

# A Review of Ambidextrous Innovation Research

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## Abstract

Under the background of innovation-oriented development strategies, innovation is a crucial resource for enterprises to maintain competitive advantages. Exploratory and exploitative innovations, serving as pivotal means to bolster corporate renewal capabilities and enhance external adaptability, have increasingly garnered attention from both academic and practical realms. This paper conducts a comprehensive literature review of Ambidextrous Innovation, encompassing both domestic and international perspectives. From a theoretical standpoint, it systematically organizes the antecedents, mediators, moderators, and consequences of Ambidextrous Innovation, thereby constructing a structured framework of existing research findings in this domain. This framework serves as a valuable reference for future studies in the field.

## Keywords

Ambidextrous Innovation, Exploratory Innovation, Exploitative Innovation, Performance

## 1. Introduction

In the current context of high-quality development strategies, the significance of innovation in enterprise growth has continued to escalate (Wang et al., 2024). As the primary agents of technological innovation, enterprises must fully harness available innovation resources, undertake targeted innovation endeavors, and expedite breakthroughs in pivotal core technologies. In this scenario, Ambidextrous Innovation activities present a dual advantage: not only securing short-term gains and profits through exploitative innovation but also fostering core technological competencies through exploratory innovation, thereby ensuring the long-term sustainable development of enterprises and elevating the value chain to a superior level. However, a prevalent observation in Chinese enterprises is that the majority of innovation outcomes are exploitative in nature, with exploratory innovations constituting a relatively minor proportion (Gao & Liu, 2016). The challenge for

corporate R&D management lies in effectively leveraging both internal and external knowledge to enhance the output of exploratory innovation and ensure the successful implementation of Ambidextrous Innovation strategies (Tang et al., 2021). Organizational Ambidextrous Innovation stands as an efficacious means to bolster competitiveness, and the path to achieving Ambidextrous Innovation remains a valuable subject of inquiry within organizational theory (Zang & Li, 2017). Given the profound importance of Ambidextrous Innovation in both theoretical and practical contexts, the academic community has engaged in extensive discourse on this topic. While there exists a considerable body of research findings on Ambidextrous Innovation strategies, these are largely confined to the micro level, focusing on specific subsets of the Ambidextrous Innovation research domain. Comprehensive analyses and critiques of Ambidextrous Innovation are comparatively scarce. Consequently, summarizing the research dynamics within the field of Ambidextrous Innovation is of paramount importance for fostering its in-depth and multi-layered development. This paper not only aids in comprehending the theoretical findings of Ambidextrous Innovation but also offers a valuable reference for future research endeavors in this area.

## 2. Conceptualization and Measurement

### 2.1. Conceptualization

The term “duality” originates from Latin, denoting the dexterity and versatility of both hands in activity and skill. Subsequently, this notion was introduced into the realm of management research, initially signifying an enterprise’s pursuit of exploratory innovation alongside the utilization of existing resources. March (1991) was the first to incorporate duality into the study of learning, delineating the concepts of “exploration” and “exploitation,” thereby establishing the foundational framework for duality theory. Since then, exploration and exploitation have emerged as the predominant paradigm in dual research within academia. Exploratory activities are directed towards uncovering new resources and opportunities, encompassing discovery, research, and innovation, whereas exploitative activities are focused on enhancing existing capabilities, including refinement, efficiency, and implementation.

A multitude of studies have defined duality from the perspective of organizational learning, emphasizing two distinct learning methodologies: the continuous improvement of existing technologies and knowledge while concurrently exploring new technologies and knowledge. He and Wong (2004) define exploration in terms of technological innovation as the endeavor to enter new product and market domains, and exploitation as the technological innovation aimed at refining existing products and markets. Jansen et al. (2008) posits that exploratory innovation constitutes breakthrough innovation, catering to the needs of new market customers, whereas exploitative innovation represents incremental innovation, tailored to meet the demands of existing market customers, augmenting existing knowledge and technology, and expanding current products and services. Build-

ing upon March and others, [Benner and Tushman \(2003\)](#) explicitly categorize exploratory and exploitative innovation as two critical and distinct approaches to innovation, differentiated by two dimensions: the extent of deviation from the current knowledge or technology trajectory and the degree of divergence from existing customer segmentation.

## 2.2. Measurement

Regarding the measurement of exploratory and exploitative innovation, most scholars adhere to the findings of He and Wong, as well as Jansen. [He and Wong \(2004\)](#) propose that the achievement of Ambidextrous Innovation, characterized by the simultaneous pursuit of exploratory and exploitative innovation, can be assessed using two criteria: firstly, an enterprise that scores high in both exploratory and exploitative innovation can be considered Ambidextrous, with the product of these two scores serving as a proxy variable for Ambidextrous Innovation. Secondly, the size of the absolute difference between the Exploration and Exploitation can be used as a criterion. An enterprise that balances these two aspects relatively evenly can be deemed Ambidextrous. Notably, even if an enterprise does not prioritize these two aspects significantly, it may still exhibit duality. Building upon the research of these scholars and considering the unique characteristics of Chinese enterprise practices, Li Jianli developed an 11-item Likert-5 scale, including six items for exploratory innovation, such as “consistently seeking out new technologies with development potential, actively exploring new markets, and frequently introducing new products/services or technologies from external sources,” and five items for exploitative innovation, including “striving to enhance the quality of existing products and services, consolidating and expanding the existing market scale, and providing additional services to existing customers” ([Li, 2009](#)).

## 3. Influencing Factors and Mechanisms of Ambidextrous Innovation

Upon reviewing the literature on Ambidextrous Innovation, this study systematically organizes its connotation, influencing factors, mediators, moderators, and consequences. Furthermore, it draws a theoretical integration framework of Ambidextrous Innovation for the existing literature, as shown in [Figure 1](#). Within academia, two predominant perspectives exist regarding Ambidextrous Innovation: the capability perspective and the behavior perspective. The former posits that Ambidextrous Innovation constitutes a dynamic capability ([O’Reilly & Tushman, 2008](#)), enabling enterprises to effectively transition between exploratory and exploitative innovations. Conversely, the behavior perspective views Ambidextrous Innovation as a behavioral activity ([Wang et al., 2019](#)), whereby enterprises, through the implementation of exploratory and exploitative innovation activities, not only enhance existing technologies and products to ensure organizational stability but also explore new possibilities to adapt to future environmental changes. By synthesizing these two perspectives, we observe that Ambidextrous

Innovation exhibits the following characteristics: firstly, it has a clear task, aiming to establish a dual ecological environment within the organization; secondly, it has a distinct goal, which is to enhance enterprises' environmental adaptability. However, both the capability and behavior perspectives focus solely on one aspect of Ambidextrous Innovation, failing to fully integrate its capabilities and behavioral functions.

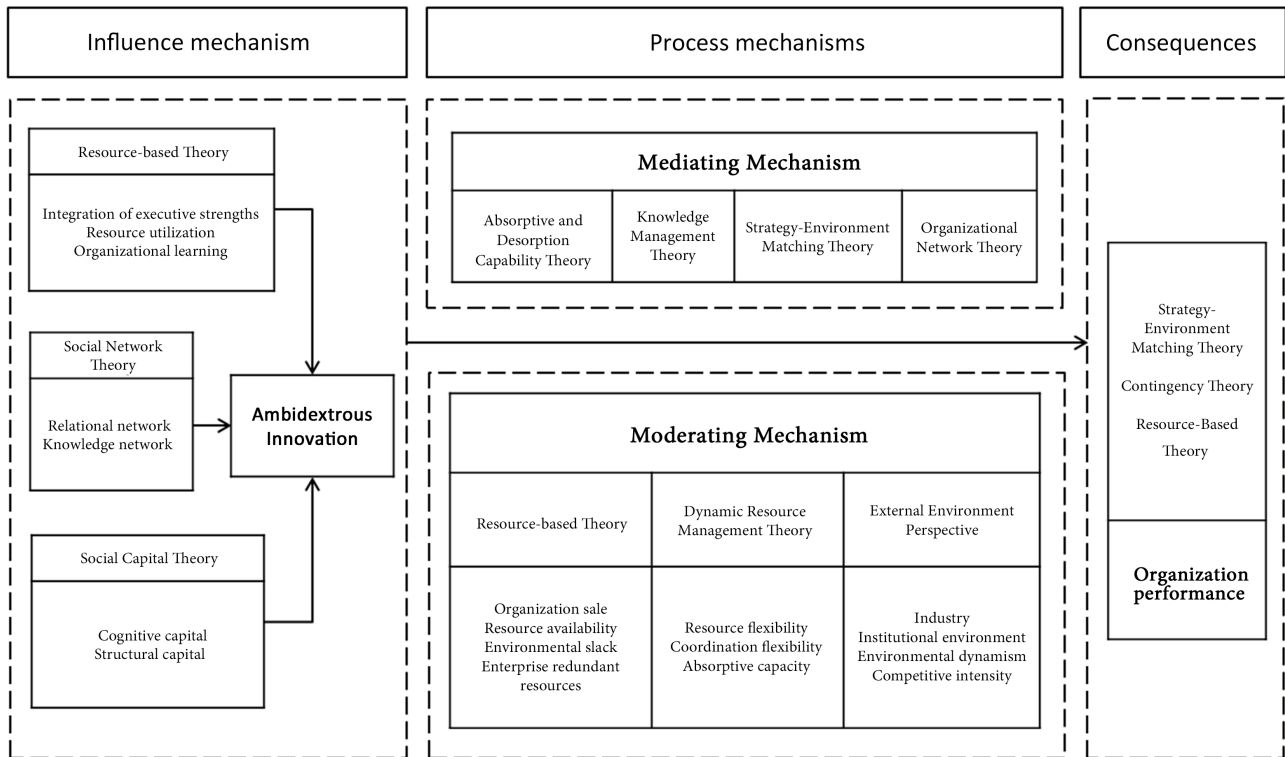


Figure 1. Theoretical integration framework.

### 3.1. Antecedent Research of Ambidextrous Innovation

Currently, a unified theoretical framework for the influencing factors of Ambidextrous Innovation remains elusive. This study endeavors to organize and analyze the antecedents of Ambidextrous Innovation by drawing insights from resource-based theory, social network theory, and social capital theory.

#### 1) Based on resource-based theory

Resource-based theory underscores the significance of organizations adapting to environmental changes by acquiring scarce, non-imitable, non-substitutable, and valuable resources to attain dual capabilities in exploratory and exploitative innovation, thereby fostering competitive advantages for enterprises. This study delves into three factors influencing Ambidextrous Innovation from the lens of resource-based theory: executive advantage integration, enterprise resource utilization, and organizational learning.

The management team serves as a potential resource for enterprises, capable of generating sustained competitive advantages. Executive advantage integration en-

capsulates the proficiency of senior managers in integrating advantageous resources. As vital human capital, corporate executives can harness their resource advantages and exhibit leadership traits, playing a pivotal role in fostering Ambidextrous Innovation within the organization. Smith (2006) contends that the executive team's strength lies in balancing exploratory and exploitative innovation as the organization ventures into unknown territories and taps into existing knowledge resources. Lubatkin et al. (2006) observed that collaborative synchronization, positive communication, and collective decision-making among executive teams are effective strategies to propel Ambidextrous Innovation, with behavioral integration among team members positively influencing the process.

Enterprise resource utilization encompasses enterprise capital, enterprise networks, and resource integration. Enterprise capital refers to the array of resources owned by the enterprise, including relational capital, where commercial and political connections can augment Ambidextrous Innovation (Dai et al., 2020). Enterprise networks also effectively catalyze Ambidextrous Innovation within the organization, with knowledge accumulation within the internal knowledge network having a positive impact on the process (Yang et al., 2017). Resource integration similarly fosters Ambidextrous Innovation, and the complementary assets of the enterprise can further propel the organization's Ambidextrous Innovation capabilities (Fu et al., 2015).

Enterprise knowledge and capabilities constitute unique resources, with learning being the fundamental avenue for acquiring these knowledge and capabilities. Organizational learning forms the bedrock and prerequisite for innovation, permeating the entire lifecycle of new product development and the introduction and application of novel technologies (Wang et al., 2023). Organizational learning can be categorized into exploratory learning and exploitative learning. Exploratory learning entails exploring diverse knowledge in uncharted territories, whereas exploitative learning focuses on refining and harnessing existing knowledge resources. Exploratory learning secures external novel resources, particularly tacit knowledge, aiding in promoting exploratory innovation. Conversely, exploitative learning fine-tunes existing knowledge, thereby enhancing exploitative innovation (Dai et al., 2020). These two forms of learning are complementary, facilitating the integration of internal and external organizational resources and directly accelerating Ambidextrous Innovation within the organization.

## 2) Based on Social Network Theory

Based on social network theory, several studies have categorized Ambidextrous Innovation research into two primary domains: relationship networks and knowledge networks. The former primarily focuses on internal and external organizational contexts, examining how various network attributes, such as centrality, structural holes within cooperative R&D networks, and relationship strength, influence Ambidextrous Innovation within enterprises (Wang et al., 2023). Conversely, the knowledge network approach initiates from a knowledge-centric perspective, investigating the distinct knowledge structure requirements for explora-

tory versus exploitative innovation. Findings from this perspective indicate that organizational forgetting and knowledge distribution play crucial roles in affecting the balance of dual learning in enterprises. By collaborating with other organizations and users, enterprises can enhance their knowledge base and navigate the tension between exploration and exploitation, ultimately achieving Ambidextrous Innovation.

### 3) Based on Social Capital Theory

Social capital theory, which serves as a widely adopted theoretical foundation in the realm of innovation, posits that innovation activities are constrained by individual capital. Furthermore, it highlights that diverse types of innovation activities necessitate varying knowledge and resources. Individuals possessing a greater variety of social capital, including cognitive capital and structural capital, are endowed with more pronounced innovative advantages compared to their peers. Such advantages are more conducive to the implementation of Ambidextrous Innovation (Cao et al., 2021).

## 3.2. Mediating Role of Ambidextrous Innovation

This study delves into the mediating mechanisms of Ambidextrous Innovation from two perspectives. Firstly, it examines the mediating role of antecedent variables in influencing Ambidextrous Innovation. Secondly, it utilizes Ambidextrous Innovation as a mediator to explore the impact of its antecedent variables on organizational performance. Xiao and Xie (2016) grounded in the theory of absorptive capacity, investigate the mediating effect of absorptive capacity on Ambidextrous Innovation across four dimensions: acquisition, digestion, transformation, and utilization. Their analysis focuses on three aspects: knowledge operation, dynamic capability, and organizational learning (Wang, 2019). Braojos et al. (2020) build on the study of desorption capacity, arguing that it facilitates the transfer of internal organizational knowledge to the external environment. The interplay between desorption and absorptive capacities forms a dual capability that aids enterprises in executing Ambidextrous Innovation. Jiang et al. (2020) drawing on knowledge management theory, explore the mediating effect of enterprise knowledge foundations, structures, accumulation, and integration on Ambidextrous Innovation. They emphasize that enterprise knowledge is dynamic, and the absorption and integration of knowledge can enhance the knowledge base, reconstruct the knowledge structure, and promote diversification, thereby fostering both exploitative and exploratory innovation (Xu et al., 2017). Han et al. (2020) based on the theory of strategic and environmental fit, employ exploratory innovation as a mediator to study the influence mechanism of entrepreneurial and employee orientations on exploratory innovation and innovation performance. Ren and Tong (2021) leveraging organizational network theory and the knowledge-based view, contend that Ambidextrous Innovation behavior serves as a mediator between knowledge network capability and organizational innovation.

### 3.3. The Mechanism of Ambidextrous Innovation on Performance

This study delves into the ramifications of Ambidextrous Innovation on enterprise performance, drawing insights from strategic and environmental matching theory, contingency theory, and resource-based theory. Ambidextrous Innovation facilitates enterprises in securing competitive advantages and achieving sustainable development through enhanced innovation performance. The core of exploratory and exploitative innovation lies in the modification of products, technologies, or markets. By engaging in technological innovation, new product development, and supply chain innovation, enterprises can effectively bolster their innovation capabilities, ultimately leading to improved performance.

Utilizing the framework of strategic and environmental matching theory, Han Chen examines the nexus between exploratory innovation and enterprise innovation performance, considering multiple strategic orientations (Han et al., 2020). From the contingency theory perspective, when the core variables of an enterprise align with the external environmental context, exploratory innovation exhibits a positive influence on enterprise performance (Zhang et al., 2016). When integrated with internationalization strategy theory, a congruence between an enterprise's internationalization strategy choice and organizational, strategic, and environmental factors fosters a favorable impact of Ambidextrous Innovation internationalization on innovation performance, with exploratory internationalization exerting a particularly notable effect (Wu & Chen, 2019).

Drawing on resource-based theory, both proactive and reactive knowledge searches empower enterprises to acquire external knowledge resources, thereby enriching the knowledge foundation upon which technological evolution hinges. Furthermore, Ambidextrous Innovation transforms cross-boundary knowledge searches into sustainable competitive advantages, augmenting enterprises' sustainable development performance. Yang et al. (2022) adopting an organizational learning perspective, posits that nascent enterprises adopting an Ambidextrous Innovation balance strategy can encourage a systematic consideration of the exclusivity and share ability of resources essential for incremental and breakthrough innovation activities. This approach aids in the more scientific allocation of scarce and redundant enterprise resources, actively coordinating the competitive dynamics of Ambidextrous Innovation and deeply exploring its synergistic potential. Consequently, by enhancing resource utilization and innovation efficiency, such strategies improve the performance of new enterprises.

### 3.4. The Moderating Mechanism of the Relationship between Ambidextrous Innovation and Performance

This paper delves further into the moderating mechanisms underlying the relationship between Ambidextrous Innovation and performance. Various factors, including the endowment of enterprise resources, resource management capabilities, the specific industry environment in which the enterprise operates, competitive intensity, organizational structure, and enterprise scale, are all poised to in-

fluence this relationship. The existing research on the moderating effects between Ambidextrous Innovation and performance can be categorized into the following types:

1) Moderating Mechanism Based on Resource-Based Theory

Exploratory and exploitative activities often give rise to conflicts and substitution issues, primarily due to their coexistence and the competition for organizational resources that ensues. Consequently, numerous studies have analyzed the process mechanisms influencing the relationship between Ambidextrous Innovation and performance from the perspective of resource-based theory. Key moderating variables considered in this context encompass organizational scale, resource availability, environmental slack, and enterprise redundant resources. When organizations possess a large scale and ample resources, they are better positioned to facilitate the coexistence and complementarity of exploratory and exploitative activities, leading to a positive correlation between Ambidextrous Innovation and performance (Lin et al., 2007). Environmental slack refers to the extent to which an organization can obtain resources from external sources; higher levels of environmental slack are associated with a more pronounced positive correlation between Ambidextrous Innovation and performance. Enterprise redundant resources represent significant endogenous factors for corporate growth. These resources include non-sedimentary redundant resources, which can be leveraged to address market competition and institutional pressures, thereby alleviating resource constraint pressures. Furthermore, non-sedimentary redundant resources influence the extent to which enterprises can access external knowledge resources, ultimately affecting the relationship between exploratory innovation and performance.

2) Moderating Mechanism Based on Dynamic Resource Management Theory

From the perspective of dynamic resource management, some scholars argue that an organization's construction, integration, and utilization of resources influence the relationship between Ambidextrous Innovation and performance. Strategic flexibility, which embodies the organization's dynamic resource management capability, has been examined in several studies regarding its impact on the relationship between dual innovation (exploratory and exploitative) and performance. These studies indicate that resource flexibility positively moderates the influence of the relative exploration dimension and interaction dimension of Ambidextrous Innovation on performance (Wei et al., 2014). Coordination flexibility, another dynamic capability, facilitates the coordination of resources within and across different departments, enhancing the complementary roles of exploration and exploitation. This capability has been found to have a positive moderating effect on the relationship between Ambidextrous Innovation and performance (Zhou & Wu, 2010). Absorptive capacity, defined as the organization's ability to acquire and utilize internal and external knowledge, both new and old, as well as technological resources, has also been studied in relation to dual innovation and performance. Research suggests that stronger absorptive capacity leads to higher

benefits derived from technological sources for enterprises (Rothaermel & Alexandre, 2009).

### 3) Moderating Mechanism Based on External Environment Perspective

Organizational innovation activities occur within a specific environment, where environmental changes, independent of enterprise innovation activities, exert a direct influence on innovation (Yang & Li, 2011). Consequently, the impact of external environmental factors on Ambidextrous Innovation within enterprises has garnered considerable attention from scholars in empirical research. From a contingency perspective, scholars have investigated which environmental factors within the enterprise's locale affect the mechanism through which Ambidextrous Innovation influences performance. Key moderating variables include industry sector, institutional environment, environmental dynamism, and competitive intensity. Firstly, research across various industries has been conducted. Cao et al. (2009) examined the high-tech industry and found a significant positive correlation between Ambidextrous Innovation and performance. He and Wong (2004) surveyed 206 manufacturing enterprises, revealing that both exploration and exploitation contribute positively to enhancing financial performance. Jansen et al. (2008) studied software enterprises and discovered a significant positive correlation between Ambidextrous Innovation and financial profit growth. Stettner and Lavie (2014) using data from the software industry, found that concurrent exploration and exploitation activities within the same organizational mode negatively impact performance, particularly in internal organizational modes and mergers and acquisitions. However, Ambidextrous Innovation across different modes promotes performance. Junni et al. (2013) employed the Meta-analysis method to compare the food, high-tech, and manufacturing industries, finding that inter-industry differences are not pronounced.

Secondly, organizational institutional theory suggests that the institutional environment influences private enterprises through government-business relations, where political connections affect corporate governance, production, and operations. High political connections impose greater legitimacy pressure on enterprises. This legitimacy pressure, stemming from the institutional environment, impacts the integration and application of enterprise resources, thereby influencing the level of investment in exploratory and exploitative innovation and, consequently, enterprise performance. Furthermore, environmental dynamism and competitive intensity are pivotal mechanisms influencing the relationship between Ambidextrous Innovation and enterprise performance. Environmental dynamism focuses on the rate and instability of environmental changes. Shen and Jiang (2019) argue that environmental dynamism encourages enterprises to engage in more technological exploration and change activities. Zhang et al. (2020) propose that, given bounded rationality, enterprises are more inclined to adopt conservative innovation strategies and reap benefits from exploitative innovation in highly dynamic environments. Additionally, the intensity of competition in the enterprise's environment necessitates further application of existing technology

to stabilize the market. To cope with fierce competition, continuous exploration of new markets and fields is essential, making the relationship between Ambidextrous Innovation and performance more evident.

## **4. Discussion**

### **4.1. Conclusion**

This paper comprehensively summarizes the research dynamics of Ambidextrous Innovation, both domestically and internationally. It defines and measures Ambidextrous Innovation, and theoretically examines its antecedents, mediators, moderators, and consequences. Furthermore, a research framework is developed based on existing findings. The research results indicate that antecedent studies on Ambidextrous Innovation predominantly explore its origins from the perspectives of resource-based theory, social network theory, and social capital theory. From the resource-based theory perspective, executive advantage integration, as a potential and sustainable competitive resource for enterprises, plays a pivotal role in fostering Ambidextrous Innovation within organizations. Factors such as enterprise capital, enterprise networks, and resource integration effectively propel Ambidextrous Innovation. Organizational learning is categorized into exploratory and exploitative learning. Exploratory learning aids in uncovering novel resources in unknown fields, thereby promoting exploratory innovation, while exploitative learning enhances and adapts existing resources, fostering exploitative innovation.

Drawing from social network theory, the impact of cooperative R&D network centrality and knowledge distribution on Ambidextrous Innovation is explored through the lenses of relationship networks and knowledge networks. In terms of social capital theory, individuals possessing abundant social capital, including cognitive and structural capital, are more conducive to implementing Ambidextrous Innovation. Regarding the realization path of Ambidextrous Innovation, existing research primarily focuses on the mediating mechanisms between antecedent variables and Ambidextrous Innovation, as well as Ambidextrous Innovation's role as a mediator variable. Theoretical perspectives include the theory of absorptive and desorption capacity, knowledge management theory, strategic and environmental matching theory, and organizational network theory. When examining the influence of Ambidextrous Innovation on organizational performance, antecedent studies analyze its impact from the perspectives of strategic and environmental matching theory, contingency theory, and others. Additionally, they explore the moderating mechanisms of organizational scale, environmental slack, enterprise redundant resources, strategic flexibility, absorptive capacity, institutional environment, and competitive intensity in the consequences of action. These explorations are grounded in resource-based theory, dynamic resource management theory, and external environment perspectives.

### **4.2. Research Limitations and Future Directions**

This paper focuses solely on performance as the primary analytical lens for exam-

ining the mechanisms underlying the consequences of Ambidextrous Innovation. The moderating mechanism discussed is likewise grounded in the relationship between Ambidextrous Innovation and performance. However, this focus does not encapsulate the entire spectrum of research on Ambidextrous Innovation within domestic and international contexts. The ramifications of Ambidextrous Innovation extend beyond performance to encompass enterprise innovation behavior, competitive advantage, competitive positioning, performance management, and other pertinent aspects. Future research endeavors can delve deeper and more comprehensively into the mechanisms involved, incorporating diverse theoretical perspectives to further refine and enhance the theoretical framework of the Ambidextrous Innovation system both domestically and internationally.

### Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

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