhance organizational performance in conjunction with innovation and overt resource allocation. The research supports the notion that IC enhances

the effects of strategic resource use, that ERM directly improves competitive position, and that ERM indirectly affects competitiveness through RA. Taken together, these findings strengthen the theoretical foundations informing the research, highlighting that sustainable CA arises from the synergy of efficient risk management practices, resource optimization, and innovative capacity. By emphasizing these interdependencies, the study offers an integrated perspective by directly linking how recognizing these connections enables medium-sized firms in Shanghai to navigate uncertainty, effectively leverage internal resources, and thereby maintain a strong, differentiated market position in the long term.

6. CONCLUSION

This paper examines the relationships between ERM, RA, IC, and CA in medium-sized manufacturing firms in Shanghai, using empirical evidence and conceptual insights. The results highlight the importance of risk management processes in decision-making, showing that ERM affects CA both directly and through RA. Furthermore, IC reinforced the impact of RA towards CA, highlighting the need for companies to develop adaptive and innovative capabilities along with efficient resource deployment. The findings empirically support central theoretical frameworks such as the RBV and DCT by demonstrating how persistent CA arises through the juxtaposition of valuable internal processes, effective resource use, and the ability to respond with innovation to changing market conditions. In practice, the research offers recommendations to China's SME managers on how to strategically apply ERM, efficiently deploy resources, and cultivate innovation to ensure resilience and differentiation in competitive settings. While acknowledging the study's methodological and contextual limitations, the study contributes to both academic knowledge and managerial practice by clarifying the mechanisms by which risk management and organizational capability intersect to promote sustainable performance. This provides a platform upon which future work can build and extend into other sectors and geographies.

6.1. Implications

The findings from this research offer valuable insights for managers and decision-makers in medium-sized manufacturing companies in Shanghai. A key point is that ERM plays a crucial role in managing uncertainties and also helps guide RA decisions to enhance competitive positioning. Managers are advised to incorporate ERM into their strategic planning cycles to determine key areas where resources should be allocated, including innovation, capability building, and operational effectiveness, thereby ensuring that investments yield maximum value. The findings also underscore the importance of innovation ability as a variable that enhances the effect of resource deployment on performance, indicating that companies should invest in building innovative processes, integrating knowledge, and adopting technology to maximize the advantages of resource deployment. Additionally, the research provides direction to SMEs in highly competitive and dynamic contexts, demonstrating that the simultaneous application of ERM, strategic resource management, and innovation can enhance adaptability, responsiveness to market needs, and long-term sustainability. Practically, these insights can inform training programs for managers, internal resource planning frameworks, and policies aimed at fostering innovation and risk-informed decision-making, enabling SMEs to achieve resilience and maintain a competitive edge in the Shanghai industrial ecosystem.

By incorporating ERM, RA, and IC into a single conceptual model to describe CA in SMEs, this research makes a theoretical contribution to the knowledge base. By illustrating that ERM constitutes a feasible organizational capability that should be applied through RA to deliver long-term performance outcomes, the research extends the Resource-Based View. The study further confirms the Dynamic Capabilities Theory ideas by demonstrating how innovation helps companies reassign resources and adapt to shifting external conditions, enhancing resource utilization in realizing CA. The research provides more nuanced insights into the mechanisms by which ERM impacts firm performance, experimentally testing mediation and moderation effects. It indicates that IC is a driver and RA is a mediator of this relationship. These findings contribute to theoretical insights into the interaction between risk management, resource utilization, and innovation within SMEs, especially in the context of developing countries like China, and provide a basis for further research to discern contextual and sectoral differences in the drivers of competitiveness.

6.2. Limitations and Future Directions

Several limitations to this study should be acknowledged, despite its valuable contributions. First, the research focused exclusively on medium-sized manufacturing enterprises in Shanghai, which may limit the generalizability of the findings to other regions, industries, or firm sizes within China or globally. By broadening the scope and coverage of inquiry, subsequent studies can overcome the limitations of the present work. To clarify the causal links between ERM, resource allocation, and innovation capacity, a longitudinal study could be conducted to directly observe how changes in one factor lead to changes in others and ultimately result in superior competitiveness over time. To further increase generalizability and investigate differences in context, researchers might also plan to involve other industries and geographic regions in China or other emerging markets. Subsequent studies can add other variables, including organizational culture, leadership, market volatility, or regulatory issues, to specifically investigate their causative effects on the ERM-RA performance link. In addition, qualitative techniques like case studies or interviews can supplement quantitative findings by demystifying the mechanisms by which managers apply ERM practices and disburse funds to improve competitiveness. Lastly, studies can examine how sustainability initiatives and ICTs serve as moderators or mediators of the environmental effects, explicating the way in which they modify the causal mechanisms connecting ERM and current business strategies with IC to increase SME competitiveness.

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