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International ambidexterity and innovation performance: The moderating role of the host country's institutional quality

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ABSTRACT

Organizational ambidexterity has been employed in the study of international business. Existing studies advocate an ambidextrous internationalization strategy for multinational enterprises in emerging markets (EM MNEs). However, the performance effect and moderating mechanism of international ambidexterity have not been fully explored yet. This study expands the combinative view of organizational learning and institutional perspective, and examines the impact and moderating mechanism of international ambidexterity on firm performance based on 387 Chinese multinationals. This study adopts the questionnaire survey method to obtain the research sample and tests the relationships among variables through multiple regression analysis. The conclusions indicate that both the balanced and combined dimensions of international ambidexterity positively impact innovation performance. Additionally, EM MNEs operating in countries with well-developed institutions are more innovative than those operating in countries with underdeveloped institutions. This study not only promotes the development of internationalization and institutional theories but also guides managers of EM MNEs to formulate internationalization strategies.

Introduction

Multinational enterprises in emerging markets (EM MNEs) actively operate overseas and consider transnational operations an important opportunity to access knowledge and an effective means of organizational learning (Xie & Li, 2018). Remarkably, in today's business environment, an increasing number of companies view internationalization as a requirement—not as an option—for successful competition (Öberg & Alexander, 2019; Oliva et al., 2022). The objective of internationalization of EM MNEs is to become more innovative (Elia et al., 2020). However, findings regarding the relationship between internationalization and innovation are inconsistent (Du et al., 2022). Does an internationalization strategy truly promote innovation performance? Therefore, conducting an in-depth study of the relationship between internationalization strategies and innovation performance is necessary.

China is a critical and typical region for investigating the internationalization of emerging economies because of the tremendous global integration speed of Chinese multinational enterprises (Luo & Zhang, 2016). As members of emerging markets, an increasing number of Chinese enterprises are involved in overseas mergers and acquisitions (Wu & Chen, 2017). According to the statistical communiqué of the People's Republic of China on 2020 foreign direct investment (FDI), China has catapulted into world's third place of non-financial FDI, with an estimated US$110.2 billion venturing into countries with heterogeneous institutional environments.[1] Hence, this study selected Chinese multinational corporations as the research objects. Chinese companies, which are increasingly expand-

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ing into international markets, consider internationalization as a springboard to secure strategic resources and mitigate domestic institutional factors and market constraints (Ciasullo et al., 2020). However, the innovation performance brought about by internationalization presents a completely different picture: Numerous Chinese multinational enterprises have improved their position in the global battle for technology through international operations (Yang et al., 2022), while a large number of companies have failed to implement internationalization strategies (Wei et al., 2016). Consequently, deeply studying the relationship between internationalization strategies and innovation performance becomes necessary.

Expanding the resource-based view, initial research on international performance considered enterprises' internationalization—the main goal of which is obtaining resources that the home region lacks from elsewhere—as the fundamental driving force for enterprises to gain competitive advantage and improve their innovation performance (Barney, 1991). However, subsequent scholars have found translating resource advantage into innovation performance difficult. Organizational learning, technological competence, and absorptive capacity are requisites for such translation (Navas-Alemán, 2011). Dynamic capability theory provides a suitable theoretical basis to analyze the internationalization process from the perspective of enterprise resources and capabilities (Prange & Verdier, 2011). While expanding their international activities, companies accumulate competencies relevant to multiple countries, such as the ability to learn, acculturate, or respond quickly to change (Sapienza et al., 2006). Although the theoretical basis differs, these past studies have largely regarded internationalization as a whole development strategy and have empirically tested the relationship between internationalization and performance (Parida et al., 2016; Belderbos et al., 2015; Elia et al., 2020). Considerable attention has been paid to the distinct antecedents and motivations of EM MNEs' internationalization and performance implications of different entry modes (Chen, 2014). The literature has ignored how much returns can be generated through overseas operations; existing studies on the relationship between internationalization and innovation have yielded inconsistent results (Du et al., 2022). The success of a transnational enterprise in international competition depends not only on its existing capabilities and resource reserves but also on its ability to continuously redistribution and adapt to international contingencies (Kogut & Singh, 1988; Li, 1995). Contemporary multinational enterprises compete in a complex competitive environment. Their strategic decisions demonstrate "international ambidexterity," which allows them to constantly integrate exploitative and exploratory strategies during internationalization and obtain a more favorable competitive position (Hsu et al., 2013). The concept of "international ambidexterity" was proposed by Prange & Verdier (2011) based on the exploration and exploitation paradigm. They emphasized that different types of capabilities support different internationalization processes, and the dynamic capability associated with international ambidexterity is called "third-order dynamic internationalization capability." "Ambidexterity" refers to the combination of efficiency-oriented and innovation-oriented exploration for short-term success and long-term survival (Clauss et al., 2021). International ambidexterity reflects the ongoing interaction between exploratory and exploitative internationalization processes (Prange & Verdier, 2011). Internationalizing firms can enter foreign markets through different entry modes, including direct exports, licensing, greenfield joint ventures, and full acquisitions (Lin & Ho, 2019). The internationalization strategy of emerging economies represented by China presents a differentiated choice of exploitation and exploration (Buckley & Tian, 2017; Maria et al., 2020). Drawing on the international paths taken by Chinese multinational enterprises, ambidexterity is emerging as a valuable perspective to reflect the internal differences in a company's internationalization strategy and represent the state of EM MNEs (Wu & Chen, 2020). Some researchers have emphasized that EM MNEs should conduct simultaneous exploratory and exploitative activities in foreign markets to realize short-term survival and longer-term growth (Luo & Rui, 2009; Prange & Verdier, 2011; Bandeira-de-Mello et al., 2016). Few studies have empirically tested the performance effect and moderating conditions of international ambidexterity, despite its significance in EM MNEs (Tamayo-Torres et al., 2017).

In addition to internationalization strategies, the level of institutional development in a host country may influence the relationship between international ambidexterity and innovation performance (Stoian & Mohr, 2016; Lynch & Jin, 2016). With the continuous development of economic globalization and convey of The Belt and Road Initiative, the location choice of Chinese multinational enterprises has developed from a single underdeveloped country to diversified developed countries (such as North America, Europe, and Japan; Minin et al., 2012; Yang et al., 2014; Amighini et al., 2015). However, although multinational enterprises may adopt similar internationalization strategies, their innovation performance may vary depending on the host country's environment (Tian et al., 2019; Huang & Lin, 2020). Existing research focuses on corporate heterogeneity's impact on the innovation performance of internationalization strategies, emphasizing the micro-level factors of the company in internationalization. However, present studies ignore the fact that the host country's institution system is also an important factor affecting internationalization performance (Purkayastha et al., 2017; Young et al., 2018). A country's institutional quality is mainly reflected in four aspects: static efficiency, dynamic efficiency, credibility, and predictability (Alonso & Garcimartín, 2013). A favorable institutional environment positively influences enterprises' tendency to invest in R&D and improves innovative public policies' effectiveness (Rodríguez-Pose & Di-Cataldo, 2014). In fact, EM MNEs engage in international operations to seek a host country for the development of multinational enterprises (Kiss et al., 2012; Iona et al., 2013). Therefore, the quality of the host country's institutions is a key factor in studying the relationship between internationalization strategy and innovation performance. Other related studies have posited that institutional factors impact international performance as intermediary or moderator variables (Aya et al., 2010; Araujo et al., 2016). However, these studies have not sufficiently focused on the role of institutional quality in the relationship between different internationalization strategies and innovation performance.

Considering the aforementioned gap in the literature, this study constructs a theoretical framework (Fig. 1) to illustrate and empirically test the impact of international ambidexterity on innovation performance from the perspective of organizational learning and institutional theory. Thereafter, it empirically examines the moderating effect of institutional quality in the host country on this relationship. Our research results have both theoretical and practical significance. First, this study combines the dual thinking of

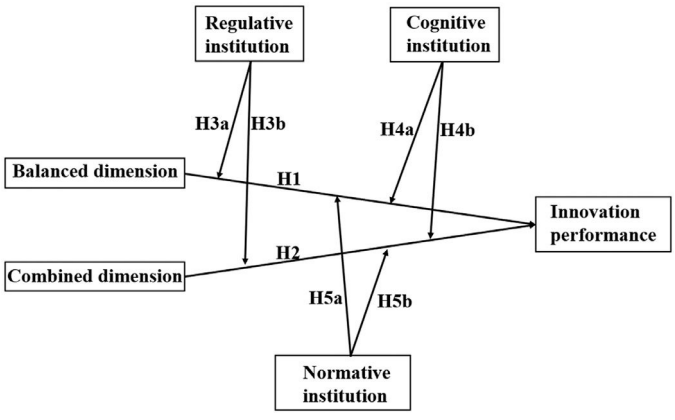

Fig. 1. Theoretical framework

organizational learning theory with the institutional view and introduces a new moderating variable—namely, the quality of the host country's institution. This variable expands the research horizon of institutional theory and the research boundary of internationalization theory. Second, this study focuses on the ambidextrous internationalization strategies of emerging market multinationals represented by China, which supplements traditional research in the field of international business. Previous studies have focused on the relationship between exploitative internationalization strategies and the innovation performance of multinational enterprises in developed economies. Finally, in the context of China, this study tests the validity of the proposition that the internal matching relationship between exploitative and exploratory internationalization affects innovation performance and improves the theoretical system of ambidextrous internationalization strategies.

The remainder of this paper is organized as follows. First, we introduce the theoretical basis of this study in the Literature Review section. We then construct the research framework and propose the research hypothesis. In the subsequent sections, we present the empirical research: We describe the data collection and variable measurement methods in the Methodology section, and we present the empirical analysis' results in the Results section. Finally, we discuss the research conclusions, theoretical contributions, and managerial implications derived from our findings, and highlight this study's limitations and possible future research opportunities.

Literature review

Organizational ambidexterity

The division and research of the concepts of exploration and exploitation can be traced back to the field of organizational learning (Ubeda-Garcia et al., 2021; Felipe et al., 2021). Organizational learning can be divided into exploratory and exploitative learning—based on the knowledge base and degree of innovation (March, 1991). Exploitation is possibly associated with the evaluation of current routines and their modifications or replacements. Exploitation is crucial for firms to build their competitive advantage by fully utilizing their existing competencies and learning from experience (Daniel et al., 1993). Additionally, exploitation may positively influence innovation development (Andriopoulos & Lewis, 2009). However, in highly volatile business environments, firms need to constantly search for new opportunities, which can improve their performance (Khan et al., 2019). Capabilities to exploit existing experiences may reduce incentives to seek new paradigms and knowledge (Manso, 2011). Thus, structural inertia resulting from excessive exploitation may reduce firms' capacity to adapt to future environmental changes and new opportunities (He & Wong, 2004). For several companies, especially emerging market multinationals, a mix of exploitative and exploratory internationalization is crucial for long-term success (Hsu et al., 2013). Exploration denotes firm activities associated with terms such as search, variation, risk-taking, experimentation, discovery, and innovation (Faizah et al., 2016). Given that organizations often recognize new opportunities and seek radical changes in the exploration process, these activities are often associated with long-term outcomes and significant risks (March, 1991).

Since studies on exploitation and exploration have grown rapidly, the relationship between the two opposing activities, which were believed to compete with each other for resources, has begun to be of interest in management and social science in recent decades. Conducting both exploitation and exploration can be beneficial for a firm's survival and prosperity, especially in a dynamic environment (Jin & Zhou, 2021). A one-sided allocation of available resources to exploration leads to a "failure trap" (Maria et al., 2020). Overemphasizing exploration and neglecting exploitation provides firms with a large amount of differentiated innovation knowledge and search costs, which leads to an overload of information processing and a reduction in innovation efficiency, ultimately causing innovation failure (Park & Meglio, 2019). By contrast, paying excessive attention to exploitation results in powerful path dependencies and core rigidities, ultimately leading to the risk of obsolescence (Kyriakopoulos & Moorman, 2004). Therefore, firms are considered successful if they can resolve the tension between exploitation and exploration activities (Maletic et al., 2014). However, several enterprises fail to do so, essentially indicating that not all enterprises pursuing ambidexterity promote their own performance (Evers & Andersson, 2021). In summary, based on the existing literature, scholars have the following perspectives regarding the relationship between organizational ambidexterity and corporate performance: positive (Mueller et al., 2013; Wu & Chen, 2018), negative (Yan et al., 2021), and non-linear relationships (Menguc & Auh, 2008; Uotila, 2009).

The research on the relationship between organizational ambidexterity and corporate performance has deepened; consequently, increasing attention has been paid to the contextual factors affecting this relationship. In terms of organizational resources, Cao et al. (2009) highlighted that the balanced dimension of ambidexterity can reduce the enormous risks of excessive exploration and the adverse effects of conservatism. Menguc & Auh (2008) divided corporate strategy into leader and defender strategies and explored their different impacts on the relationship between organizational ambidexterity and corporate performance. They argued that when enterprises adopt the leader strategy, organizational ambidexterity positively impacts corporate performance, whereas organizational ambidexterity has no significant influence on performance when enterprises adopt the defender strategy. Wu & Chen (2018) stated that an organization's internal and external competitive intensity moderates the relationship between international duality and innovation performance.

Ambidexterity perspective of EM MNEs' internationalization

Makino (2002) introduced the theory of exploration and exploitation in the field of international business, and clarified the strategic distinction between exploratory and exploitative internationalization. On this basis, subsequent research has asserted that enterprises can choose between exploration and exploitation (Prange & Verdier, 2011), and argued that exploitative internationalization uses a certain ownership advantage in the global scope to enhance the competitiveness of enterprises; by contrast, exploratory internationalization refers to acquiring strategic resources by establishing overseas relations and learning opportunities, rooted in the logic that overseas resources can help companies avoid the risk of foreign markets and uncertainty (Wu et al., 2020; Zhou et al., 2020). Initial research on multinational companies in developed countries considered exploitation as the main motivation for internationalization (Campbell-Hunt, 2004). Multinational enterprises use their own advantages at home to transfer the technology of the parent company to overseas branches to adapt to the market environment and the needs of the host country (Han & Celly, 2008). However, in recent years, with the rapid growth of EM MNEs, exploratory internationalization strategies have become increasingly prominent in the overseas operation process (Hela et al., 2017). Unlike the basic assumptions of traditional international business theory originating from developed countries, EM MNEs do not have an ownership advantage; instead, they actively establish R&D institutions in developed countries to gain knowledge and explore the learning resources and opportunities needed for their long-term development (Gaffney, 2016; Luo & Tung, 2018). Considering this scenario, Prange & Verdier (2011) proposed the idea of international ambidexterity, arguing that an international exploration strategy is conducive to multinational enterprises' long-term development and that an international exploitation strategy benefits short-term survival. The integration and balance between

exploration and exploitation can help multinational enterprises combat risks in markets abroad, obtaining a full-fledged dynamic capability that reinforces long-term survival and growth in dynamic international environments (Silva et al., 2021). According to Wu (2019), international ambidexterity is defined as the capability of multinational enterprises to achieve balanced development of two kinds of strategies by coordinating and weighing. International ambidexterity is further decomposed into balanced and integrated dimensions. The balanced dimension refers to the degree to which enterprises maintain a consistent balance between exploration and exploitation in multinational operations. The integrated dimension refers to the combined magnitude of exploratory and exploitative internationalization, emphasizing the integration of the two internationalization strategies (Pereira et al., 2021). Theorists have shown significant interest in the uniqueness and ambidexterity of EM MNEs; moreover, the theoretical distinction between the two internationalization strategies has been recognized. However, internationalization has been predominantly treated as a whole in empirical tests. Several studies have confirmed that internationalization facilitates corporate innovation and encourages the diffusion of innovation between the parent company and its foreign subsidiaries (Santangelo & Meyer, 2017). Another study found that internationalization significantly promotes a firm's innovation performance, which can be critical for sustaining a firm's competitive advantage in international markets (Hsu et al., 2013; Azar & Cibuschi, 2017). Although the thesis that internationalization positively affects the innovation performance of multinational enterprises has become indisputable, scant attention has been paid to how ambidexterity is actually implemented by EM MNEs.

Existing strategic studies propose the use of ambidexterity, viewing exploitation and exploration as two distinct but complementary perspectives (March 1991; Benner & Tushman, 2003; He & Wong, 2004; Gupta et al., 2006). Some scholars believe that exploration and exploitation, two activities with different characteristics, require different organizational cultures, systems and structures, implementation plans, human resources, and operational processes (Menguc & Auh, 2008). Consider these activities simultaneously is difficult because the two are competitive for resources. Therefore, faced with such a dilemma, several firms limited by resource constraints choose the trade-off strategy (Lee & Hemmert, 2021). However, subsequent studies on international ambidexterity have refuted the paradox between exploration and exploitation. Exploitation and exploration improve corporate international performance in different ways: Exploitation is related to the firm's strategic capability to manage and add value to existing resources, while exploration embraces the firm's capabilities to seek and acquire new resources and combine them into strategic assets in which resources are devoted to long-term competency-building objectives (Hsu et al., 2013; Hela et al., 2017). Moreover, empirical research indicates that the balanced and combined dimensions of international ambidexterity significantly foster a firm's overseas market expansion (Park & Meglio, 2019). Despite the thesis that internationalization positively affects the innovation performance of multinational enterprises has become indisputable, scarce attention has been paid to how ambidexterity is actually implemented by multinational enterprises.

Although the innovation performance of the dual internationalization strategy and the moderating or mediating effect of corporate internal factors have been verified (Wu & Chen, 2018), whether external institutional factors play a moderating role in this influence process has not been explored in the literature.

Host country institutional development and innovation performance

When studying multinational companies in emerging economies, the institutional view has become the most frequently adopted theoretical perspective (Kiss et al., 2012; Golgeci et al., 2019). Institutional economics, represented by North (1990), and organizational sociology, represented by Scott (1995), constitute institutional theory. Extant studies have defined institutions from different perspectives. As one authoritative definition implies, institutions "are the humanly devised constraints that structure political, economic, and social interactions" (North, 1991). According to Reyerson (2006), institutions are defined as groups of social factors, rules, beliefs, values, and organizations. Alonso & Garcimartin (2013) suggested that good institutions are those that can stimulate the activities of the subject and generate higher social returns. Conversely, flawed institutions stimulate socially futile or unproductive behaviors such as rent-seeking activities. Alonso & Garcimartin (2013) further provided four characteristics to define institutional quality: static efficiency, dynamic efficiency, credibility, and predictability. Per capita income and international openness determine institutional quality by influencing these four characteristics. Alonso et al. (2020) advocated that institutional quality is mainly determined by the variables regulated by public policy, such as the level of development, income (re)distribution patterns, taxation, international openness, and education. First, the level of development determines the quality of institutions —the higher the level, the higher the quality (Alonso & Garcimartín, 2013). Second, the income distribution conditions both the predictability and legitimacy of the institutional framework (Alonso et al., 2020). Keefer & Knack (2002) empirically supported the negative impact of inequality on institutional quality. In terms of taxation, Baskaran & Bigsten (2013) found that higher fiscal capacity leads to a higher quality institutional framework. International openness is linked to the dynamic efficiency of institutions (Alonso et al., 2020). Rodrik et al. (2004) found that openness positively impacts institutional quality. Finally, some studies have found that education positively impacts the quality of institutions. The more educated the population, the greater the need for more transparent and dynamic institutions and regulations to build them (Alesina & Perotti, 1996; Rauch & Evans, 2000; Glaeser et al., 2007; Alonso & Garcimartín, 2013).

Unlike multinational enterprises in developed countries, EM MNEs characterized by underdeveloped institutions that constrain the development of internal capabilities for innovation do not exhibit ownership and technological advantages (Wu et al., 2016). Compared with traditional theory based on the research object of multinational corporations in developed countries, institutional theory has a stronger interpretation of international innovation performance (Peng & Jiang, 2008; Andreas & Isabella, 2009). From the institutional perspective, research on the relationship between the quality of the host country's system and performance of internationalization predominantly has the following aspects: Some scholars believed that the quality of the host country's institution is an important explanatory variable for international performance (Jouida et al., 2017). Since well-developed institution means lower uncertainty and lower transaction and search costs, multinational enterprises can capitalize on institutional advantages to develop stronger technological capabilities in host countries with stronger institution (Wu et al., 2019; She et al., 2021). However, other studies have found a curvilinear relationship between the quality of the host country's institution and multinational subsidiaries' performance (Story et al., 2015). In addition to the direct influence of the host country's institutions, scholars have also focused on the moderating role of the host country's institutional quality in multinational operations (Buckley & Tian, 2017).

Nevertheless, these studies have focused on the gains accrued in the entire international strategy; thus, knowledge about how the quality of the host country's institution influences the relationship between international ambidexterity and innovation performance is limited. This research gap is significant because accounting for the role of host country institutional development may enable a more nuanced interpretation of where and how EM MNEs derive capabilities that enable them to innovate despite their weak internal

R&D capabilities and unfavorable home country institutional environments.

Hypothesis development

The balanced dimension of international ambidexterity and innovation performance

The balance between exploitative and exploratory internationalization refers to the fact that multinational enterprises allocate resources between exploitation and exploration without any discrimination (Wu et al., 2020). On the one hand, multinational companies can use their exploitative strategy to obtain a competitive advantage in the overseas market to enhance innovation performance in the short term. However, in the long run, exploitation will undeniably lead to short-sightedness and organizational rigidity, and thus, the company will gradually lose not only the ability to respond to the external environment but also long-term development vitality (Luo & Rui, 2009). On the other hand, while implementing an exploratory internationalization strategy in the international market can help companies search for advanced production technology and management methods on a global scale, paying excessive attention to exploration activities may lead enterprises to fall into a failure trap of the vicious incessant cycle of exploration, failure, and exploration, thus making it difficult for the firm to recover innovation investment (Tamayo-Torres et al., 2017). Enterprises must deal with a large amount of differentiated global information while implementing exploratory internationalization (Nasrallah & Cheaib, 2016).

Furthermore, multinational companies in emerging economies often lack international management experience and competencies (Wu et al., 2016). An excessive tendency toward exploratory internationalization leads to an increase in corporate costs and loss of revenue, ultimately reducing the efficiency of internationalization (Ho et al., 2011). Therefore, the balance and coordination of international ambidexterity can mitigate the risks of enterprises' international operations, realize the balance of long- and short-term benefits, and promote the improvement of innovation performance. Therefore, we propose the following hypothesis:

H1. The balanced dimension of exploitative and exploratory internationalization significantly positively impacts innovation performance.

The combined dimension of international ambidexterity and innovation performance

The combined dimension indicates a complementary effect between exploitative and exploratory internationalization (Wu et al., 2019). The implementation of one kind of international activity strengthens the effect of another kind of international activity (Cao et al., 2009). Exploitative internationalization guarantees exploratory internationalization, which enables multinational enterprises to realize cash benefits in a short period of time, thereby providing necessary financial support for exploratory activities (Schwens et al., 2011). Simultaneously, according to absorptive capacity theory, the efficiency of absorbing and using knowledge depends on the existing knowledge base (Venkatraman, 1989). Enterprises fully absorb and integrate existing knowledge through exploitative internationalization and then enhance their ability to identify, explore, and apply new knowledge in exploratory internationalization (Mueller et al., 2013). On the other hand, exploratory internationalization can avoid the ability trap caused by excessive internationalization (Jin & Zhou, 2016). Multinationals need to find an appropriate configuration between capability exploration and exploitation for performance improvement (Luo, 2002). Based on the above analysis, we propose the following hypothesis:

H2. A positive relationship exists between the combined dimensions of international ambidexterity and innovation performance.

The moderating role of host country's institutional quality

Hypothesis 1 proposes that the balance between exploitative and exploratory internationalization improves innovation performance by reducing the risk of international operations. Hypothesis 2 assumes that a combination of the two enhances innovation performance through complementary effects. Additionally, this study believes that the host country's institutional environment significantly impacts the integration and internal matching of exploration and exploitation, which, in turn, affects innovation performance.

According to the resource-based view, access to scarce resources is the first step for enterprises to enhance their innovation capabilities (Camisón-Haba et al., 2019). Host country institutions can be a source of competitive advantage for international operations, enabling firms to outperform competitors that remain at home (Araujo et al., 2016). As the government oversees a large number of scarce resources, multinational companies in emerging markets need to spend significant energy and material costs and adopt non-market strategies to obtain the necessary resources for innovation (Xie & Li, 2018). Some international business researchers believe that EM MNEs' particularly urgent overseas expansion agenda stems mainly from the constraints of their domestic market (Luo & Tong, 2007). At the same time, countries with robust formal and informal systems create more robust environments for business performance (LiPuma et al., 2013).

According to the theory of institutions, institutional legitimacy significantly impacts the innovation performance of multinational companies (Yang & Christoph, 2019). When operating in developed countries with higher institutional quality, under the pressure of institutional isomorphism, MNEs tend to imitate the innovation strategies and business decisions of local companies in the host country to obtain the legal status accepted and recognized by the host country's institutional environment; thus, they compensate for the liability of foreignness resulting from the lack of organizational legitimacy (Codagnone et al., 2015). After being recognized by the host country, they receive more resources and support from the host country's government and society. The more resources a company devotes to international operations, the more significant the complementary effects of exploration and exploitation, and higher the resulting innovation performance (Aya et al., 2010). Subsequent analysis divided the host country's institutional environment into regulative, cognitive, and normative systems, and studied the moderating effects of these three dimensions on multinational enterprises' innovation performance, based on Scott's (1995) research framework—namely, "three pillars."

Regulative Institution

Regulative institutions are the sum of legal institutions and prevalent rules, laws, and regulations used to restrict the specific behaviors of individuals or organizations (Scott, 1995). The inspection of the regulative institution includes two parts: static and dynamic. The static aspect primarily examines the host country's tax burden, perfection of the financial system, and difficulty of foreign investors obtaining business license qualifications, while the dynamic aspect mainly considers the stability and predictability of laws and government policies in host countries (Stoian & Mohr, 2016). The tax burden and perfection of the financial system directly determine the operating costs of multinational companies and the difficulty in obtaining financial resources. The smaller the tax burden, the better the financial system, and the more the resources that multinational companies can obtain for innovative activities. Moreover, multinational enterprises are more likely to perceive assets and intellectual property

protected by legal institutions, thereby stimulating the enthusiasm of multinational operations when entering host countries with well-developed regulative institutions (Nasrallah & Cheaib, 2016). Thus, multinational enterprises are more willing to allocate their resources to exploratory and exploitative internationalization. Further, the stability and predictability of the host country's institutional environment over a certain period can reduce the risks and penalties of companies' transnational operations associated with organizational deviance from legal rules. Therefore, when the quality of the host country's regulative institution is higher than that of the home country, increasing the input of resources and decreasing risk and uncertainty strengthens the innovation performance of the internal matching relationship of international ambidexterity.

Hence, we propose the following hypotheses:

H3a. The regulative dimension of the institutional environment positively moderates the relationship between the balanced dimension of international ambidexterity and innovation performance.
H3b. The regulative dimension of the institutional environment positively moderates the relationship between the combined dimension of international ambidexterity and innovation performance.

Cognitive institution

Cognitive institutions are the sum of the common cognitive types and mental models used by people to explain a certain phenomenon (Scott, 1995). Cognitive institutions mainly reflect the formulation of internationalization strategies, elaboration of internationalization goals, and richness of specific information and knowledge about foreign markets (Grandinetti, 2011). If several enterprises are effective at formulating comprehensive and reasonable internationalization strategies in the host country, multinational enterprises will have numerous references for learning when entering the host country. Thus, when choosing between exploitative and exploratory internationalization, under the premise of considering their own reality, multinational enterprises can better choose matching strategies conducive to their long-term development by imitating the strategies of these exemplary enterprises (Yang et al., 2014). Expansion to foreign countries with a better-developed knowledge institution can ease institutional constraints that limit returns from innovation investments in the domestic market (Wu et al., 2015; Ode & Ayavoo, 2020). Besides, the diversity of external sources of knowledge may enhance innovation and enable firms to improve their innovation ability (Medase & Abdul-Basit, 2020). The quality of a country's market-supporting institutions can promote or hinder the flow of ideas and knowledge spillovers among enterprises, which significantly contributes in enterprise innovation (Mahmood & Rufin, 2005). With the improvement in the dynamic capabilities of enterprises and efficiency of international operations, enterprises will benefit more from the balance and combination of international ambidexterity, and the innovation effect will be more significant (Andreas & Isabella, 2009). Based on this understanding, we propose the following hypotheses:

H4a. The cognitive dimension of the institutional environment positively moderates the relationship between the balanced dimension of international ambidexterity and innovation performance.
H4b. The cognitive dimension of the institutional environment positively moderates the relationship between the combined dimensions of international ambidexterity and innovation performance.

Normative institution

Normative institutions refer to the sum of the values, beliefs, and judgment standards held by individuals in a specific country when judging human behavior, and the social responsibilities formed based on interpersonal interaction (Scott, 1995). We consider normative institutions from three perspectives: psychological distance, cultural characteristics, and differences in market norms between the host and home country (Huang & Cantwell, 2017). First, when the host and home country are relatively similar in terms of culture, language, and the political system, and have a relatively close psychological distance, the risk of entering the host country is relatively low, which reduces the requirements for the management ability of multinational companies, making it easier for them to operate internationally (Schwens et al., 2011). Second, if the host country appreciates the social atmosphere of entrepreneurs and international activities, the innovative vitality and potential of multinational companies are more likely to be stimulated. Third, the normative differences between the industry and market are mainly reflected in the differences in industry practices and target customers' consumption preferences. When the difference between the industry and market is small, the institutional barriers are smaller, and the enterprise is better able to utilize institutional nesting—that is, apply the experience accumulated in the home country environment to the host country environment.

Hence, we propose the following hypotheses:

H5a. The normative dimension of the institutional environment positively moderates the relationship between the balanced dimension of international ambidexterity and innovation performance.
H5b. The normative dimension of the institutional environment positively moderates the relationship between the combined dimension of international ambidexterity and innovation performance.

Methodology

Data collection and sample analysis

This study collected the required data through questionnaires. First, we invited 50 interviewees to conduct a small-scale pre-survey. Pilot testing prior to conducting a full survey can help identify issues requiring improvement (Han & Celly, 2008). Using feedback from the pre-survey, we deleted or modified the items that did not fit the Chinese context to ensure that the respondents better understood the questions. The second step was to issue questionnaires across China. First, we distributed 500 questionnaires nationwide using a professional questionnaire survey website. Second, MBA students with work experience in multinational companies were invited to complete 100 questionnaires. Finally, we entrusted relatives and friends to explain the study objectives to the employees of multinational companies by email, and invited these employees to complete 100 questionnaires online. A total of 700 responses were received, of which 313 were discarded according to the following established criteria: (a) The questionnaire was incomplete. (b) The answers showed obvious regularity; for example, only one questionnaire from the same enterprise was kept randomly. (c) The respondent was from a company with no international business. Finally, we selected 387 valid responses with an effective response rate of 55.3%.

This study analyzed the sample characteristics from four dimensions; detailed information is shown in Table 1. First, we divided enterprises into manufacturing and non-manufacturing industries, and the two types of enterprises account for 36.6% and 63.4% of the sample, respectively. Second, the ownership nature of enterprises was divided into three categories—28.9% were state-owned enterprises, 50.1% were private enterprises, and 21% were other ownership enterprises. Private enterprises were the main part of the sample, and state-owned and other ownership enterprises accounted for a similar proportion. Third, from the perspective of business years, 68.3% and 0.4% of companies had been in business for more than five years and less than two years, respectively. Additionally, 10.2% of the companies had been operating for one–three years, and 21.1% had been operating for three–five years. This data distribution structure is

Table 1
Sample characteristics.

Industry owned by enterprise			Nature of enterprise ownership		
Type	Sample size	Percent (%)	Type	Sample size	Percent (%)
Manufacturing	142	36.6	State holding	112	28.9
Non-manufacturing	245	63.4	Private holding	194	50.1
Years of operation			Other	81	21
Type	Sample size	Percent (%)	**Number of employees**		
Within a year	2	0.4	Type	Sample size	Percent (%)
One–three years	39	10.2	Under 500	231	59.7
Three–five years	82	21.1	500–10000	134	34.5
Five years and above	264	68.3	10000 and above	22	5.8

conducive to better research because companies with longer operating years exhibit more stable and mature internationalization strategies. Finally, 59.7% of enterprises had fewer than 500 employees, 34.5% had between 500 and 10,000 employees, and 5.8% had more than 10,000 employees. The sample included multinational companies of all sizes.

Measurement

Dependent variable

We appropriately modified the scales used in domestic and foreign studies to adapt to our research situation. This ensured good reliability and validity. All items in the study were measured on a 7-point Likert scale ranging from 1 (strongly disagree) to 7 (strongly agree). Table 2 shows the definitions and measurement methods used in this study.

Innovation performance, our dependent variable, measures an enterprise's innovation activity and output (Thakur-Wernz & Samant, 2019). Since technological innovation constitutes a great deal of uncertainty and complexity, scholars have not yet established a standard system to measure the performance of enterprise technological innovation. According to existing theories, a complete technological innovation performance evaluation system should include two parts: innovation output performance and innovation process performance. Some scholars have adopted six questions to measure the innovation performance of enterprises, including the number of new products, proportion of new product sales in total sales, and speed and success rate of new product development (Wu & Chen, 2018). Thakur-Wernz & Samant (2019) adopted the natural logarithm of the annual number of new invention patent applications as a proxy for innovation output. Patents are considered the output of the R&D process, and granted patents are relatively optimal innovation measurement standards (Acs et al., 2002; Griliches, 1990; Lungeanu et al., 2015). However, if researchers use patents to measure the innovation activity of a company, they cannot capture all innovations. Therefore, considering the quantification of indicators and availability of data, this study only considers the output performance of enterprise technological innovation.

Following Story's (2015) research on the evaluation index system of enterprise technological innovation performance and the product innovation performance measurement scale proposed by Baker & Sinkula (1999), we used the following to measure innovation performance: proportion of new product sales to total sales, the proportion of technical personnel to the total number of employees, the number

Table 2
Description of main variables.

Variable	Definition	Measurement
Exploratory Internationalization	Refers to acquiring strategic resources by establishing overseas relations and learning opportunities: Exploration is based on the development of new capabilities (Prange & Verdier, 2011), and usually refers to notions such as "search, variation, experimentation, and discovery" (March, 1991).	Five questions in the questionnaire were used to measure exploratory internationalization, and the average score of the five questions represented the value of this variable.
Exploitative Internationalization	Refers to the use of certain ownership advantages in the global scope to improve the competitiveness of enterprises (Prange & Verdier, 2011): Exploitation mainly emphasizes the application of existing knowledge (Vermeulen & Barkema, 2002), and is usually related to "improvement, efficiency, selection, and implementation" activities (March, 1991).	Five questions in the questionnaire were used to measure exploitative internationalization, and the average score of the five questions represented the value of this variable.
Balanced Dimension of International Ambidexterity	Refers to the fact that multinational enterprises allocate resources between exploitation and exploration without discrimination (Wu et al., 2020).	Subtract the absolute deviation between exploratory and exploitative internationalization from 5 (the smaller the absolute deviation of the two, the better the balance between the two).
Combined Dimension of International Ambidexterity	Indicates the presence of a complementary effect between exploitative and exploratory internationalization (Wu et al., 2019): The implementation of one kind of international activity strengthens the effect of another kind of international activity (Cao et al., 2009).	The product of exploratory internationalization and exploitative internationalization
Enterprise Innovation Performance	Measures the innovation activity and innovation output of an enterprise (Thakur-Wernz & Samant, 2019)	Five questions in the questionnaire were used to measure enterprise innovation performance, and the average score of the five questions represented the value of this variable.
Institutional Quality	Institutions can be defined as a group of social factors, rules, beliefs, values, and organizations (Reyerson, 2006), and the evaluation of system quality mainly includes four aspects: static efficiency, dynamic efficiency, credibility, and predictability (Alonso & Garcimartín, 2013).	There are four questions in the questionnaire aimed at measuring cognitive institution, five questions for measuring regulative institution, and five questions for normative institution—thus, altogether fourteen questions. The average score of the fourteen questions is used to represent the score of the institutional quality.
Regulative Institution	The regulative institution is the sum of legal institutions and prevalent rules, laws, and regulations used to restrict specific behaviors of individuals or organizations (Scott, 1995).	Five questions in the questionnaire were used to measure regulative institution, and the average score of the five questions represented the value of this variable.
Cognitive Institution	The cognitive institution is the sum of common cognitive types and mental models that people use to explain a certain phenomenon (Scott, 1995).	Four questions in the questionnaire were used to measure cognitive institution, and the average score of the four questions represented the value of this variable.
Normative Institution	The normative institution refers to the sum of the values, beliefs, and judgment standards held by individuals in a specific country when judging human behavior, and the social responsibilities formed on the basis of interpersonal interaction (Scott, 1995).	Five questions in the questionnaire were used to measure normative institution, and the average score of the five questions represented the value of this variable.

of items that presided over or participated in the formulation of national standards, the number of items that presided or participated in the formulation of industry standards, and the percentage of R&D investment in operating revenue. The scale has been tested and exhibits good reliability and validity.

Independent variables

Referring to Makino's (2002) explanation of exploratory and exploitative internationalization and the research by Wu et al. (2020), this study measured exploratory internationalization of multinational companies through five questions in the questionnaire, including "Your company obtains high-level R&D and management talents from overseas markets through internationalization." Simultaneously, exploitative internationalization was measured using five topics, such as "Your company takes advantage of cheap labor and material resources in foreign markets through internationalization." Table 3 lists the specific measurement items for exploratory and exploitative internationalization. Drawing on organizational duality theory, this research examines the internal matching relationship of dual internationalization strategies from the two dimensions of balance and combination. The balance of international ambidexterity represents the relative balance between exploratory and exploitative internationalization; by contrast, the combination of internationalization expresses the integration of exploratory and exploitative internationalization. In terms of specific calculations, this study followed Cao et al.'s (2009) method. We first found the absolute value of the difference between exploratory and exploitative internationalization: The smaller the absolute deviation of the two, the better the balance between them; while the larger the value of innovation performance as the explained variable, the better the innovation achievement obtained. Simultaneously, the absolute deviation between the two was found to be between 0 and 4.40. Therefore, we used 5 minus the absolute deviation of the two to measure the balance of the dual international strategy to facilitate the regression analysis in the following interpretation. Additionally, the product of exploratory and utilization internationalization was used to measure the combination of dual internationalization strategies.

Moderating variable

The dimensional division of the institutional environment mainly includes the dichotomy, three-pillar, and four-quadrant methods. Scott's (1995) three-pillar theory, which has been widely recognized by scholars, divides institutions into normative, cognitive, and normative dimensions. However, some studies have used different measurements. De Luca et al. (2021) used the institutional quality index proposed by Nifo and Vecchione O to measure institutional quality at the regional level. This study followed the mainstream view and drew on the scale proposed by Busenitz et al. (2000), which is widely used to measure the quality of the institutional environment and has good reliability and validity. The scale measures both the regulative and the normative institution using five topics and measures the cognitive institution using four topics, which are listed in Table 3.

Control variables

Several firm-level control variables were adopted to eliminate possible confounding effects on the relationships we explored. The company's age, scale, type of industry, nature of ownership, and previous year's sales revenue affect the company's internationalization behavior and innovation performance. We measured the company's age and scale according to the years of business operation and number of employees, respectively. Additionally, we set industry type as a dummy variable. The value of 0 represents non-manufacturing, whereas 1 represents manufacturing. Finally, we controlled for differences between private enterprises (coded as 0) and state-owned enterprises (coded as 1).

Table 3
Reliability and validity test results.

Variables	Measure item	Normalization factor	α	AVE
Exploratory Internationalization	1. Obtain high level R&D and management talents from overseas	0.749	0.872	0.580
	2. Obtain technological and marketing resources for innovation	0.816		
	3. Merge into foreign innovative atmosphere and obtain spillover effects	0.767		
	4. Use effective foreign R&D hardware infrastructure	0.752		
	5. Establish cooperative relationship with local leading firms	0.721		
Exploitative Internationalization	1. Use technological advantages of enterprises in foreign markets.	0.620	0.865	0.569
	2. Enter foreign markets and expand development space.	0.727		
	3. Produce products meeting the needs of foreign customers.	0.760		
	4. Establish manufacturing base to reduce transportation cost.	0.822		
	5. Use cheap labor and material resources in foreign markets.	0.824		
Regulative Institution	1. The tax burden on foreign enterprises is relatively low.	0.752	0.877	0.589
	2. Relevant laws protect the rights and interests of foreign investors.	0.829		
	3. Foreign investors are easy to obtain business license qualification.	0.751		
	4. The financial credit system of the host country is relatively optimal.	0.756		
	5. The laws, regulations, and policies are stable and predictable.	0.749		
Cognitive Institution	1. Several local firms know how to formulate international strategy.	0.877	0.851	0.595
	2. Several local firms know how to set international goals.	0.746		
	3. Several local firms know how to cooperate in the cross-cultural context.	0.715		
	4. Several local firms have reliable market information of related products.	0.738		
Normative Institution	1. People appreciate and respect successful entrepreneurs with ability.	0.860	0.880	0.604
	2. People generally have the courage to take risks.	0.764		
	3. People have the will to pursue wealth and achievement.	0.746		
	4. The culture, language and political system is similar to the home country.	0.757		
	5. There is not much difference in consumption preference and practice.	0.758		
Innovation Performance	1. Proportion of sales revenue of new products in total sales revenue	0.719	0.881	0.635
	2. Proportion of technical personnel in total number of employees	0.798		
	3. Number of national standards the firms participated in	0.876		
	4. Number of industrial standards the firms participated in	0.758		
	5. Proportion of R&D investment in operating revenue	0.825		

Table 4
Descriptive statistics and correlation matrix

Variable	Mean	SD	1	2	3	4	5	6	7	8	9	10	11
1. Industry	4.57	1.76	1										
2. Ownership	2.26	1.34	-0.06	1									
3. Sales revenue last year	3.26	1.37	-0.07	-0.01	1								
4. Firm size	3.17	1.78	-0.09	-0.03	0.71**	1							
5. Firm age	3.57	0.70	-0.05	-0.13**	0.35**	0.31**	1						
6. Balance dimension	1.08	0.90	-0.01	-0.01	0.08	0.04	0.12*	1					
7. Combined dimension	22.82	9.26	0.02	0.13**	0.10	0.17**	0.05	-0.31**	1				
8. Regulative institution	4.80	1.00	0.01	0.06	0.08	0.12**	0.06	0.14**	0.31**	1			
9. Cognitive institution	4.96	1.04	-0.01	-0.03	0.11**	0.09	0.13**	0.18**	0.30**	0.30**	1		
10. Normative institution	4.78	1.12	-0.05	-0.00	-0.01	0.10**	0.07	0.16**	0.28**	0.32**	0.20**	1	
11. Innovation performance	3.96	1.50	-0.09	0.11*	0.13*	0.20**	0.09	0.26**	0.37**	0.43**	0.44**	0.45*	1

Note: Indicates significance at the p≤0.10 (***p≤0.001 **p≤0 .01, *p≤0 .05)

Reliability and validity analysis

Table 3 shows that the Cronbach's alpha of the six constructs—exploratory internationalization, exploitative internationalization, control system, cognitive system, normative system, and innovation performance—were all higher than 0.7, indicating that the measurement scales of each construct exhibit high internal consistency reliability. Moreover, the standardized factor loading of each item and AVE value of each construct were greater than 0.5, indicating that the aggregate validity of all scales was higher than the minimum acceptance threshold. Additionally, the square roots of the AVE values of the six constructs were all higher than the correlation coefficients between the constructs, and discrimination validity adhered to the standard.

Results

Table 4 reports descriptive statistics for the variables used in the analysis. The balance dimension ($r = 0.259$, $p < 0.01$) and combination dimension ($r = 0.368$, $p < 0.001$) were significantly positively correlated with innovation performance. Furthermore, regulative institution ($r = 0.429$, $p < 0.01$), cognitive institution ($r = 0.437$, $p < 0.01$), and normative institution ($r = 0.446$, $p < 0.01$) were significantly correlated with innovation performance. Nevertheless, we mean-centered variables in the interaction terms to avoid multicollinearity and increase the interpretability of interactions. The variance inflation factor values ranged from 2.12−2.23, well below the cutoff threshold of 10 (Hair et al., 1998). Thus, multicollinearity is not a major concern.

To gain further insight, we tested our hypotheses using a hierarchical regression. Table 5 presents the results of the analysis. Model 1 acts as the baseline model because it includes only control variables. Firm size has a positive effect, which indicates that larger multinational firms are more innovative in this study's empirical context. The variables for the balance and combination dimensions of international ambidexterity were added to Models 2 and 3, respectively. The coefficient of this variable is positive and statistically significant, which remains consistent through Models 4−9. This indicates that the main effect of international ambidexterity on innovation performance is positive and significant ($p < 0.001$ in all models). Therefore, H1 and H2 are supported.

Model 5 adds three moderating variables—regulative institutions, cognitive institutions, and normative institutions, while Models 6−8 include each of their interactions with innovation performance, respectively. The coefficient of the interaction term in Model 6 is positive and significant, which indicates that regulative institutions strengthen the relationship between international ambidexterity and innovation performance. This result supports H3a and H3b. Similarly, the interaction term in Model 7 is positive and significant, indicating that higher quality cognitive institutions strengthen the focal relationship. Thus, H4a and H4b are supported. H5a and H5b are also supported because the coefficient of the interaction term in Model 8 is positive and significant. As a robustness check, Model 9 is a full

Table 5
Results of moderated regression analysis

	Model 1	Model 2	Model 3	Model 4	Model	Model 6	Model 7	Model 8	Model 9
Industry			0.10*	0.12*	5	0.08*	0.11*	0.07	0.06
Ownership	0.08	0.08	-0.04	-0.05	0.11**	-0.02	-0.06	-0.02	-0.03
Sales revenue last year	-0.05	-0.06	-0.04**	-0.06	-0.06	-0.05**	-0.08	0.05	0.01
Firm size	-0.05	-0.07	0.15	0.14*	-0.03	0.11*	0.19**	0.08	0.11
Firm age	0.23**	0..241**	0.04	-0.00	0.12*	-0.00	-0.02	-0.01	-0.02
Balance dimension	0.05			0.41***	-0.02	0.37***	0.32***	0.35***	0.27***
Combined dimension		0.02	0.35***	0.48***	0.24***	0.43***	0.42***	0.44***	0.34***
Regulative institution		0.26***			0.25***	0.27***			0.16***
Cognitive institution					0.16***		0.31***		0.24***
Normative institution					0.23***			0.28***	0.22***
Balance dimension × Regulative institution					0.24***	0.30***			0.16***
Combined dimension × Regulative institution						0.33***			0.21***
Balance dimension × Cognitive institution							0.27***		0.16***
Combined dimension × Cognitive institution							0.24***		0.11***
Balance dimension × Normative institution								0.34***	0.21***
Combined dimension × Normative institution								0.34***	0.24***
R^2	0.05	0.12	0.17	0.32	0.46	0.50	0.47	0.53	0.67
R^2 (adj)	0.04	0.10	0.16	0.30	0.44	0.49	0.45	0.52	0.66
Max VIF	2.12	2.13	2.15	2.15	2.18	2.17	2.17	2.19	2.23

Note: Indicates significance at the p≤0.10 (***p≤0.001 **p≤0 .01, *p≤0 .05)

Table 6
Robustness test 1

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7	Model 8	Model 9
Industry		0.08	0.10**		0.10**	0.08*	0.11**	0.07	0.05
Ownership	0.08	-0.06	-0.04	0.11*	-0.06	-0.02	-0.07	-0.02	-0.03
Firm size	-0.05	0.20**	0.14*	-0.05	0.09*	0.08	0.12**	0.11**	0.11**
Balance dimension	0.20**	0.26***		0.10*	0.24***	0.43***	0.42***	0.44***	0.34***
Combined dimension			0.35***	0.41***	0.25***	0.37***	0.31***	0.35***	0.27***
Regulative institution					0.16***	0.27***			0.22***
Cognitive institution				0.48***	0.22***		0.30***		0.16***
Normative institution					024***			0.28***	0.24***
Balance dimension × Regulative institution						0.30***			0.15***
Combined dimension × Regulative institution						0.33***			0.16***
Balance dimension × Cognitive institution							0.27***		0.21***
Combined dimension × Cognitive institution							0.23***		0.22***
Balance dimension × Normative institution								0.335***	0.11***
Combined dimension × Normative institution								0.340***	0.24***
R^2	0.05	0.11	0.17	0.32	0.37	0.50	0.46	0.53	0.67
R^2 (adj)	0.04	0.11	0.16	0.31	0.36	0.49	0.45	0.52	0.66
Max VIF	1.11	1.12	1.15	1.16	1.56	1.37	1.37	1.30	1.63

Note: Indicates significance at the p≤0.10 (***p≤0.001 **p≤0 .01, *p≤0 .05)

model that includes all the independent variables and interaction terms. Evidently, the key results concerning the balance and combination dimension variables as well as the moderating variables remain qualitatively unchanged.

To further assess the robustness of the results, we conducted two robustness tests. First, we reduced the two control variables. Table 6 shows that the results following the reduction in the control variables are qualitatively similar to those reported above. These results further support our hypotheses. Second, we randomly selected 200 samples for regression analysis. Table 7 reports the results of regression analysis of the random sample. The coefficients of the balance and combination dimensions were all significantly positive in all the models; further, we verified the moderating effect of the three dimensions of institutional quality. Thus, the robustness test results are consistent with previous ones.

Conclusion

This study constructed a theoretical framework to illustrate and empirically test the relationship between the internal consistency of international ambidexterity and innovation performance of multinational enterprises. Meanwhile, we examined the moderating effect of the host country's institutional quality on the innovation effect of the ambidextrous internationalization strategy. Our empirical results show that both the balanced and associated dimensions of ambidextrous internationalization significantly positively impact corporate performance. The multinational enterprises that can allocate resources between exploratory and exploitative activities in a balanced manner and give full play to their combined effects exhibit better innovation outputs and benefits than other firms. Therefore, our results support the previous argument of a dual perspective in the fields of organizational and strategic research. The dual perspective emphasizes that companies should conduct exploitative activities to ensure the current viability of the organization while using exploration activities to maintain the company's long-term competitiveness (Ancona et al., 2001; Floyd & Lane, 2000; Levinthal & March, 1993; March, 1991).

From the balanced dimension of international ambidexterity, our study shows that the balanced implementation of the two activities can avoid the risks caused by over-indulging in one activity, thus showing improved international innovation performance. This result is consistent with the conclusions of some previous studies (Levinthal & March, 1993; Ireland & Webb, 2007; Wu & Chen 2018). Some scholars have held that these two activities have different requirements in

Table 7
Robustness test 2

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7	Model 8	Model 9
Industry		0.17*	0.17*		0.17**	0.13*	0.19**	0.13*	0.10*
Ownership	0.15*	0.05	0.05	0.19*	0.00	0.03	-0.02	0.04	-0.01
Sales revenue last year	0.06	0.22*	0.22*	0.02	-0.09	-0.08	-0.16*	-0.01	-0.02
Firm size	0.28*	-0.08	-0.08	-0.13	0.12*	0.16*	0.26**	0.12	0.15*
Firm age	-0.11**	0.11	0.11	0.21*	0.03	0.06	0.07	0.03	0.01
Balance dimension	0.11	0.30***		0.08	0.19***	0.33***	0.29***	0.40***	0.33***
Combined dimension			0.30***	0.34***	0.20***	0.40***	0.42***	0.43***	0.39***
Regulative institution				0.41***	0.15***	0.27***			0.19***
Cognitive institution					0.18***		0.29***		0.25***
Normative institution					0.24***			0.28***	0.27***
Balance dimension × Regulative institution						0.24***			0.14***
Combined dimension × Regulative institution						0.30***			0.21***
Balance dimension × Cognitive institution							0.22***		0.16***
Combined dimension × Cognitive institution							0.26***		0.17***
Balance dimension × Normative institution								0.36***	0.29***
Combined dimension × Normative institution								0.37***	0.31***
R^2		0.12	0.20		0.41	0.44	0.43	0.53	0.67
R^2 (adj)	0.05	0.10	0.18	0.30	0.38	0.41	0.40	0.52	0.64
Max VIF	0.04	2.13	1.96	0.27	2.05	2.01	2.00	2.19	2.10
	1.95			1.98					

Note: Indicates significance at the p≤0.10 (***p≤0.001 **p≤0 .01, *p≤0 .05)

terms of organizational culture, institutional structure, and human resources. Conducting these two activities simultaneously is difficult for enterprises (Menguc & Auh, 2008); hence, they must choose any one alternative. This study argues that EM MNEs can conduct both development and exploration activities simultaneously through reasonable resource allocation, and these two internationalization activities have different ways to improve enterprise innovation performance. Exploitative internationalization is related to a company's strategic management ability and complete use of existing resource advantages, while exploratory internationalization is a company's behavior of seeking and obtaining new resources to achieve long-term goals (Hsu et al., 2013; Hela et al., 2017).

Regarding the united dimension of international ambidexterity, our findings confirm that the integration of exploitative and exploratory activities exhibits a joint effect. The implementation of an exploitative internationalization strategy provides resource support for exploratory internationalization, thus compensating for the latter's deficiency of ignoring short-term gains. In this way, the two promote each other, thus achieving a balance between the short-term survival and long-term development of transnational corporations. The joint effect of exploration and exploitation enables the two internationalization strategies to complement each other and helps companies achieve better performance in global competition (Tallman & Fladmoe-Lindquist, 2002; Prange & Verdier, 2011).

In terms of moderating effects, this research examined the moderating effect of institutional quality on the relationship between international ambidexterity and innovation performance from three dimensions: regulatory, cognitive, and normative systems. First, the quality of regulatory institutions positively moderates the relationship between international ambidexterity and innovation performance in both the equilibrium and joint dimensions; that is, when the quality of regulatory institutions in the host country is higher than that in the home country, increasing resource input and reducing risk and uncertainty enhance the innovation performance of the internal matching relationship of international ambidexterity. Second, cognitive institutional quality positively moderates the relationship between international ambidexterity and innovation performance in both the balanced and associated dimensions. In other words, a high-quality institutional environment enables multinational enterprises to access and utilize the market information and international business knowledge of host countries. Thus, the innovation performance of an enterprise will become more significant by promoting the improvement of dynamic capability and international operational efficiency (Andreas & Isabella, 2009). Third, the quality of normative institutions positively moderates the relationship between international ambidexterity and innovation performance in both balance and joint dimensions. This study argues that the innovation vitality and potential of multinational enterprises are better stimulated if the host country has a social atmosphere and international activities that support entrepreneurs.

Theoretical and managerial implications

Theoretical implication

First, this study enriches the theoretical research on internationalization strategies and institutions explored in the context of emerging markets (Hsu et al., 2013; Wu et al., 2019). Traditional internationalization theory originated from research on multinational corporations in developed countries, focusing on the relationship between exploratory internationalization and innovation performance (Mueller et al., 2013). However, the motivations and strategies for internationalization adopted by enterprises in emerging economies differ from those of multinational enterprises in developed countries (Luo & Zhang, 2016; Yang & Christoph, 2019). Simultaneously, companies in emerging economies are increasingly inclined to fully utilize the international market for technological learning and the acquisition of innovative resources (Amighini et al., 2015). Using Chinese companies as a research sample to explore the effects of international ambidexterity on innovation performance in the context of emerging economies, this study extends the literature on international strategy, thus providing targeted theoretical support for the internationalization of enterprises in emerging economies.

Second, this research's empirical results support existing theories about the division of exploitative and exploratory internationalization, and further verify the conclusions of previous empirical research that the internal matching relationship between exploitative and exploratory internationalization affects innovation performance. The distinction of internationalization strategy breaks through the initial thinking of existing research on internationalization strategy as a whole, completes the dual theory system of internationalization, and provides new strategic ideas for the internationalization practices of multinational companies in emerging economies.

Third, this study explores the role of host country system quality in the adjustment of international ambidexterity innovation performance from the perspective of organizational learning and institutional theory, and expands the research boundary of dual international innovation performance. Wu & Chen (2018) empirically tested the moderating effect of internal and external organizational competition intensity on the relationship between internationalization ambidexterity and innovation performance. By contrast, we introduce a new moderating variable—institutional quality—from a novel theoretical perspective. Additionally, we selected a larger sample size and used different scales. Although the importance of institutional factors in international innovation performance has been widely recognized, this study divides the host country's institutional environment into three dimensions and examines the moderating effects of each dimension. Simultaneously, it combines the dual thinking of organizational learning theory with the view of institutions, which expands the horizons of institutional theory research and the research boundary of internationalization theory.

Managerial implications

The empirical results of this study can provide valuable guidance for managers of EM MNEs committed to improving innovation performance through overseas operations. First, although our empirical results suggest that both the balance and combined dimensions of ambidextrous internationalization positively impact firms' innovation performance, achieving the balance and coordination of a dual internationalization strategy is difficult because multinational enterprises in emerging economies do not have an ownership advantage and lack international operational experience. Hence, we encourage enterprises with resources and other difficulties to maintain a certain degree of vigilance and to not blindly pursue the absolute balance between exploratory and exploitative activities of enterprise resources. Indubitably, multinational enterprises should implement both exploitative and exploratory internationalization strategies simultaneously when resources permit and try to maintain the balance and coordination of the two types of internationalization strategies. Multinational companies in emerging economies must not only fully utilize their existing advantages and accessible material resources in foreign markets to produce more products that meet the needs of foreign customers, but also acquire as much information and knowledge as possible in the well-developed innovation environment of the host country and actively learn from advanced enterprises. Simultaneously, organizational learning, technical ability, and absorptive capacity are necessary to transform resource advantages into innovation performance (Navas-Alemán, 2011). Khan et al. (2019) suggested that absorptive capacity is critically important in stimulating manufacturers' exploitative and exploratory innovation and that learning intent enables the realization of absorptive capacity. Therefore, EM

MNEs should be aware of the role of resources and capabilities in pursuing a balance and combination of exploitation and exploration. EM MNEs should create a learning environment and focus on the cultivation of technical expertise and knowledge absorption capacity. For example, the cultivation of learning spirit and ability can be emphasized in organizational culture, and staff training can be conducted regularly.

Second, managers of multinational corporations should pay complete attention to the complementary effects of exploratory and exploitative internationalization. These two strategies of internationalization activities have their own advantages in that exploitative internationalization promotes short-term cash returns of enterprises, while exploratory activities are beneficial for long-term development (Prange & Verdier, 2011). However, the realization of complementary effects requires multinational companies to simultaneously conduct high-level exploratory and exploitative internationalization. The rational allocation of resources is the core of balancing exploitative and exploratory internationalization. Therefore, enterprises can seek policy and financial support from their home countries to better conduct exploitative activities and adopt diversified international cooperation models to actively implement exploratory activities. Further, acquiring relevant knowledge and experience, which can improve international operation ability, is essential.

Third, multinational companies should strive to improve their ability to assess the host country's institutional environment and choose an appropriate overseas business location. Compared to host countries with lagging institutions, those with higher institutional quality more significantly positively affect internationalization and innovation performance. A well-developed host country's institutional environment can compensate for the disadvantages faced by emerging economies in their international operations. Multinational companies in emerging economies must attach importance to—and fully utilize—the host country's institutional advantages. By choosing a host country with a higher level of institutional development, companies obtain greater learning opportunities and richer innovation resources and establish a solid foundation for the improvement of innovation capabilities, thereby strengthening the positive impact of the balance and combination of dual internationalization on innovation performance. Government policymakers should insist on an open policy to foreign investors, establish and improve foreign investment promotion mechanisms, and implement high-level investment liberalization and facilitation policies. We believe that creating an institutional environment with static efficiency, credibility, security, and adaptability will not only attract more foreign investors but also reduce the difficulty for domestic companies to improve their innovation performance through overseas operations.

Limitations and future research directions

Despite its theoretical and practical implications, this study has some limitations that should be considered. First, we only initially verified the innovative effects of international ambidexterity and the moderating role of the host country's institutional environment in this process; we did not consider the "middle black box" that internationalization affects innovation performance.

Future studies can explore the mediating mechanism of international ambidexterity and innovation performance from a knowledge integration perspective to determine how internationalization ambidexterity affects innovation performance. Further, our research sample includes only Chinese multinational corporations, which somewhat limits the applicability of our conclusions to other emerging economies. Therefore, verifying our study results by involving multinationals from other emerging countries —to investigate the relationship between international ambidexterity and innovation performance using a wider sample—would be useful. Third, our study did not focus on a specific industry or ownership. Therefore, examining why the relationship between international ambidexterity and innovation performance differs—whether due to the nature of ownership or the industry in which MNEs operate—would be interesting. Finally, this study only uses cross-sectional questionnaire data to examine the static relationship between enterprise ambidexterity internationalization and innovation performance, whereas the internationalization of enterprises is a dynamic process. Therefore, future research could use longitudinal sequence data to examine the dynamic process of ambidextrous international innovation performance.

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