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Research paper

A Conceptual Framework for SME Growth in China Based on Strategic Resources, Capabilities, and Sustainability

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Abstract

The sustainable growth of Small and Medium-sized Enterprises (SMEs) is central to economic resilience and inclusive development. In China, government-led initiatives have spurred the expansion of business incubation institutions to support entrepreneurship and innovation. However, existing studies have not sufficiently examined how resource-based mechanisms within incubation models affect SME development. This conceptual paper proposes an integrated framework grounded in the Resource-Based View (RBV), Dynamic Capabilities Theory, and the Natural Resource-Based View (NRBV) to explore the relationship between incubation services, resource orchestration, and SME performance. The study identifies key internal and external resources, such as financial, human, technical, and sustainability-oriented capabilities, that influence incubator effectiveness. It highlights the importance of strategic resource alignment, capability development, and environmental adaptation in supporting SME competitiveness. The framework also considers contextual factors such as regional disparities and sector-specific needs, which may moderate the effectiveness of incubation efforts. By situating the discussion within China's evolving innovation ecosystem, particularly in regions like Fujian Province, the study contributes to theory-building in incubation research and informs the design of more effective and context-responsive incubation strategies. The framework serves as a foundation for future empirical research aimed at enhancing the long-term impact of incubation models on SME innovation, sustainability practices, and strategic growth.

Keywords: *SMEs; Innovation Incubation; Resource-Based View; Incubation Model; Sustainable Development; China; VRIN Framework.*

1. Introduction

Economic development in both advanced and emerging economies is closely tied to enterprises that create jobs, generate innovation, and promote regional diversification. Among these, Small and Medium-sized Enterprises (SMEs) occupy a particularly important place because they sustain competitiveness and enable inclusive growth. Globally, SMEs account for more than 90 percent of businesses and employ over half of the labor force. In China, their impact is even more pronounced, contributing roughly 60 percent of the national GDP and nearly 80 percent of urban employment (World Bank, 2022).

To strengthen this role, the Chinese government launched the "Mass Entrepreneurship and Innovation" initiative in 2014. The policy aimed to encourage grassroots innovation, ease entry barriers, and create supportive institutional frameworks for entrepreneurship. One direct outcome has been the rapid expansion of incubators across the country. By 2022, China had more than 11,800 incubators offering services that include infrastructure, seed funding, mentoring, and access to technology platforms (World Bank, 2017).

However, the effectiveness of these incubators has not been uniform. While some have successfully nurtured high-growth firms in sectors such as digital technology, others provide little beyond basic administrative functions. This uneven performance has raised questions about the strategic role of incubators in the SME ecosystem. Past research notes that it is not merely the presence of physical facilities or financial assistance that drives outcomes, but rather the incubator's ability to coordinate and deliver resources in ways that create long-term value (ICSIN, 2020; Huang & Ichikohji, 2024).

The Resource-Based View (RBV) offers a theoretical basis for examining this challenge. As first advanced by Barney (1991), RBV argues that firms achieve sustained competitive advantage when they acquire resources that are valuable, rare, inimitable, and non-substitutable (VRIN). This framework has been widely applied in studies of entrepreneurship, technology management, and innovation. Within the incubation context, RBV highlights how resource access and deployment can shape SME outcomes. For example, incubators may be assessed on their ability to help firms obtain VRIN resources such as specialized knowledge, innovation capacity, and strategic networks (van Rijnsoever & Eveleens, 2021).

Recent evidence further underscores the importance of intangible resources. Mentorship, networking opportunities, and access to venture capital are consistently associated with greater innovation and faster commercialization among Chinese SMEs (Ni & Wang, 2025; Hu & Dumay, 2023). Incubators that also foster peer learning, inter-firm collaboration, and absorptive capacity tend to produce firms that are

more resilient and adaptive (Kennett et al., 2020). These findings suggest that the incubator's role extends beyond service provision to include resource orchestration for strategic advantage.

China's incubation landscape itself is diverse. Government-supported science parks, university-affiliated incubators, and private accelerators provide different service mixes and target different types of firms. Yet the literature on comparative effectiveness across these models remains thin. Most available studies are descriptive or survey-based and lack strong theoretical grounding, leaving open the question of why certain models succeed in building sustainable SMEs while others do not (Tang et al., 2019).

Regional disparities add another dimension to this issue. Provinces along the coast, such as Guangdong, Jiangsu, and Fujian, enjoy stronger infrastructure, higher levels of foreign investment, and more robust university–industry linkages, leading to more advanced incubation ecosystems. By contrast, interior provinces often contend with institutional barriers, limited resources, and lower absorptive capacities among SMEs. Understanding how local conditions interact with incubation strategies requires more context-sensitive research (Tang et al., 2019).

Fujian province provides a particularly relevant setting for such analysis. With industries rooted in electronics, textiles, and food processing, as well as a growing cross-border e-commerce sector tied to the Maritime Silk Road, Fujian illustrates the intersection of traditional and emerging markets. The province now hosts more than 200 incubators and innovation hubs, including the Fuzhou High-Tech Industrial Park and the Xiamen Torch Development Zone, both of which specialize in advanced manufacturing and technology transfer (Fujian Provincial Bureau of Statistics, 2023). These developments underline why Fujian serves as a valuable case for studying incubation and SME growth.

As a coastal province with deep manufacturing traditions, Fujian has invested heavily in innovation-led development. Supported by both provincial and national policy frameworks, the region has established multiple technology parks, incubators, and innovation zones. Examining incubation in Fujian, therefore, offers insights into how regional ecosystems influence SME trajectories, particularly in relation to resource integration and cross-sector collaboration.

Sustainability has become an additional priority in this landscape. With China's carbon neutrality pledge and its 14th Five-Year Plan emphasizing green growth, SMEs are now expected to incorporate environmental goals into their strategies. This shift places incubators under increasing pressure to help firms adopt clean technologies, improve energy efficiency, and align with circular economy practices. Yet, despite these policy drivers, the integration of environmental, social, and governance (ESG) principles into incubation remains limited, and empirical research on how incubators embed sustainability is still emerging (Wang et al., 2020).

These dynamics highlight the need for a fresh approach to studying incubation in China. Extending the RBV to include institutional linkages and external networks provides a robust framework for doing so. Conceptualizing incubators as platforms that transform general resources into strategic capabilities allows for a better understanding of their role in SME development. This perspective is also consistent with national priorities relating to innovation, upgrading, and environmental responsibility.

In this light, the present paper proposes a conceptual framework that links incubation models with resource-based theory and regional economic dynamics. The framework emphasizes the importance of aligning internal and external resources, fostering collaboration among stakeholders, and promoting strategic learning. Its purpose is to inform empirical research, guide incubation policy, and contribute to wider debates on entrepreneurship and sustainable development in emerging economies.

2. Problem Statement

China's commitment to promoting entrepreneurship has led to a significant increase in the number of business incubators nationwide. These institutions play a central role in supporting SMEs by providing essential resources such as workspace, advisory services, funding access, and connections to innovation networks. While their presence has expanded notably in recent years, evaluations of their actual contribution to long-term SME success reveal mixed results. Several studies indicate that many incubators operate with limited effectiveness, highlighting the need to strengthen the quality and relevance of support mechanisms offered to small enterprises (Bonfanti et al., 2025; Hong & Lu, 2016).

Many incubation institutions continue to focus on offering tangible support such as office space, administrative assistance, and subsidies. Although these inputs are necessary for early-stage enterprises, they are insufficient to drive long-term growth or competitiveness in dynamic markets. Studies suggest that intangible resources, including entrepreneurial mentoring, access to innovation networks, and financial capital, are more critical to SME success (Pattanasak et al., 2022; Breu & Kanbach, 2025). The Resource-Based View (RBV), a widely adopted theory in strategic management, provides a useful framework for analyzing how incubators can help SMEs build sustained competitive advantages through access to resources that are valuable, rare, inimitable, and non-substitutable (Barney, 1991).

Despite the relevance of RBV, its application within the context of SME incubation in China remains underdeveloped. There is limited research that integrates resource-based theory with incubation strategies in a structured and regionally grounded way. Most available studies rely on descriptive case analyses and fail to offer theoretically informed models that explain how incubators facilitate the strategic acquisition and deployment of resources by SMEs (Bruneel et al., 2012). Moreover, regional economic structures play a significant role in determining the success of incubation systems. For instance, Fujian Province exhibits distinct industrial specializations and policy environments compared to inland regions. The absence of region-specific incubation studies limits our ability to generalize or replicate incubation strategies across varying local contexts (Yuan et al., 2022).

Another underexplored area concerns the integration of sustainability into the incubation process. While China is increasingly emphasizing sustainable development and green innovation in policy discourse, little is known about how incubators contribute to advancing environmental and social responsibility among SMEs. Preliminary evidence suggests that incubators could act as facilitators of sustainable business practices by embedding green innovation, resource efficiency, and environmental awareness into their support services (Rodrigues & Franco, 2023). However, there remains a significant conceptual gap in understanding how such practices are being implemented or institutionalized. These issues collectively point to a lack of a comprehensive, theoretically grounded framework for understanding the role of incubation models in resource orchestration and sustainable SME development within China's entrepreneurial ecosystem.

3. Research Objectives

This study seeks to propose the conceptual and empirical gaps outlined above by developing a resource-based framework to better understand the function of innovative incubation models in supporting SME growth. The specific objectives of the study are as follows:

1) To examine how incubators configure and deliver internal and external resources that exhibit the characteristics defined by the Resource-Based View, particularly those that are valuable, rare, inimitable, and non-substitutable.

2) To examine how different incubation models influence innovation and performance outcomes among SMEs in the regional context of Fujian Province.
3) To assess the extent to which sustainability-oriented capabilities and practices are integrated into current incubation models in China, and their relevance to long-term SME development.

4. Literature Review

4.1. The Strategic Role of SMEs in China's Innovation Ecosystem

As key contributors to China's economic structure, SMEs are now facing increasing pressure to adapt to shifting market demands and technological changes (China Daily, 2025). This has led to growing interest in improving policy frameworks that not only support business creation but also enhance the innovation capacity of existing firms. Recent initiatives have focused on improving the quality of support systems, including better coordination among incubators, academic institutions, and industry partners to facilitate more effective knowledge exchange and resource utilization (Zhou et al., 2023). Despite this support, SMEs face structural constraints, such as limited access to innovation resources, weak market positioning, and low survival rates. These limitations underline the importance of strategically designed support structures such as incubators to close capability gaps and enhance SME competitiveness in both domestic and global markets.

4.2. From Service Provision to Strategic Resource Facilitation: Reframing The Incubator

Traditional conceptions of business incubators have emphasized their role as physical infrastructure providers offering space, administrative services, and limited training (Bruneel et al., 2012). However, recent literature positions incubators as strategic intermediaries within entrepreneurial ecosystems. They are increasingly seen as platforms that orchestrate a variety of resources, from financial capital and legal services to mentoring, innovation tools, and institutional legitimacy (Bergek & Norrman, 2008). This transition implies a need for incubators to evolve from static service providers into dynamic systems capable of configuring and delivering firm-specific strategic value.

This study extends Bergek and Norrman's (2008) "best practice" framework by integrating RBV, DC, and NRBV perspectives, moving beyond service provision to emphasize sustainability-oriented resource transformation. Recent studies reinforce this view. Bonfanti et al. (2025) highlight sustainability-driven incubation, Breu and Kanbach (2025) emphasize strategic management of incubator resources, and Ni and Wang (2025) show how dynamic capabilities shape SME outcomes. Moreover, these developments align with national policy frameworks such as China's 14th Five-Year Plan, which prioritizes innovation-driven development and sustainability integration (State Council of China, 2021). Together, these insights confirm the explanatory power of an integrated RBV–DC–NRBV approach within the Chinese context.

Empirical studies by Bruneel et al. (2012) and Ayatse et al. (2017) confirm that incubators offering integrated support services generate more positive performance outcomes than those relying on traditional service models. However, much of this literature remains descriptive, focusing on short-term firm-level metrics without embedding the analysis in theoretical frameworks like the RBV. This gap calls for a conceptual lens that explains how incubators enable firms to acquire and transform strategic resources. In the Chinese context, this transformation is evident in the proliferation of hybrid incubation models that integrate public and private actors. These include university-affiliated incubators, government-supported science parks, and venture capital-led accelerators (Gao & Hu, 2017). While the number of incubators has grown substantially, outcomes remain uneven, largely due to variations in their ability to match services to the evolving needs of SMEs. A more robust theoretical framework is needed to assess how incubators create, transfer, and align resources in ways that sustain competitive advantage.

4.3. Resource-Based View (RBV) and The Incubation Process

The RBV provides a well-established framework for understanding how firms derive competitive advantage from their resource configurations (Barney, 1991). Central to RBV is the assertion that sustained performance depends on the acquisition and deployment of resources that are valuable, rare, inimitable, and non-substitutable (VRIN). For SMEs, especially in transitional economies, incubators play a pivotal role in helping firms access VRIN-type resources that would otherwise be inaccessible due to financial or institutional constraints (Zhang, 2024). Applying RBV to the incubation process involves recognizing incubators not merely as external support entities but as co-creators of SME resource portfolios. This reframing invites a more interactive view, where incubators engage in resource orchestration, facilitating not only access to resources but also learning, integration, and recombination (Sirmon et al., 2007). The incubator becomes a site of capability building through which firms learn to mobilize, deploy, and protect strategic assets.

Prior studies, such as those by van Rijnsoever & Eveleens (2021) and Eveleens et al. (2017), demonstrate that incubators enhance firm learning and innovation performance, but few explicitly link these outcomes to VRIN resource formation. Additionally, the role of incubators in enabling SMEs to adapt to fast-changing environments remains insufficiently explored. RBV has limitations in explaining how resource value evolves and how resources are configured within dynamic environments. To address these gaps, scholars have integrated dynamic capabilities theory, emphasizing the role of learning, adaptation, and reconfiguration in sustaining advantage (Borch & Madsen, 2007). In the incubation setting, this perspective aligns with empirical evidence showing that SME success depends not only on what resources are provided, but on how firms are enabled to absorb and exploit them (Kennett et al., 2020).

4.4. Regional Context and The Configuration of Incubation Models

Incubation outcomes are significantly shaped by the broader regional economic structures and institutional contexts in which incubators operate. In China, provinces such as Fujian, Guangdong, and Zhejiang possess distinctive advantages such as robust industrial clusters, export-oriented infrastructure, and strong innovation linkages. These contextual factors influence both the demand for incubation services and the form those services must take. As noted by Zhang et al. (2021), incubators embedded in high-capacity regions often benefit from access to research universities, local government support, and established financing mechanisms.

Empirical evidence from Xiao & North (2017) illustrates that SMEs in innovation-intensive regions gain greater benefits from tailored incubator support programs, particularly those emphasizing industry-specific mentoring and internationalization. Conversely, incubators in peripheral regions tend to operate in institutional voids, lacking access to networks, skilled talent, and policy support. This results in highly uneven performance across the national incubation system (Xiao & North, 2018).

To account for these disparities, researchers have advocated for regional adaptation of incubation models. Zhang et al. (2021) found that incubators responsive to local economic dynamics and SME capabilities had stronger long-term impacts on firm survival and market competitiveness. However, most studies stop short of theoretically articulating how regional embeddedness interacts with incubator design and resource orchestration.

The RBV and institutional theory together offer a useful analytical lens to examine these differences. While RBV focuses on resource configuration at the firm level, institutional perspectives highlight the enabling or constraining role of the broader environment. A conceptual synthesis of these theories would allow for a better understanding of how incubators mediate between systemic structures and individual firm resource needs.

Fujian contributes approximately 4% of China's GDP and plays a key role in the Maritime Silk Road initiative, with strong emphasis on logistics, digital platforms, and international trade (World Bank, 2022). The province has invested heavily in specialized incubators that promote clean energy technologies, cross-border digital trade, and high-value manufacturing. Compared to inland regions, Fujian benefits from its coastal advantage and international exposure, yet faces the challenge of balancing global competitiveness with inclusive SME development. This dual positioning reinforces the importance of tailoring incubation strategies to both local and national priorities.

4.5. Sustainability as A Strategic Resource in SME Development

China's growing commitment to sustainability, particularly through initiatives such as the "Dual Carbon" goals, has increased pressure on SMEs to align with environmental and social standards. However, SMEs often lack the resources, expertise, and incentives to adopt sustainability practices independently. Incubators, in this context, can serve as vital enablers by embedding sustainability-oriented capabilities into their support offerings. Natural Resource-Based View (NRBV) extends the traditional RBV by considering environmental capabilities such as pollution prevention, eco-design, and sustainability leadership as potential sources of competitive advantage (Hart, 1995). These capabilities, if properly developed, can become VRIN resources, enhancing firms' reputations, compliance readiness, and stakeholder trust. Although this theoretical link is well-established, the application of NRBV in the context of SME incubation remains underexplored.

Sohu et al. (2024) point out that only a limited number of Chinese incubators offer structured support in areas such as green innovation, circular economy training, or ESG integration. Moreover, studies such as Eveleens et al. (2017) observe that sustainability initiatives in incubators are often fragmented and externally imposed, rather than being embedded into strategic development pathways. Despite these gaps, some emerging models offer promising insights. For instance, Duan & Xia (2022) examined green incubators in Jiangsu province and found that firms receiving environmental management training and clean technology support showed significantly higher innovation and export performance. These findings suggest that sustainability, when treated as a strategic resource, enhances both market competitiveness and legitimacy.

Incubators can operationalize sustainability by embedding training programs on carbon accounting, renewable energy adoption, and ESG reporting guidance (Duan & Xia, 2022). Pilot "green innovation labs" have demonstrated how SMEs can adopt clean technologies while aligning with China's 14th Five-Year Plan and long-term carbon neutrality target for 2060 (State Council of China, 2021). These examples provide concrete pathways through which incubators can incorporate sustainability into their strategic models. Therefore, integrating NRBV into the conceptual framing of SME incubation adds an important dimension to resource-based analysis. It expands the scope of incubator support to include not only economic and innovation capabilities, but also environmental and social value creation.

4.6. Toward an Integrated Theoretical Perspective

The preceding review indicates that existing research on incubation, while rich in empirical insight, lacks a unifying conceptual framework that explains how strategic resources are configured, adapted, and embedded through incubation processes. The integration of the RBV, dynamic capabilities theory, and the NRBV offers a promising pathway for addressing this gap. The RBV provides the foundational logic for understanding how incubators can help firms access and develop VRIN resources. Dynamic capabilities theory adds depth by emphasizing the importance of learning, coordination, and adaptation, particularly relevant in rapidly changing environments. NRBV broadens this focus by highlighting sustainability as a strategic capability, not merely a regulatory or ethical concern. Together, these perspectives support a more comprehensive view of incubation as a resource orchestration system shaped by regional institutions, sectoral characteristics, and evolving development priorities. This theoretical synthesis creates the basis for a new conceptual model that can guide both empirical research and practical incubation strategies focused on long-term SME resilience and sustainability.

5. Conceptual Framework

The conceptual framework presented in this study integrates three foundational theoretical lenses: the RBV, the Dynamic Capabilities Theory, and NRBV. These perspectives collectively offer a multidimensional understanding of how innovative incubation models contribute to the growth, competitiveness, and sustainability of SMEs in China. By synthesizing these theories, the framework illustrates the mechanisms through which incubators serve as both providers of external resources and enablers of internal capability development. Furthermore, the framework incorporates contextual moderating variables that may influence the relationship between incubation services and SME performance outcomes. This integrative approach provides a platform for theoretical exploration and practical implementation.

At the core of the framework lies the role of business incubators as strategic resource facilitators. In line with RBV, incubators provide access to resources that are valuable, rare, inimitable, and non-substitutable (Barney, 1991). These resources may include mentorship, technical knowledge, legal advisory, investor connections, and brand legitimacy. However, access alone is not sufficient. Drawing on the dynamic capabilities perspective, the framework emphasizes the importance of firms' ability to integrate, reconfigure, and upgrade these resources to respond to changing market and institutional conditions. In parallel, sustainability is treated as a strategic capability under the NRBV (Hart, 1995).

Given China's evolving green policy environment, incubators are envisioned as vehicles that help embed environmental and social capabilities within SMEs. These may take the form of eco-innovation training, ESG compliance mechanisms, and sustainability reporting tools, all of which contribute to enhanced legitimacy and long-term viability. The framework also recognizes that the influence of incubation models is not uniform across all settings. Regional economic disparities, incubator typologies, and sector-specific requirements introduce variation in outcomes. In developed regions, resource orchestration may prioritize advanced technological innovation and internationalization, whereas in developing areas, emphasis may be placed on basic entrepreneurial support and institutional capacity building. These moderating variables enrich the explanatory power of the framework.

5.1. Resource-Based View (RBV)

According to the RBV, competitive advantage is achieved by possessing and effectively managing resources that are valuable, rare, inimitable, and non-substitutable (Barney, 1991). This view emphasizes the internal strengths of a firm, and in the context of business incubation, it helps explain how incubators contribute to the development of SME capabilities by providing access to essential resources that would otherwise be unavailable or difficult to acquire. In this study, four categories of resources are emphasized under the RBV perspective.

5.1.1. Financial Resources

Incubators often provide direct funding support in the form of seed capital, grants, or subsidized services. They also facilitate access to venture capital networks and offer financial planning assistance. Financial support is a critical enabler for SMEs at their early stages, allowing them to invest in product development and market expansion (Latip et al., 2025).

5.1.2. Human Resources

Through mentorship programs, training workshops, and strategic guidance, incubators supply SMEs with valuable human capital. Mentors and advisors often possess specialized industry experience and managerial knowledge that are essential for shaping a firm's strategic direction and operational efficiency (Assenova, 2020).

5.1.3. Technical Resources

Incubators typically provide access to research and development infrastructure, prototyping laboratories, and technical consulting. These facilities are especially important for SMEs engaged in high-tech sectors or product innovation, where early access to technical expertise can accelerate development cycles (Bruneel et al., 2012).

5.1.4. Network-Based Resources

Successful incubation also depends on building strategic alliances. Incubators facilitate this through curated networking events, partnerships with universities and industries, and connections to investors and customers. These network resources enhance legitimacy and market reach, both of which are essential for firm survival and growth (Eveleens et al., 2017).

5.2. Dynamic Capabilities Theory

While RBV highlights the importance of resource possession, it does not adequately explain how firms adapt to rapidly changing environments. The Dynamic Capabilities Theory complements RBV by focusing on a firm's capacity to integrate, reconfigure, and renew resources in response to market and institutional shifts (Taghizadeh et al., 2024). In the context of incubators, this theory helps clarify how SMEs convert static resources into dynamic performance capabilities. Three major components of dynamic capabilities are discussed in this framework.

5.2.1. Learning Mechanisms

These mechanisms include structured mentorship, experiential learning, and iterative feedback processes that help SMEs absorb new knowledge. Incubators often facilitate continuous learning through expert panels, problem-solving sessions, and hands-on activities that help entrepreneurs refine their business models (Assenova, 2020).

5.2.2. Strategic Reconfiguration

This refers to a firm's ability to restructure its resource base and align it with new opportunities or threats. Incubators may support this capability by offering scenario planning tools, pivoting strategies, and market analysis support. Such services are crucial when SMEs must adapt their products or services to meet emerging demands or overcome constraints (Edoun et al., 2022).

5.2.3. Coordination Support

Effective coordination involves aligning internal functions and decision-making processes with external requirements. Incubators enhance coordination through standardized operating procedures, performance monitoring systems, and cross-functional training (Wu et al., 2021). These tools help SMEs manage complexity and ensure strategic coherence across different business activities.

5.3. Natural Resource-Based View (NRBV)

The NRBV extends RBV by incorporating environmental and social dimensions into the concept of strategic resources (Hart, 1995). In an era where sustainability is both a market and policy priority, incubators play a pivotal role in equipping SMEs with capabilities that align with ESG objectives. Key dimensions of NRBV in this framework include:-

5.3.1. Green Innovation Training

Many incubators now offer specialized training programs focused on sustainable product design, life-cycle assessment, and resource efficiency. These initiatives help SMEs integrate eco-friendly practices from an early stage, contributing to long-term sustainability and regulatory compliance (Rodrigues & Franco, 2023).

5.3.2. ESG Readiness

Incubators facilitate ESG integration by providing templates, guidelines, and auditing tools that help SMEs prepare for investor scrutiny and public accountability. This is particularly relevant in the Chinese context, where government policies are increasingly linking financial incentives to ESG performance (Wu et al., 2021).

5.3.3. Sustainability Tools

Incubators may also provide software and systems for carbon tracking, energy monitoring, and sustainability reporting. These tools not only support compliance but also enhance firm reputation and stakeholder engagement (Belloum & Khemili, 2024).

5.4. Moderating Variables

While the above mechanisms outline how incubators support SME development, the actual outcomes are not uniform across contexts. Several external factors may moderate the effectiveness of incubation interventions. These moderating variables help explain why some SMEs benefit more than others under similar incubation settings.

5.4.1. Regional Economic Context

China's regional heterogeneity affects the availability of infrastructure, talent, and institutional support. In economically developed regions such as the Yangtze River Delta, incubators may emphasize advanced technology and internationalization. In contrast, incubators in less developed provinces may focus on basic entrepreneurial skills and capacity building. Understanding regional differences is crucial for designing context-sensitive incubation policies (Wang et al., 2020).

5.4.2. Type of Incubator

Incubators vary in ownership, governance, and strategic orientation. Government-sponsored incubators often prioritize public policy goals such as employment generation and rural development. University-affiliated incubators may emphasize innovation and commercialization, while private incubators focus on financial returns and scalability. These variations influence the kind of support offered and the types of SMEs that benefit most (Bruneel et al., 2012).

5.4.3. Industry Sector of SMEs

Sector-specific requirements also moderate incubation effectiveness. For instance, SMEs in biotechnology or clean technology require intensive research and development support and regulatory guidance. In contrast, digital service firms may need assistance in customer acquisition and platform scaling. Tailoring incubation strategies to industry-specific needs enhances both efficiency and relevance.
Figure 1 illustrates the conceptual framework. The framework illustrates how incubator resources (financial, human, technical, and network-based) contribute to SME outcomes through the development of dynamic capabilities (learning, reconfiguration, and coordination). Sustainability integration (green innovation, ESG readiness, and supportive tools) acts as a cross-cutting dimension. The effectiveness of these relationships is moderated by regional context, incubator type, and sectoral characteristics.

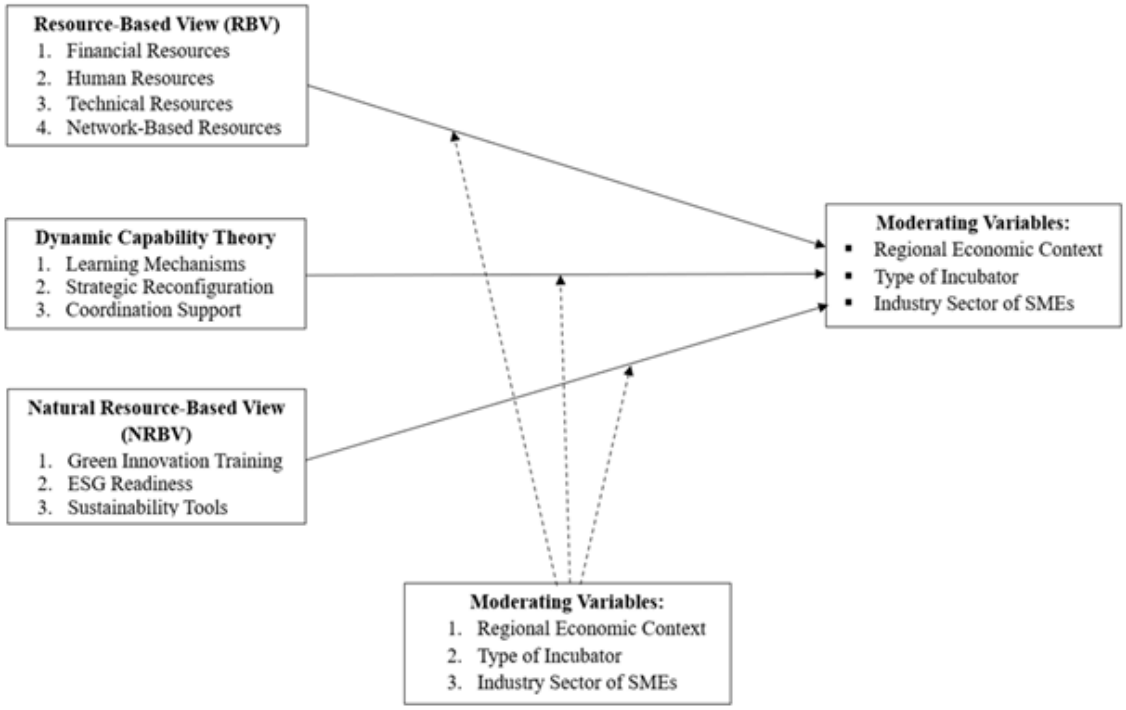

Fig. 1: Conceptual Framework of SME Growth in China's Incubation Ecosystem.

The conceptual framework posits that the effectiveness of innovative incubation models in fostering SME growth is shaped by three interrelated elements. First, incubators provide critical VRIN resources that support enterprise formation and expansion. Second, SMEs must develop dynamic capabilities to effectively deploy these resources in a changing environment. Third, sustainability-oriented resources introduced through incubation enhance long-term competitiveness in line with NRBV. Importantly, these relationships are moderated by regional, institutional, and industrial contexts, which should be considered in both research and practice. This comprehensive framework offers a robust foundation for empirical testing and contributes to both academic inquiry and policy formulation.

6. Research Methodology

As this study is conceptual in nature, no primary data collection or statistical analysis was conducted. Instead, the proposed framework was developed through a synthesis of established theoretical perspectives and an extensive review of relevant literature on small and medium-sized enterprise (SME) incubation, strategic resource management, and sustainability integration. The review involved peer-reviewed journal articles, policy reports, and empirical studies published primarily within the last ten years, with particular emphasis on research conducted in the Chinese context.

The theoretical foundation of this study draws on three key perspectives: the RBV, dynamic capabilities theory, and the NRBV. These theories were selected due to their relevance in explaining how firms develop, adapt, and sustain strategic advantages through resource orchestration, capability development, and environmental responsiveness. The integration of these perspectives allows for a comprehensive understanding of how incubators facilitate SME growth, particularly within rapidly evolving economic and sustainability landscapes. Based on the literature and the research objectives outlined in the earlier section, the following variables are proposed:

6.1. Independent Variables

1) Incubator resource configuration (financial, human, technical, network-based)
2) Dynamic capability facilitation (learning mechanisms, strategic reconfiguration, coordination support)
3) Sustainability-oriented incubation support (green innovation training, ESG readiness, environmental guidance)

6.2. Dependent Variable

SME Growth and Strategic Competitiveness (measured conceptually through innovation outcomes, market expansion, and long-term viability). The conceptual relationships among these variables are illustrated in the framework presented earlier. While the model is not tested empirically in this paper, it provides a basis for future quantitative and qualitative investigations.

6.3. Recommended Research Design

For empirical validation, covariance-based structural equation modeling (CB-SEM) is recommended because the proposed framework is theory-driven, integrating constructs from RBV, dynamic capabilities, and NRBV. CB-SEM allows for rigorous hypothesis testing and assessment of model fit, which is essential for confirmatory analysis (Hair et al., 2019). Nevertheless, in contexts where sample sizes are limited or data distributions deviate from normality, partial least squares SEM (PLS-SEM) could be employed as an alternative, particularly for exploratory testing or prediction-oriented objectives (Sarstedt et al., 2020). Based on the research objectives and framework, the following hypotheses are suggested for empirical testing:

Table 1: Hypotheses Statements

H1a:	Access to incubator-provided financial resources positively influences SME performance outcomes.
H1b:	Access to incubator-provided human resources positively influences SME performance outcomes.
H1c:	Access to incubator-provided technical resources positively influences SME performance outcomes.
H1d:	Access to incubator-provided network-based resources positively influences SME performance outcomes.
H2:	Dynamic capabilities mediate the relationship between incubator resources and SME performance outcomes.
H3a:	Sustainability-oriented training (e.g., green innovation workshops) positively influences SME innovation outcomes.
H3b:	ESG readiness embedded in incubator support positively influences SME institutional legitimacy.
H3c:	Access to sustainability tools (e.g., carbon accounting, renewable energy adoption) positively influences SMEs' long-term competitiveness.
H4:	Regional context (coastal vs. inland provinces) moderates the relationship between incubator resources and SME performance outcomes.
H5:	The type of incubator (government-supported, university-based, private, or hybrid) moderates the effectiveness of incubation practices on SME outcomes

To test these hypotheses, quantitative approaches such as structural equation modeling (SEM) can be applied to examine complex causal relationships among constructs, while multigroup analysis allows comparison across provinces, incubator types, or sectors. To complement quantitative findings, alternative designs such as case studies and mixed methods could be employed to triangulate results and provide deeper insights into context-specific mechanisms. Such an approach would ensure both generalizability and contextual richness, thereby strengthening the empirical foundation of the framework.

6.4. Target Respondents

The survey would target founders, senior managers, or innovation officers from SMEs that have participated in formal incubation programs in China. To ensure diversity and relevance, respondents should represent SMEs across various sectors, including technology, manufacturing, food and agribusiness, and green innovation industries. SMEs must have been enrolled in an incubator program for at least one year to ensure exposure to incubator services.

6.5. Incubator Criteria

Participating incubators must meet specific criteria, including formal registration as an incubation entity, active operation for more than three years, and provision of at least three types of support services (e.g., mentorship, financing access, or sustainability training). University-affiliated incubators, science parks, and private accelerators will be included to represent a range of incubation models in China.

6.6. Data Collection Method

The questionnaire could be distributed online via incubator networks, government SME support agencies, and professional associations. To increase response rates, cooperation letters and reminders will be used, and confidentiality assurances will be provided to participants.

6.7. Data analysis

1) Objective 1 (To examine how incubators facilitate access to internal and external VRIN resources): Structural Equation Modeling (SEM) will be used to analyze the relationships between incubator resource configuration and the development of firm-level capabilities.
2) Objective 2 (To explore the role of dynamic capabilities in mediating the relationship between incubation support and SME competitiveness): Mediation analysis within the SEM framework, or hierarchical regression, will be applied to test the mediating effect of dynamic capabilities.
3) Objective 3 (To assess how sustainability-oriented support contributes to long-term SME growth): Path analysis or multigroup SEM could be employed to examine the impact of sustainability-oriented services and compare variations across regions or sectors.

The moderating effects of regional characteristics or sector-specific factors may also be tested to refine the model's explanatory power and generalizability. In sum, the conceptual development in this paper rests on well-established theoretical models and a thematically structured literature review. It is supported by a proposed empirical research design to guide future validation and ensure that the framework remains grounded in both academic and practical relevance.

7. Discussion

This study examines how innovative incubation models can influence the strategic growth and competitiveness of SMEs in China. Drawing from the RBV, dynamic capabilities theory, and the NRBV, the discussion highlights the mechanisms through which incubators can enable firms to access, integrate, and sustain strategic resources while adapting to evolving sustainability demands. RBV offers a foundation to understand how incubators help SMEs gain a competitive advantage by facilitating access to resources that are valuable, rare, inimitable, and non-substitutable. Yet, possession of resources alone is insufficient. The theory of dynamic capabilities adds an important dimension by emphasizing the firm's ability to reconfigure and renew these resources in response to environmental changes. Incubators that embed learning, flexibility, and coordination into their support structures may, therefore, contribute not only to resource accumulation but also to long-term adaptability.

The integration of NRBV further extends this theoretical base by situating sustainability as a strategic imperative. Incubators that incorporate ESG-related guidance, green innovation training, and compliance support can foster environmentally responsible business practices among SMEs, which may, in turn, enhance their market positioning and institutional legitimacy. Overall, this study moves beyond the conventional understanding of incubation as administrative or infrastructure support. It positions incubators as strategic enablers capable of shaping SME capabilities, fostering innovation, and contributing to national sustainability goals. This broader interpretation encourages a more proactive and collaborative approach in designing incubation strategies, particularly within emerging economies like China.

This broader interpretation encourages a more proactive and collaborative approach in designing incubation strategies, particularly within emerging economies like China. Several barriers may constrain the application of the proposed framework. Institutional resistance to change, limited funding availability, and uneven enforcement of national policies can restrict incubators from fully embedding sustainability practices or advanced capability-building programs (Huang & Ichikohji, 2024).

8. Expected Results

The anticipated results of this research align with the three core research objectives. First, with respect to the role of incubators in supporting access to VRIN resources, it is expected that SMEs engaged with resource-rich incubators will report enhanced strategic readiness, innovation outputs, and competitive differentiation. These firms are more likely to demonstrate resilience in challenging market conditions due to their improved internal resource base and external linkages.

Second, the inclusion of dynamic capabilities as a mediating construct is expected to reveal that SMEs benefit not just from the resources themselves, but from the capabilities they develop to effectively reconfigure and deploy those resources. Learning mechanisms, mentoring, and coordination support offered by incubators are likely to foster better integration of support services into the operational routines of SMEs, leading to sustainable performance gains.

Third, the emphasis on sustainability-oriented incubation is expected to yield positive relationships between incubator support and SMEs' engagement in green product development, regulatory compliance, and ESG reporting. SMEs benefiting from such support may be better positioned to meet domestic and international sustainability standards, attract investment, and enhance brand credibility. In combination, the framework suggests that a well-rounded incubation model, one that integrates strategic resources, dynamic learning processes, and sustainability practices, can significantly improve SME outcomes. This reinforces the argument that incubators must evolve into facilitators of transformation, not just enablers of entry.

9. Implications

9.1. Theoretical Implications

This study advances the literature by integrating RBV, dynamic capabilities, and NRBV into a single conceptual model. This theoretical synthesis helps clarify how incubation models can influence firm competitiveness in complex environments. It also responds to existing calls for broader frameworks that capture the interaction between strategic resource management and sustainability imperatives within SME ecosystems.

9.2. Policy Implications

The findings offer guidance to policymakers aiming to improve the effectiveness of incubation programs. Incubation policy should expand beyond infrastructural support to encompass sustainability training, ESG integration, and sector-specific mentorship. Policymakers can also use the framework to guide investments in regional innovation ecosystems, especially in areas undergoing industrial transformation or targeted for green economic development.

9.3. Practical Implications

Incubator managers can use the proposed framework as a diagnostic tool to assess service coverage and strategic alignment. By focusing on the development of capabilities and sustainability literacy, incubators can improve their long-term impact on SME growth. For entrepreneurs, the model offers a blueprint to evaluate incubation partnerships and align support offerings with business development goals, particularly in sectors such as technology, agriculture, and clean manufacturing. Altogether, the study offers useful direction for theory-building, policy refinement, and incubation practice design, with the goal of strengthening SME competitiveness through more comprehensive and strategically structured support systems.

10. Conclusion

This paper has explored how innovative incubation models, supported by theoretical insights from the RBV, dynamic capabilities, and the NRBV, can contribute to the sustainable growth of SMEs in China. The study proposes a conceptual framework that integrates strategic resource access, capability development, and sustainability alignment as central components of effective incubation. While the model has not yet been empirically tested, it offers a strong basis for future research and practice.

The proposed framework contributes conceptually by extending the role of incubators from service providers to strategic partners that can facilitate long-term competitiveness. It also underscores the importance of embedding sustainability into the incubation process, reflecting the growing expectations placed on SMEs to contribute to environmental and social goals. In light of the rapidly evolving economic landscape and rising sustainability pressures, the model presented here serves as a timely and relevant guide for rethinking incubation practices.

Future empirical studies are needed to validate the model and refine its components across diverse sectors and regional contexts. By doing so, researchers and practitioners can better understand how incubation strategies can be optimized to build more resilient, innovative, and sustainable enterprises. In addition, future studies should test the framework across different sectors, such as technology-intensive versus manufacturing SMEs, and across regions, such as coastal and inland provinces (Hu & Dumay, 2023). Comparative research would highlight how institutional environments shape incubation effectiveness.

11. Authors' contributions

The authors contributed to this manuscript as follows: Chen, Y., was responsible for the conceptualization, drafting, analysis, and visualization of the manuscript. Latip, M., supervised the research process and contributed to the conceptualization, review and editing, project administration, and correspondence. Sharkawi, I., participated in the review and editing, validation of the theoretical framework, and refinement of the manuscript structure. Mat Jusoh, N.H., contributed to the literature review and assisted with editing and formatting. All authors have read and approved the final version of the manuscript.

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Conflicts of Interest

The authors declare no conflicts of interest.

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