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Lock-in Breakthrough of SRDI Enterprises: A Literature Review and Research Agenda

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ABSTRACT

Lock-in breakthrough is a core issue in the growth research of SRDI (Specialized, Refined, Distinctive, and Innovative) enterprises. This paper reviews the evolutionary trajectory of this field. It refines the concept of lock-in, distinguishes it from low-end lock-in and specialization trap, and analyzes its dimensional composition. It then constructs an integrative framework following the "antecedents—paths—effects" paradigm. The review finds that existing research has moved from innovation search to resource reconstruction and further to strategic response typologies, but remains focused on internal mechanisms. External structural conditions, especially the dual-chain fit between industrial chain and innovation chain, are still under-theorized. Future research should deepen the construct of dual-chain fit, develop measurement scales, expand research contexts, enrich methods, and explore mechanisms from multiple theoretical perspectives.

KEYWORDS

SRDI enterprises; Lock-in breakthrough; Dual-chain integration; Literature review; Research agenda

1. INTRODUCTION

Cultivating SRDI enterprises has become a national strategy in China. By the end of 2025, China had cultivated more than 140,000 SRDI SMEs and over 17,600 national-level "Little Giant" enterprises (Wu et al., 2026). These firms account for only 3.5% of industrial SMEs above designated size but contribute 9.6% of revenue and 13.7% of profits. They have become a key force in strengthening industrial chains and enhancing supply chain resilience.

However, while SRDI enterprises build competitive advantages in niche markets, they also face high dependence on those markets. From 2020 to 2024, the average share of sales from the top five customers of A-share listed SRDI firms rose from 39.4% to 41.8% (Wu et al., 2026). Xu et al. (2023) describe this as "specialization lock-in": limited niche market capacity means that while firms concentrate resources to build advantages, they also encounter a market ceiling. Lock-in breakthrough has therefore become a core issue in SRDI growth research.

Research on lock-in breakthrough has grown rapidly. Xu et al. (2023) established an innovation search framework. Hai and Lin (2026) advanced the analysis to resource reconstruction. Feng et al. (2025) proposed a typology of lock-in and strategic responses. Wu et al. (2026) revealed a double-helix growth mechanism from the perspective of exaptive innovation. These studies have deepened the field, but they remain largely focused on internal mechanisms. The structural position of firms in industrial and innovation chains has not been treated as an independent contextual variable. This review aims to clarify the evolutionary logic, identify the gap, and propose future directions.

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Overall, as an emerging topic, lock-in breakthrough has a relatively short research history. Existing review studies in the SRDI field focus more on broad themes such as enterprise growth and cultivation policies, and their discussion of lock-in breakthrough is fragmented. An integrative framework synthesizing domestic and international research at different levels has not yet been formed. Problems such as unclear evolutionary trajectory, inconsistent conceptual definitions, and unsystematic distribution of findings have hindered deeper understanding of the construction, evolution, and driving processes of lock-in breakthrough.

This paper first reviews existing literature and depicts the knowledge map of lock-in breakthrough research. Second, it systematically reviews the conceptual connotations of lock-in breakthrough, distinguishes it from low-end lock-in and specialization trap, and analyzes its path compositions. Subsequently, based on the "antecedents—paths—effects" paradigm, it constructs an integrative research framework. Finally, it provides an outlook on future research topics.

2. LITERATURE SEARCH AND RESEARCH OVERVIEW

2.1. Literature Search

This paper uses a systematic literature review method. English literature was searched in the WOS Core Collection using keywords such as "Specialized SME," "SRDI Enterprise," "Niche Market Lock-in," and "Specialization Trap." Chinese literature was searched in CNKI CSSCI using "SRDI," "lock-in breakthrough," and "specialization lock-in." After limiting research fields, literature types, and journal levels, 78 articles were obtained. Further screening by title, abstract, and conclusions reduced the sample to 31 important articles. Journal sources include Management World, Foreign Economics & Management, Research and Development Management, and Nankai Business Review.

2.2. Publication Trends

The total number of publications in this field has increased year by year. 2023 is an important node. After 2023, research growth accelerated. Considering publication lag, the field is expected to continue expanding. Overall, however, research on lock-in breakthrough remains relatively "thin" and has substantial potential.

2.3. Evolutionary Trajectory

The field has experienced two periods.

(1) Germination period (2023–2024). Xu et al. (2023) marked the entry of lock-in breakthrough into mainstream research. This period focused on how lock-in breakthrough drives growth, servitization, and value co-creation. The resource-based view and dynamic capability theory were introduced. Case studies dominated. Hot keywords included "innovation search," "resource leverage," "specialization lock-in," and "SRDI."

(2) Growth period (2025–present). Research topics diversified. Hai and Lin (2026) emphasized differentiated reconstruction of attention and non-attention resources. Feng et al. (2025) proposed "advantage erosion" and "advantage constraint" lock-in types and "leap—extension" responses. Wu et al. (2026) revealed the "technology-focused development—exaptive innovation—scenario gradient climbing" mechanism. Dynamic QCA and longitudinal case tracking also gained ground. Hot keywords include "resource reconstruction," "configuration analysis," "double-helix growth," and "scenario gradient climbing."

3. CONCEPTUAL CONNOTATION AND DIMENSIONAL COMPOSITION

3.1. Conceptual Connotation

Lock-in breakthrough emerged with research on SRDI enterprise growth. It draws on dynamic capability and the resource-based view (Zeng et al., 2024). Existing definitions focus on three perspectives: market space expansion, technological path breakthrough, and resource foundation reconstruction.

From market space expansion, lock-in breakthrough is the ability to identify and utilize new market opportunities (Wu A., et al., 2024; Feng et al., 2025). This perspective highlights market resource integration but neglects strategic transformation in structure and process.

From technological path breakthrough, it is the skill, talent, and expertise in developing and managing technological trajectories (Hai & Lin, 2026). This view focuses on technology as a fundamental instrument but underplays broader organizational change.

From resource foundation reconstruction, it is the ability to respond rapidly to environmental change (Hai & Lin, 2026). This perspective emphasizes dynamic adaptation and integrates resource integration with technological enabling.

This paper defines enterprise lock-in breakthrough as: the capability of firms to rapidly adapt to dynamic environmental changes and maintain sustainable competitive advantage by using digital technologies to broadly integrate digital and other organizational resources in the value network, thereby promoting systematic strategic transformation and realizing growth value creation.

The concept has four basic characteristics: (1) construction subjects include suppliers, users, government, and other stakeholders; (2) the resource base includes digital and other organizational resources; (3) the main task is systematic strategic transformation and growth value creation; (4) the core goal is sustainable competitive advantage in a complex and uncertain environment.

3.2. Distinction from Low-end Lock-in

Low-end lock-in describes the trap of developing countries in low value-added or low-technology segments of the global value chain (Lü et al., 2018). Compared with macro-level low-end lock-in, micro-level lock-in breakthrough has changed value creation for individuals, organizations, and society (Shao et al., 2026). Both concepts share resource-based and dynamic capability foundations. They differ in generation context, demand characteristics, technological composition, and main task. Low-end lock-in represents passive dependence; lock-in breakthrough represents active breakthrough. The former relies on traditional IT such as ERP and CRM; the latter emphasizes IoT, big data, cloud computing, and AI (Hai & Lin, 2026). The former depends on internal IT investment; the latter requires broader stakeholder participation (Wang Q., et al., 2020; Zhang Y., et al., 2022). The former focuses on IT empowerment; the latter aims at digital enabling and customer-centric digital innovation (Khin & Ho, 2019; Chen et al., 2020).

3.3. Distinction from Specialization Trap

Specialization trap is the capability to assemble, integrate, and deploy specific big data resources (Wu et al., 2026). Both concepts emphasize dynamic capability and rapid response to environmental change (Xu et al., 2023; Hai & Lin, 2026). They differ in technological composition, technological role, demand goals, management focus, and key activities. Specialization trap relies on big data technologies and acts as a "decision supporter." Lock-in breakthrough transcends a single technology category and can act as a "decision maker" in some contexts (Hai & Lin, 2026). The former focuses on data asset value; the latter involves data, platforms, value networks, and digital ecosystems. The

former optimizes resource allocation; the latter also transforms governance structures and reshapes value creation mechanisms (Fang & Ye, 2026; Wu et al., 2026).

3.4. Dimensional Composition

There is no consensus on dimensions. Some treat lock-in breakthrough as unidimensional; most agree it is multidimensional. Xu et al. (2023) identified combinatorial, heterogeneous, and cooperative search. Hai and Lin (2026) identified attention and non-attention resource reconstruction. Feng et al. (2025) proposed leapfrogging and extension responses. Wu et al. (2026) proposed technology-focused development, scenario gradient climbing, and exaptive innovation. Fang and Ye (2026) identified key module breakthrough, overall architecture rule reconstruction, and module-architecture coupling upgrade.

Overall, innovation search, resource reconstruction, and scenario climbing have received the most attention. However, many studies fail to systematically identify the multidimensional structure and neglect the external ecological network. Most studies use case methods. Reliability and universality still need large-sample empirical testing. Future research should refine dimensions in different contexts and build measurement models.

4. INTEGRATIVE RESEARCH FRAMEWORK

4.1. Antecedents

Environmental level. Environmental change drives firms to develop lock-in breakthrough (Xu et al., 2023). Government policy can enhance it (Wang & Xiao, 2026). Market standards can hinder it (Li et al., 2024). Environmental change is often treated only as background. Future research should examine regulatory, normative, and cognitive institutional elements from an institutional theory perspective.

Organizational level. Organizational inertia has an inverted U-shaped relationship with lock-in breakthrough (Yi et al., 2022). Resource orchestration, learning, unlearning, and product innovation drive dynamic evolution (Su et al., 2022; Li & Wang, 2022). Digital strategy guides and supports capability building (Wu et al., 2026). Strategy and capability must be aligned; otherwise their advantages erode (Hai & Lin, 2026).

Technological level. Digital technology is the core element (Hai & Lin, 2026), including cloud computing, blockchain, big data, and platforms.

Individual level. The Chief Digital Officer (CDO) is a key promoter (Tumbas et al., 2017). Entrepreneurial management capability is indispensable (Li et al., 2018). Labor skill levels can constrain application (Harris et al., 2022).

Existing research focuses mainly on organizational factors. Individual and environmental factors are under-explored. Future research should examine multi-factor interactions and substitution effects.

4.2. Mediating Mechanisms

Two streams exist. First, mediators between lock-in breakthrough and outcomes. Wu et al. (2026) found that capability asymmetry strengthens buyer information dependence. Feng et al. (2025) demonstrated the mediating role of exaptive innovation. Fang and Ye (2026) showed that lock-in breakthrough affects knowledge accumulation and breakthrough innovation. Second, lock-in breakthrough as a mediator. It can transform resources into competitive advantage under high strategic flexibility (Wu et al., 2026). Xu et al. (2023) found that product innovation affects servitization only through lock-in breakthrough. Yi et al. (2022) found a mediating effect between organizational inertia and business model innovation.

Research on mediating mechanisms remains scarce. Most studies examine single factors. Organizational-level factors dominate; individual-level factors are neglected.

4.3. Moderating Mechanisms

Two categories exist. First, lock-in breakthrough as a moderator. Xu et al. (2023) found it positively moderates social media and radical innovation. Wang and Xiao (2026) found it moderates internationalization value-added behavior and competitive advantage. Second, moderators between lock-in breakthrough and outcomes. Wu et al. (2026) found strategic flexibility positively moderates its impact. Fang and Ye (2026) found knowledge integration capability moderates the relationship with breakthrough innovation performance. Enterprise and industry types also matter (Wang H., et al., 2022).

Boundary conditions remain under-examined. Future research should explore development stages, regional culture, and stakeholder perspectives.

4.4. Effects

Organizational behavior. Lock-in breakthrough affects business model innovation, digital transformation, and open innovation (Wu et al., 2026; Hai & Lin, 2026). It also affects servitization, value co-creation, and crisis response (Xu et al., 2023; Fang & Ye, 2026).

Organizational capability. It is crucial for managerial improvisation (Wu et al., 2026) and service innovation capability (Xu et al., 2023).

Organizational performance. It improves digital export performance, financial performance, and innovation performance (Wu et al., 2026; Xu et al., 2023; Hai & Lin, 2026). Moderate development is beneficial; excessive development can create innovation burdens.

Existing research focuses on organizational-level outcomes. Ecological and social outcomes are under-explored. Qualitative methods dominate. Large-sample empirical testing is needed. Direct effects are emphasized; mechanisms remain under-theorized.

5. CONCLUSIONS AND FUTURE PROSPECTS

5.1. Conclusions

First, lock-in breakthrough is an emerging and rapidly developing subfield. It has moved from germination to growth. The germination period focused on growth, servitization, and value co-creation. The growth period has deepened dimensional and evolutionary analysis and introduced QCA and other methods.

Second, definitions remain inconsistent. Existing research defines lock-in breakthrough from market space, technological path, and resource reconstruction perspectives. Dimensional classifications differ. Measurement scales are underdeveloped. Quantitative exploration is limited.

Third, antecedents focus on organizational factors. Individual and environmental factors are under-explored. Effects focus on direct organizational outcomes. Mediating and moderating mechanisms are under-researched. Contextual factors in construction and functioning need more attention.

5.2. Future Prospects

First, strengthen conceptual understanding and scale development. Future research should integrate multiple theoretical perspectives and develop an easy-to-operate, universally applicable, and widely recognized measurement scale with large-sample reliability and validity testing.

Second, explore antecedents and interactions. Future research should examine institutional, geographical, and cultural factors, managerial traits, social capital, and multi-level interactions.

Third, expand mechanisms and effects. Future research should explore individual, ecological, and social outcomes, including employee entrepreneurship, leadership, organizational learning, social responsibility, and ecosystem governance. Longitudinal designs are needed to capture dynamic effects.

Fourth, enrich boundary conditions. Future research should examine enterprise types, development stages, regional culture, and environmental moderators.

Fifth, adopt diverse methods. Future research should combine large-sample empirical studies, longitudinal case studies, QCA, behavioral experiments, and simulation.

Sixth, expand China-context research. Future research should examine policy opportunity identification, paternalistic and authoritarian leadership, and international expansion under economic globalization challenges.

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