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Cross-National Knowledge Distance and Host Country Innovation—The Mediating Roles of Local Talents and Third-Country Exporting

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ABSTRACT

Drawing on embeddedness and learning perspectives, we examine and extend the learning-by-hiring (LBH) and learning-by-exporting (LBE) logics to better understand the innovation activities of advanced economy multinational enterprises (AEMNEs) in a dissimilar knowledge context where cross-national differences persist. We consider that the use of local talents manifests the LBH logic as a means of enhancing AEMNEs' local embeddedness. Likewise, third-country exporting is underpinned by the LBE logic as a way for MNEs to leverage third-country embeddedness. We propose that these two mechanisms act as mediators that shape and filter AEMNEs' access and integration of geographically distant knowledge for their emerging market innovation. Moreover, we predict a complementarity between employing local talents and third-country exporting. Our findings from an analysis of AEMNEs operating in China provide support for these predictions. This study offers important implications for managing multiple embeddedness across AEMNEs' global networks in order for their innovation to flourish in emerging markets.

1 | Introduction

The shift in innovation by advanced economy multinational enterprises (AEMNEs) to emerging economies (EEs) is characterized as one of the most dynamic developments in the recent decade. Emerging markets provide AEMNEs with fast growth prospects and opportunities for developing new products, services, manufacturing methods, and business processes for global markets. This phenomenon is largely driven by the cross-national knowledge distance, which results in a diversity of perspectives and ideas, offering firms opportunities to make novel linkages and associations in addition to the rapid economic growth of these countries (Berry, Guillen, and Zhou 2010; Dunning 1993; van Hoorn and Maseland 2016). Equally, the presence of such differences also creates challenges in the form of misunderstandings and legitimacy problems related to the transfer of knowledge and organizational routines, and may sometimes prevent knowledge flows between countries, thereby increasing the transaction cost of innovation across borders (Eden and Miller 2004). While both the innovation benefits and costs are widely acknowledged by international business and innovation scholars, less is known about how AEMNEs explore cross-national knowledge distance for their innovation success in emerging markets. Understanding the potential mechanisms underlying this process is key to MNEs' host-country innovation activities, as the ways firms' access, transfer, and integrate distant knowledge play a critical role in determining their ability to innovate (Phene, Fladmoe-Lindquist, and Marsh 2006; Cohen and Levinthal 1990).

One possible mechanism is the employment of local talents, which is considered in prior literature to be an effective local embeddedness strategy that facilitates the access and transfer of knowledge across borders—a major constraint faced

by MNEs in expanding their geography of innovation (Song et al. 2003; Liu et al. 2010). However, successful knowledge access and transfer is a necessary step but an insufficient condition for MNEs' overseas innovation activity. We know little about whether and how the use of highly skilled local employees (HSLEs) (local embeddedness) complements or restrains MNEs' other activities within their global knowledge networks, such as third-country exporting (third-country embeddedness). The solid local knowledge background and high-levels of absorptive capacity of HSLEs not only determine how technological inputs originating in the MNEs' home-country take on a specifically national character but also allow them to shape, filter, and modify the integration and recombination of such knowledge with local ideas and specialties (Sassen 2008). The integration and recombination of knowledge across countries is crucial in shaping MNEs' ability to generate breakthrough innovation (Gupta and Govindarajan 2000). Thus, shedding light on the role of local talents will deepen our understanding of the interdependencies of MNEs' global knowledge networks and help us specify the extent to which local knowledge embeddedness contributes to their radical innovation overseas.

An equally, if not more important mechanism is third-country exporting, which provides AEMNEs with the opportunity not only to introduce new products developed in EEs to other markets but also to simultaneously source external ideas or insights within their global knowledge networks for their host-country innovation (Aw, Chung, and Roberts 2000; Salomon and Jin 2010; Tse, Yu, and Zhu 2017). In this way, AEMNEs become open to both incoming and outgoing innovation. However, the extant exporting literature offers limited explanations for this emerging role of third-country exporting in AEMNEs' overseas innovation. The learning-by-exporting (LBE) literature argues that firms learn through exporting activities and subsequently achieve innovation gains (Aw, Chung, and Roberts 2000). This stream of research predominantly considers exporting and subsequent innovation from a dichotomy of home-country and host-country perspectives, but it has overlooked the interrelated linkage between AEMNEs' third-country exporting and their global knowledge networks. It is unclear whether and how MNEs explore global knowledge networks for host-country innovation. Examining this question enables us to capture the importance of global knowledge in MNEs' innovation beyond the context of home and host countries and helps reconcile the mixed findings of the impact of exporting on innovation reported by prior empirical studies (Aghion et al. 2018; Bratti and Felice 2012; Salomon and Jin 2010). Understanding this phenomenon will also provide indirect but valuable insights into the nature of the innovation race in AEs, where a substantial number of domestic innovations were originally developed in EEs and brought back by AEMNEs (Govindarajan and Ramamurti 2011; Shankar and Narang 2019).

To resolve these theoretically and practically important issues, our study examines how cross-national knowledge distance affects AEMNE innovation performance in EEs through hiring local talents and third-country exporting. We also pay particular attention to the interplay between third-country exporting and the use of local talents. Drawing on arguments from the embeddedness and organizational learning literature, we predict that AEMNEs achieve better innovation performance when they use HSLEs and third-country exporting to draw ideas or insights from local and global knowledge networks, facilitating the access, combination and exploitation of distant knowledge in EEs. We further predict that the increased use of HSLEs reinforces the positive effect of third-country exporting on AEMNEs' innovativeness in EEs. Our analysis of 534 foreign firms operating in the Chinese high-tech industries during the 2004–2012 period supports these predictions.

Our study aims to offer several contributions to the literature. First, it is one of the first to advance the theoretical mechanisms mediating the relationship between cross-national knowledge distance and AEMNEs' innovation in EEs. We conceptualize and empirically demonstrate the use of local talents and third-country exporting as important local and global embeddedness strategies for AEMNEs to incorporate distant knowledge into their knowledge-creation process, thereby boosting the novelty of their EE innovation. Moreover, by exploring the interaction effect between these embeddedness strategies on AEMNEs' EE innovation, we specify the extent to which different types of embeddedness across their multiple knowledge networks substitute or complement each other, helping AEMNEs maximize the innovation gains of cross-national knowledge distance. Second, we extend LBE logic beyond a dichotomy of home-country and host-country contexts. Our study emphasizes the value of LBE in the global context where cross-national knowledge distance persists. By verifying the significance of this mechanism within global knowledge networks, we refine and enhance the precision of theoretical predictions underpinned by the LBE argument. Finally, by examining third-country exporting as an important innovation mechanism that mediates the innovation outcome of cross-national knowledge distance, our study moves beyond the widely recognized direct effect of LBE. This offers new insights into the exporting literature.

2 | Theory and Hypotheses

2.1 | Cross-National Knowledge Distance, Embeddedness, and Innovation

A long-standing strand of literature suggests that knowledge distance and local embeddedness play an important role in MNEs' cross-border innovation activities (Makri, Hitt, and Lane 2010; Vasudeva and Anand 2011; Kaplan and Vakil 2015). Knowledge distance between home and host countries provides MNEs with the opportunity to make novel linkages and associations. Scientifically and/or technologically distant elements widen the set of possible recombinations of host-country and home-country knowledge, thereby prompting greater novelty in MNEs' innovation outcomes in host countries (Cassiman et al. 2005).

However, prior studies show that combining knowledge stocks that are too disparate, or transferring advanced knowledge or technologies to host-country operations, often diminishes MNEs' cross-border innovation performance (Phene, Fladmoe-Lindquist, and Marsh 2006). The knowledge distance that makes it valuable for innovation often creates difficulties in its acquisition and application because the emergence of knowledge is intertwined with its unique local social contexts, which

are used both to transform data into information and to acquire knowledge (Goldman 1992). Embedding subsidiaries in the local knowledge networks facilitate learning from external partners across national or regional knowledge contexts, enhancing MNEs' access to locally diverse knowledge (Larson 1992). In a similar vein, MNEs can further improve the novelty and diversity of their knowledge-creation activity by sourcing divergent insights and approaches across multiple knowledge contexts on how best to explore the distinctiveness of distant knowledge through their global knowledge network (Ito et al. 2013). Thus, deep local and global embeddedness can help compensate for the absence of institutional proximity necessary for the successful and effective integration of diverse and specialized knowledge bases cross-nationally (Phene and Almeida 2008).

Equally, deep embeddedness in host-country knowledge contexts may promote local isomorphism, increasing MNEs' strategic similarities at the expense of competitive heterogeneity (Tan, Shao, and Li 2013), thereby diminishing the originality of their innovation. The existence of cross-national knowledge distance gives rise to variations in cognition, providing MNEs with unique business acumen and insights not possessed by local firms. As their interaction with local environments increases, MNEs are more likely to adjust to local norms and informal rules, facilitating their absorption of local knowledge. Once they become insiders, the perceived knowledge distance diminishes, reducing the heterogeneity in their comprehension and application of local knowledge as they come to share the same views as their local counterparts (Lin et al. 2015). Thus, it is important for MNEs to adopt innovation strategies that foster embeddedness to ensure access to local or global knowledge, while simultaneously preserving their unique perspectives. For instance, AEMNEs may bypass the need for deep assimilation of remote expertise by outsourcing knowledge-creation tasks to local scientists and selectively engaging them in their innovation process (Tzabbar 2009). This strategy enables AEMNEs to maintain their distinctiveness in understanding and utilizing local knowledge, which is essential for their EE innovation (Lin et al. 2015).

Applying this logic to AEMNEs operating in EEs, we argue that embeddedness serves as an important mechanism through which the knowledge distance between home and host countries shapes AEMNEs' innovation in the host country. We emphasize two types of embeddedness mechanisms—the employment of local talents and third-country exporting—which AEMNEs use to access and explore cross-national knowledge distance for their novel innovation activities. This approach promotes local and/or global embeddedness while maintaining their uniqueness.

2.2 | Embeddedness and Learning

The embeddedness strategies, such as knowledge networking activities, prompt a thorough understanding of the local context, which enhances MNEs' ability to learn and integrate distant host-country knowledge with their existing knowledge in an effort to create knowledge that is distinct and new (Cohen and Levinthal 1990). Thus, we consider that the use of local talents manifests the logic of LBH (Song et al. 2003) as a strategy to enhance local embeddedness. Previous literature suggests that firms often seek to acquire significant knowledge for innovation through individuals (Argote and Ingram 2000) who possess firm- and country-specific knowledge and can apply it to new organizational contexts, thereby accelerating knowledge development (Song et al. 2003). In contrast, we consider that third-country exporting, guided by the principles of LBE (Aw, Chung, and Roberts 2000), allows MNEs to leverage their global or third-country embeddedness while maintaining a foothold in the local context. Through exporting,[1] firms gain exposure to diverse international knowledge and technologies. Increased foreign competition encourages exporting firms to learn and integrate new ideas, technologies, and production methods from foreign competitors and knowledgeable buyers into their operations, facilitating the recombination of newly acquired knowledge (Tse, Yu, and Zhu 2017). Collectively, learning through hiring and third-country exporting promotes the acquisition of advanced skills, the development of radical ideas, and responsiveness to new customer demands, thereby fostering firms' innovation (Salomon and Jin 2008).

2.3 | Exploring Cross-National Knowledge Distance for Host-Country Innovation Through Employment of HSLEs

The distance in knowledge between host and home countries provides significant opportunities for novelty in science and technology, playing a crucial role in the cross-border innovation activities of MNEs. The use of HSLEs allows subsidiaries of AEMNEs to capitalize on these opportunities by gaining access to a diverse range of local knowledge, perspectives and insights (Song et al. 2003). HSLEs are embedded within networks of people, organizations, and institutions, which provide them with access to local resources (Granovetter 1985; Inkpen and Tsang 2005). They often bring knowledge from previous companies or educational backgrounds, enriching the subsidiary with valuable ideas. Empirical studies demonstrate that firms frequently acquire technical knowledge from newly hired engineers whose expertise lies outside the firm's core competencies, a phenomenon referred to as "learning-by-hiring" (Song et al. 2003; Giuliani et al. 2014). This is particularly significant for accessing local tacit knowledge, especially that which resides within individual talents.

The employment of local talents helps AEMNEs effectively adapt to variations in knowledge and geographical contexts, which are often significant barriers to integrating internationally distant knowledge (Giuliani et al. 2014) due to their novelty and variety. First, locally employed talents deeply embedded within the AEMNEs typically acquire extensive knowledge of their new surroundings. This positions them to better search for and effectively identify opportunities for applying local knowledge within the AEMNE context (Song et al. 2003). Such capabilities enable subsidiaries of AEMNEs to extend their knowledge application beyond their core expertise, which is critical for exploring internationally distant knowledge (Phene and Almeida 2008). Fundamentally, bridging distant fields requires substantial cognitive effort from HSLEs. Effective search processes enhance their cognitive processing capacities, aiding in the integration of unfamiliar knowledge elements and the exploration of novel connections between them (Li et al. 2013).

Second, unlike indigenous firms and individuals in MNEs' external networks, HSLEs possess an insider's understanding and familiarity with the operational dynamics of foreign subsidiaries that extend beyond a local perspective. This situational awareness enables them to navigate seamlessly between the different organizational routines and innovation mechanisms employed by both foreign and domestic firms. Their deep social and cultural embeddedness facilitates the development of strong relationships with local suppliers, customers, and government entities. Consequently, foreign subsidiaries can effectively navigate the complexities arising from institutional and geographic contexts when leveraging internationally distant knowledge, thereby influencing the distinctiveness of their innovation strategies (Marin and Sasidharan 2010; Hohberger and Wilden 2022).

Finally, locally employed talents differ from incumbent expatriates in their knowledge backgrounds and social status, which allows them to maintain distinct social and knowledge identities (Brewer 1991). The cross-national knowledge distance between expatriates and HSLEs is more likely to encourage greater diversity in the knowledge elements used by both groups, facilitating the recombination of their respective knowledge bases. Venturing beyond one's own domain of expertise may stimulate a more flexible mindset, beneficial for exploring unconventional avenues of thought (Sassenberg and Moskowitz 2005). This process can enhance innovation opportunities by enabling individuals to access additional knowledge elements that serve as foundations for creating novel associations and fostering the number of potential atypical connections across different disciplinary domains (Schilling and Green 2011).

It is important to note that knowledge or insights acquired directly from local talents are more immediate compared to those obtained through other embeddedness strategies, such as third-country exporting, where access to local knowledge-based resources serves a secondary rather than primary purpose. Essentially, subsidiaries of AEMNEs can bypass the complete absorption of distant know-how by directly involving HSLEs in innovation activities, enabling them to generate insights themselves (Tzabbar 2009). Thus, the utilization of local talents in EEs not only allows AEMNE subsidiaries to access and build on the cross-nationally distant knowledge but also preserves their uniqueness in perspectives, ensuring heterogeneity in their comprehension and exploitation of local knowledge. This is crucial for the innovation of AEMNE subsidiaries in host countries (Lin et al. 2015). We hypothesize,

H1. *The employment of HSLEs will mediate the relationship between the knowledge distance between AEMNE subsidiaries' home and host countries and the novelty of their EE innovation.*

2.4 | Exploring Cross-National Knowledge Distance for Host-Country Innovation Through Third-Country Exporting

Third-country exporting provides an opportunity for AEMNE subsidiaries to source complementary expertise needed to evaluate and comprehend cross-nationally distant knowledge for innovation. Although it is expected to keep diminishing, the knowledge discrepancies between AEs and EEs remain substantially more prominent than those between countries at similar levels of economic development. The greater the levels of knowledge distance between EEs and their home countries, the more likely AEMNEs are to search broadly across various territorial boundaries for complementary knowledge to adapt to such distance. Third-country exporting broadens AEMNE subsidiaries' search scope, specifically in terms of the number of channels they can draw on in their innovation activities. This external search for complementary knowledge takes place beyond their host and home operations, within their global knowledge networks (Phene and Almeida 2008). In parallel, as MNEs lack knowledge and expertise in the related knowledge domain, they tend to have relatively low-expectations toward the optimal complementarity of external knowledge, which reduces their search difficulty but increases the ambiguity of their search objectives. This low-precision in their search objectives tends to leave ample room for potential sources of complementary, novel knowledge in both related and unrelated disciplines (Lopez-Vega, Fredrik, and Vanhaverbekede 2016). The external knowledge search via exporting meets the complementarity requirement for MNE subsidiaries to adjust to host-country knowledge distance.

When exporting firms become well-connected within foreign countries, they are able to learn and tap into local knowledge through various channels such as trade associations and social engagements. This enables these firms to benefit from the exchange of technical information among scientists, managers, engineers, and other industry professionals (Salomon and Shaver 2005). Exporting firms also face local competition that they do not encounter at home. By interacting with and competing against foreign rivals in third countries, AEMNEs are exposed to knowledge that is unavailable to firms whose operations are confined to the home and host markets only. For instance, they can reverse engineer their competitors' products in the exporting countries to gain technological insights.

In addition to being an important channel for the diffusion of technological knowledge, third-country exporting also provides access to market knowledge that helps AEMNEs commercially apply internationally distant knowledge in EEs (Salomon and Jin 2008). When searching for and negotiating with foreign buyers, exporters learn about opportunities for exploiting and/or integrating distant knowledge for innovative products in foreign markets (Salomon and Shaver 2005). Exporting products that embody local knowledge to a third-country also enables AEMNE subsidiaries to benefit from foreign customer feedback on how to improve existing products, which can be used to inform the design and delivery of new products in their EE host countries (Salomon and Jin 2008). In some cases, exporting firms even involve foreign buyers who can offer technical, operational, and product development assistance in their innovation activities (Evenson and Westphal 1995). Thus, third-country exporting serves as a mechanism for AEMNE subsidiaries to source complementary and diverse knowledge beyond host countries but within their global knowledge networks.

H2. *Third-country exporting will mediate the relationship between the knowledge distance between AEMNE subsidiaries' home and host countries and the novelty of their EE innovation.*

2.5 | Interaction Between Employment of HSLEs and Third-Country Exporting

The use of HSLEs may enhance AEMNE subsidiaries' ability to capture the innovation-related benefits of third-country exporting for several reasons. First, as we discussed earlier, AEMNE subsidiaries face the challenges of reduced uniqueness but increased variations in knowledge content as they increasingly engage in third-country exporting. Embedding distant knowledge in innovation beyond a subsidiary's existing knowledge domain and national boundaries is challenging. The employment of local talents in EE host countries can help AEMNE subsidiaries alleviate such problems because local talents with a solid knowledge background outside MNEs' core knowledge domains may be more familiar with the complementary knowledge content from third countries than expatriates. Additionally, this helps preserve their uniqueness in perspective. Their closer knowledge proximity is likely to facilitate the adaptation of diverse practices that emerge within national contexts more effectively because proximity enables these HSLEs to develop a thorough understanding of differing approaches and the related national contexts in which knowledge within the same research field has been applied (Crescenzi, Nathan, and Rodríguez-Posea 2016). This is evident from prior research which found technical proximity to be a key determinant in the innovation success of co-patenting teams with cultural diversity (Crescenzi, Nathan, and Rodríguez-Posea 2016).

Second, some new knowledge may be too complex for local employees with expertise in the field to fully decode and assimilate, specifically in the acquisition of tacit knowledge (Mowery, Oxley, and Silverman 1996). This often requires more intensive interaction with knowledge sources to help knowledge learners build up contextual understanding and accumulate experiential learning before being able to fully explore such knowledge for innovation (Su et al. 2011). However, the higher the levels of exporting to third countries, the greater the opportunities for AEMNEs to develop strong social relationships and interactions with third-country buyers and knowledge sources. As a result, it is more likely that local employees will be able to successfully acquire such knowledge due mainly to their intensive interaction with foreign knowledge sources. Therefore, the positive relationship between third-country exporting and the novelty of their EE innovation predicted previously will be amplified for those AEMNE subsidiaries simultaneously using HSLEs in their EE host countries. Hypothesis 3 is as follows:

H3. *The employment of HSLEs will positively moderate the effect of third-country exporting on the novelty of AEMNE subsidiaries' EE innovation—the positive effect of third-country exporting on the novelty of their EE innovation will be strengthened for those simultaneously using HSLEs.*

3 | Data and Method

3.1 | Sample and Data

Our sample includes all AEMNEs operating in the Chinese high-tech industries in the 2004–2012 period. China was considered to be the most appropriate empirical setting for our study as it has been the largest FDI recipient country in the world since the early 2000s. We focus on the time window during the 2004–2012 period when China maintained its world No. 1 position as the favorite destination for FDI in surveys of investor sentiment and the A.T. Kearney FDI Confidence Index, despite increasing competition from other investment destinations. We focus on the Chinese high-tech industries, in particular where foreign MNEs have a major dominance characterized by their extensive R&D engagement with over 1000 R&D centers established in China, and account for more than half of the high-tech exports from China during our sample period (KPMG 2014). Moreover, according to the statistics provided by the China National Intellectual Property Administration (CNIPA) since 2004, the total number of Chinese patents held by AEMNEs in these high-tech industries exceeds 80% of all patents granted to foreign MNEs in China. Thus, to better capture the AEMNEs' local innovation activity, we targeted those that have R&D centers in China and have patented locally. We adopt the OECD classification of the high-tech sector used in China, which defines high-tech industries as industries with a higher OECD-average direct, indirect and overall R&D intensity than those in a lower category over the 1980–1990 period (Hatzichronoglou 1997). We obtained basic information on AEMNEs, such as the employment of HSLEs and third-country exporting, from the Chinese Statistic Yearbook, the most comprehensive and reliable database that contains detailed information on all firms operating in China. We collected information on their patent citations for the same period and company nationalities[2] from the patent database of the CNIPA and the Chinese Ministry of Commerce. These AEMNEs span four primary three-digit Chinese Standard Industrial Classification (SIC) high-tech industries as listed in the Chinese Statistic Yearbook: Radio, TV, and communications equipment (401–3, 405–9); Pharmaceuticals (271–6); Office, accounting, and computing machinery (404, 415); and Medical, precision, and optical instruments (368, 411–2, 419, 414). The aircraft and spacecraft industry is excluded due to restrictions on foreign entry. Table 1 presents the descriptive statistics and correlation matrix for the variables of interest, and Table 2 illustrates the breakdown of patent citation profiles across various industries. All independent variables are lagged by 1 year to mitigate possible endogeneity with the mediators and dependent variables. Our full dataset contains 3168 firm-year observations.

3.2 | Measures

We measure the novelty of an AEMNE's EE innovation using the number of forward citations of its Chinese patents. Particular attention is paid to their invention patents, which cannot be issued unless the condition of "an inventive step," highlighting their fundamental novelty and distinctiveness from existing solutions and inventions. The variable captures the annual citation counts made for a given Chinese invention patent of the focal firm, excluding its self-citation. The patent citations for each sample firm were collected from the year when the Chinese invention patents were applied for (no earlier than 2004) until the end of 2012. Computing a weighted patent count using forward citations provides a more precise measurement to gauge variations in the novelty of firm innovation than alternative measures, such as patent counts (Hall, Jaffe, and Trajtenberg 2005), as it enables us to effectively

TABLE 1 | Descriptive statistics and correlations.

Variables	M	SD	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1. Patent citation counts	2.24	25.73	1															
2. Third-country exporting $_{t-1}$	0.21	0.36	0.021	1														
3. The employment of HSLEs $_{t-1}$	0.10	0.66	0.003	−0.075	1													
4. Knowledge distance$_{t-1}$	0.08	0.09	0.033	0.076	0.044	1												
5. Patent law change	0.25	0.44	−0.003	0.325	−0.089	−0.066	1											
6. Proximity to the global technological frontier	0.56	0.50	0.090	0.074	0−0.006	0.076	−0.131	1										
7. Financial crisis	0.15	0.35	0.010	−0.257	0.019	−0.062	−0.278	0.344	1									
8. Local competition$_{t-1}$	4.86	1.17	−0.005	0.287	−0.063	0.102	0.395	−0.001	−0.429	1								
9. R&D investent$_{t-1}$	0.06	0.18	−0.006	−0.010	0.011	0.002	−0.003	0.141	0.007	−0.040	1							
10. Operational experience in China$_{t-1}$	7.72	5.19	0.013	0.154	−0.083	0.136	0.036	0.146	−0.096	0.209	0.037	1						
11. Size$_{t-1}$	11.54	1.86	0.151	0.174	0.015	0.008	−0.027	0.130	−0.042	0.067	−0.123	0.179	1					
12. GDP per capital$_{t-1}$	40,585.77	17,125.12	−0.010	0.317	−0.047	0.130	0.126	0.255	−0.093	0.316	−0.078	0.154	0.157	1				
13. Slack resources$_{t-1}$	2.5	25.25	−0.008	0.156	−0.0035	0.015	0.083	−0.007	−0.051	0.099	−0.012	−0.011	−0.029	0.013	1			
14. Innovative capability$_{t-1}$	0.38	3.93	0.575	−0.013	0.014	0.018	−0.023	0.036	−0.007	−0.009	−0.008	0.065	0.076	−0.035	0.001	1		
15. Host-country performance$_{t-1}$	0.16	0.33	−0.020	−0.185	0.002	−0.024	−0.167	−0.082	0.085	−0.144	0.057	−0.092	−0.250	−0.132	−0.039	−0.017	1	
16. Intellectual property protection$_{t-1}$	14.15	9.36	0.006	−0.021	0.010	0.030	−0.311	0.113	0.296	−0.242	−0.062	−0.028	0.122	0.448	−0.061	−0.016	−0.022	1
17. Marketization of commercial activities$_{t-1}$	8.38	1.21	0.070	0.003	0.003	−0.091	−0.028	−0.005	0.022	−0.076	−0.019	−0.049	−0.054	−0.048	−0.035	0.061	0.053	0.034

Note: $N = 3168$, $t = 9$. All positive and negative correlations greater than 0.03 are significant at $p < 0.05$.

TABLE 2 | Patent citation profiles by industry.

Patent citation counts	Industry 1	Industry 2	Industry 3	Industry 4
Mean	1.54	0.16	2.69	1.15
SD	5.26	0.85	30.33	8.94
N	736	664	952	816

Note: "1" = the pharmaceutical industry; "2" = the medical, precision and optical instrument industry; "3" = the office, accounting and computing machinery industry; "4" = the radio, TV and communications equipment industry.

distinguish between high-quality patents which are the building blocks upon which future patents are created, and low-quality patents with little or no value to future patents.

We capture the knowledge distance between an AEMNE's home and EE host countries using the number of patents and scientific articles per capita (Furman, Porter, and Stern 2002). Following Berry, Guillen, and Zhou (2010), we calculate the dyadic knowledge distance between AEMNEs' home countries and China using the Mahalanobis method. We collected data on the number of patents and scientific articles per 1 million of the population of each home-country during the sample period from the USPTO, the World Development Indicators (WDI), and the International Scientific Indexing (ISI).

To assess the indirect effects, we construct two mediating variables. The employment of HSLEs is measured by the number of local employees with a degree or higher in a science subject as a proportion of an AEMNE subsidiary's total employees in China (Saxenian 1990). Following the conventional approach (Salomon and Jin 2008), we capture third-country exporting by the ratio of an AEMNE subsidiary's export sales generated from China to third countries to its total sales. Both variables allow us to gauge the extent to which AEMNEs use local talents and third-country exporting as channels for local and global knowledge-sourcing.

We construct a set of control variables that may also affect the novelty of AEMNEs' innovation in China at firm level, including AEMNEs' operational experience in China (by the number of years it has established formal operational facilities in China), size of host-country operations (by the log of its total assets in China), host-country R&D intensity (by R&D expenditure as a percentage of its total sales in China), proximity to the global technological frontier (1 = an AEMNE's home-country R&D intensity is greater than the average industry R&D expenditures in OECD countries, 0 = otherwise) (Salomon and Jin 2010), innovative capability (by the total number of Chinese patents an AEMNE has generated since its entry until the year before the observation years), slack resources (by the ratio of current assets to current liabilities), and host-country performance (using return on assets in China). At industry level, we control for competition (using the Herfindahl–Hirschman index), and industry effect (using industry dummies). At provincial level, we control for GDP per capital (by the GDP per capita of the province where an AEMNE's formal operational facility locates), intellectual property protection and marketization of commercial activities using the National Economic Research Institute marketization index. To control for the potential impact of external shocks on AEMNEs' novel innovation in China, we include two dummy variables, namely the global financial crisis (1 = the observation year of the global financial crisis in 2008, 0 = otherwise) and local patent law change (1 = the observation years that fall before 2009, 0 = otherwise).

3.3 | Estimation Methods

Our dependent variable, the number of forward patent citations, is a count variable that takes on non-negative integer values. This suggests a Poisson regression to avoid heteroskedastic and non-normal residuals. Our independent and mediating variables operate at multiple levels, mostly firm and country levels. Given the multilevel structure of our independent variables, we estimate a two-level random effects Poisson model that partitions the total variance of each independent variable between firms and countries. Although a fixed effects model controls for time-independent unobserved firm characteristics, it does not account for the multilevel nature of our independent variables. To derive the size of the year effect, we estimate the unconditional models using the conditional models with the inclusion of year-fixed effects. This allows us to separate and specify the percentage of variance explained by the year effect from the residual variance. In a similar vein, we estimate the effect of knowledge distance on our mediators using a two-level random effects hierarchical generalized linear model because both mediators, the employment of HSLEs and third-country exporting, are continuous variables.

4 | Results

Table 3 reports the results of our hierarchical generalized linear modeling of the impact of knowledge distance between AEMNEs' host and home countries on the two mediators, the use of HSLEs (Models 1–2), and third-country exporting (Models 3–4). Table 4 presents the results from our multilevel negative binomial regression analysis of the novelty of AEMNEs' host-country innovation. Model 1 is the baseline model. Model 2 estimates the direct effect of knowledge distance on AEMNE's novel innovation in China. Models 3–4 analyze the mediating impacts of the employment of HSLEs and third-country exporting on the novelty of AEMNE's innovation in China, respectively. Model 5 is the main-effect model and Model 6 adds the interaction term between our two mediators.

To test Hypotheses 1 and 2 and determine whether the employment of HSLEs and third-country exporting are channels through which the knowledge distance between the

TABLE 3 | Effect of knowledge distance on the employment of HSLEs and third-country exporting.

	The employment of HSLEs		Third-country exporting	
Dependent variables	**Model 1**	**Model 2**	**Model 3**	**Model 4**
Independent variables		**Coef.**	**Coef.**	**Coef.**
Knowledge distance$_{t-1}$ (KD$_{t-1}$)		0.483**		0.819***
		(0.169)		(0.179)
Patent law change (PLC)	−0.125***	−0.098*	0.043**	0.093***
	(0.032)	(0.040)	(0.013)	(0.018)
Proximity to the global technological frontier	−0.050	0.014	0.215***	0.220***
Technological frontier	(0.030)	(0.039)	(0.013)	(0.016)
Financial crisis	0.018	−0.041	0.278***	0.264***
	(0.056)	(0.072)	(0.023)	(0.030)
Local competition$_{t-1}$ (LC$_{t-1}$)	0.038*	0.001	0.030***	0.033**
	(0.019)	(0.023)	(0.008)	(0.010)
R&D investent$_{t-1}$	0.008	0.016	0.028	−0.062
	(0.076)	(0.116)	(0.034)	(0.043)
Operational experience in China$_{t-1}$	−0.003	−0.007*	0.004*	0.002*
	(0.002)	(0.003)	(0.002)	(0.001)
Size$_{t-1}$	−0.037	0.018*	0.014***	0.025***
	(0.007)	(0.009)	(0.004)	(0.004)
GDP per capital$_{t-1}$	0.000	0.000	0.000***	0.000***
	(0.000)	(0.000)	(0.000)	(0.000)
Slack resources$_{t-1}$	0.001	−0.001	0.000	0.000
	(0.001)	(0.001)	(0.000)	(0.000)
Innovative capability$_{-1}$	0.003	0.001	−0.003	−0.004*
	(0.003)	(0.003)	(0.003)	(0.001)
Host-country performance$_{t-1}$	−0.067	−0.055	−0.037*	−0.029
	(0.035)	(0.050)	(0.015)	(0.019)
Intellectual property protection$_{t-1}$	0.002	−0.001	−0.003**	0.001
	(0.002)	(0.002)	(0.001)	(0.001)
Marketization of commercial activities (MC)$_{t-1}$	−0.007	−0.001	0.018**	0.022***
	(0.009)	(0.011)	(0.006)	(0.005)
Industry fixed effect	Yes	Yes	Yes	Yes
Year-fixed effect		Yes		Yes
Random effect parameter		Yes		Yes
Country level		1.513		0.097
		(0.578)		(0.021)
Wald Chi^2	58.84***	30.08***	1895.85***	1142.65***
Log likelihood		−2077.29		−789.76

Note: $N = 3168$, $t = 9$. All time varying independent variables are lagged by 1 year. Standard robust errors are reported in parentheses. *$p < 0.05$; **$p < 0.01$; ***$p < 0.001$.

TABLE 4 | Mediation effects of the employment of HSLEs and third-country exporting.

DV = Patent citation count	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
Independent variables		**Coef.**	**Coef.**	**Coef.**	**Coef.**	**Coef.**
The employment of HSLEs (LE_{t-1})			0.169***		0.162***	0.035*
			(0.024)		(0.024)	(0.026)
Third-country exporting (TE_{t-1})				0.424***	0.396***	0.403***
				(0.065)	(0.065)	(0.066)
$HSLE_{t-1} \times TE_{t-1}$						0.231***
						(0.042)
Knowledge distance$_{t-1}$ (KD_{t-1})		1.510**	1.120	1.310	0.010	0.009
		(0.559)	(0.564)	(0.560)	(0.006)	(0.006)
Patent law change (PLC)	0.613***	0.860***	0.912***	0.670***	0.741***	0.706***
	(0.054)	(0.059)	(0.060)	(0.066)	(0.066)	(0.067)
Proximity to the global technological frontier	−0.022	0.624***	0.627***	0.613***	0.617***	0.600***
Technological frontier	(0.051)	(0.047)	(0.047)	(0.047)	(0.047)	(0.047)
Financial crisis	0.314***	0.141	0.084	0.214**	0.151	0.187
	(0.072)	(0.078)	(0.078)	(0.079)	(0.079)	(0.079)
Local competition$_{t-1}$ (LC_{t-1})	0.063	0.196***	0.175***	0.209***	0.185***	0.204***
	(0.031)	(0.033)	(0.033)	(0.033)	(0.034)	(0.033)
R&D investent$_{t-1}$	−1.899	0.319	0.382	0.270	0.333	0.281
	(0.313)	(0.230)	(0.224)	(0.232)	(0.226)	(0.233)
Operational experience in	−0.212	0.037***	0.040***	0.038***	0.040***	0.039***
China$_{t-1}$	(0.028)	(0.005)	(0.005)	(0.005)	(0.005)	(0.005)
Size$_{t-1}$	−0.222	0.470***	0.480***	0.456***	0.466***	0.462***
	(0.037)	(0.010)	(0.011)	(0.011)	(0.011)	(0.011)
GDP per capital$_{t-1}$	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Slack resources$_{t-1}$	−0.178***	−0.290***	−0.304***	−0.303***	−0.316***	−0.311***
	(0.020)	(0.013)	(0.014)	(0.013)	(0.014)	(0.014)
Innovative capability$_{t-1}$	0.401	0.050***	0.050***	0.051***	0.050***	0.050***
	(0.461)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Host-country performance$_{t-1}$	0.161	−0.089	−0.135	−0.069	−0.112	−0.089
	(0.103)	(0.083)	(0.084)	(0.083)	(0.084)	(0.084)
Intellectual property protection$_{t-1}$	0.010	−0.003	−0.004	−0.004	−0.004	−0.004
Protection$_{t-1}$	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)
Marketization of commercial activities (MC)$_{t-1}$	−0.503	0.373***	0.382***	0.364***	0.373***	0.370***
Activities (MC)$_{t-1}$	(0.088)	(0.019)	(0.019)	(0.019)	(0.019)	(0.019)
Industry fixed effect	Yes	Yes	Yes	Yes	Yes	Yes
Year-fixed effect	Yes	Yes	Yes	Yes	Yes	Yes

(Continues)

TABLE 4 | (Continued)

DV = Patent citation count	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
Independent variables		**Coef.**	**Coef.**	**Coef.**	**Coef.**	**Coef.**
Random effect parameter		Yes	Yes	Yes	Yes	Yes
Country level		2.532	2.527	2.529	2.524	2.534
		(0.462)	(0.462)	(0.463)	(0.462)	(0.470)
Wald Chi^2	410***	9054***	8997***	9132***	9018***	9016***
Log likelihood	−1646	−6847	−6821	−6826	−6803	−6800

Note: $N = 3168$, $t = 9$. All time varying independent variables are lagged by 1 year. Standard robust errors are reported in parentheses.*$p < 0.05$; **$p < 0.01$; ***$p < 0.001$.

home-country and China benefits the novelty of an AEMNE's host-country innovation, we conducted a mediation analysis following Baron and Kenny (1986), Hayes (2013) and Preacher, Rucker, and Hayes (2007). First, the independent variable must be correlated with the dependent variable. Second, the independent variable must be correlated with the mediator. Third, the mediator must affect the dependent variable. Finally, the effect of the independent variable on the dependent variable in a model that includes the mediator should be significantly smaller than that which does not include the mediator. Model 2 of Table 4 shows that the coefficient of knowledge distance is positive and significant ($\beta = 1.510$; $p < 0.01$), which indicates that the knowledge distance between an AEMNE's home-country and China is positively related to the novelty of its Chinese innovation. We find that knowledge distance has a positive and significant ($\beta = 0.483$; $p < 0.01$) impact on the employment of HSLEs in Model 2 of Table 3. Model 3 of Table 4 shows a positive and significant ($\beta = 0.169$; $p < 0.001$) relationship between the employment of HSLEs and the novelty of AEMNEs' Chinese innovation. In Table 4, the coefficient of knowledge distance (1.120) in Model 3 becomes insignificant and less than that in Model 2 (1.510), after controlling for the employment of HSLEs. The result of our Hayes (2013) and Preacher, Rucker, and Hayes (2007) mediation test with 5000 bootstrap resamples and a bias-corrected and accelerated 95% confidence interval suggests that the change in the effect of knowledge distance is statistically significant (for the indirect effect $\beta = 0.390$; $p < 0.001$). These results suggest that the employment of HSLEs mediates the relationship between the knowledge distance between AEMNEs home and host countries, and the novelty of their host-country innovation, providing support for Hypothesis 1.

Hypothesis 2 predicts that third-country exporting mediates the relationship between the knowledge distance between an AEMNE's home and host countries and the novelty of its innovation performance. Model 4 in Table 4 shows that after controlling for the effect ($\beta = 0.424$; $p < 0.001$) of third-country exporting, the coefficient of knowledge distance in Model 4 (1.310) becomes insignificant and less than that in Model 2 (1.510). The Hayes (2013) and Preacher, Rucker, and Hayes (2007) mediation test result with 5000 bootstraps resamples and a bias-corrected and accelerated 95% confidence interval confirms that the change is statistically significant (for the indirect effect $\beta = 0$ 0.200; $p < 0.001$). Thus, Hypothesis 2 is supported. The more fully specified models (Models 5 and 6) in Table 4, with the inclusion of both causal mechanisms, provide evidence for stronger mediation effects, as the coefficients of knowledge distance drop further (0.010 in Model 5 and 0.009 in Model 6). The results of our Hayes (2013) and Preacher, Rucker, and Hayes (2007) moderated mediation test with 5000 bootstraps resamples and a bias-corrected and accelerated 95% confidence interval suggest that the conditional indirect effect of third-country exporting on the novelty of AEMNEs' host-country innovation increases, as the employment of HSLEs increases.

Model 6 in Table 4 reports the results from estimating the moderating effect of the employment of HSLEs on third-country exporting in affecting the novelty of AEMNEs' host-country innovation. The coefficient of the interaction term with third-country exporting is positive and statistically significant ($\beta = 0.231$; $p < 0.001$), which is consistent with the prediction of Hypothesis 3. As Figure 1 shows, the slope of the relationship between third-country exporting and the novelty of their host-country innovation is more positive and significant for AEMNEs recruiting high-levels of HSLEs (HSLEs = 0.760, mean + 1 SD) than those with low-levels of HSLEs (HSLEs = 0). Therefore, the findings support Hypothesis 3.

Figure 2 shows our moderated mediation test graphically. These results suggest that the employment of HSLEs and third-country exporting significantly mediate the effect of cross-national knowledge distance between AMNEs' home and host countries on the novelty of their host-country innovation. Moreover, the employment of HSLEs crowds out the effect of third-country exporting on AEMNEs' innovativeness in the host-country. These results support Hypotheses 1–3.

To assess the sensitivity of our results, we performed several robustness checks. First, to test whether our hypothesized relationships hold in the case of incremental innovation, we re-estimated our model using the number of utility patents as the dependent variable to replace patent citation counts and obtained consistent results. Second, we replaced forward patent citation counts with two alternative measures for innovation performance—patent count and new product sales as a percentage of total sales and innovation propensity (a dummy variable indicating whether or not an AEMNE engages in innovation (Yes = 1, No = 0)). The inclusion of each alternative dependent variable in our supplementary analysis produced results similar to our original findings which are robust with regard to the propensity and the quantity of innovation in addition to its quality. Finally, we further tested the potential of the non-linear effect of the employment of HSLEs and

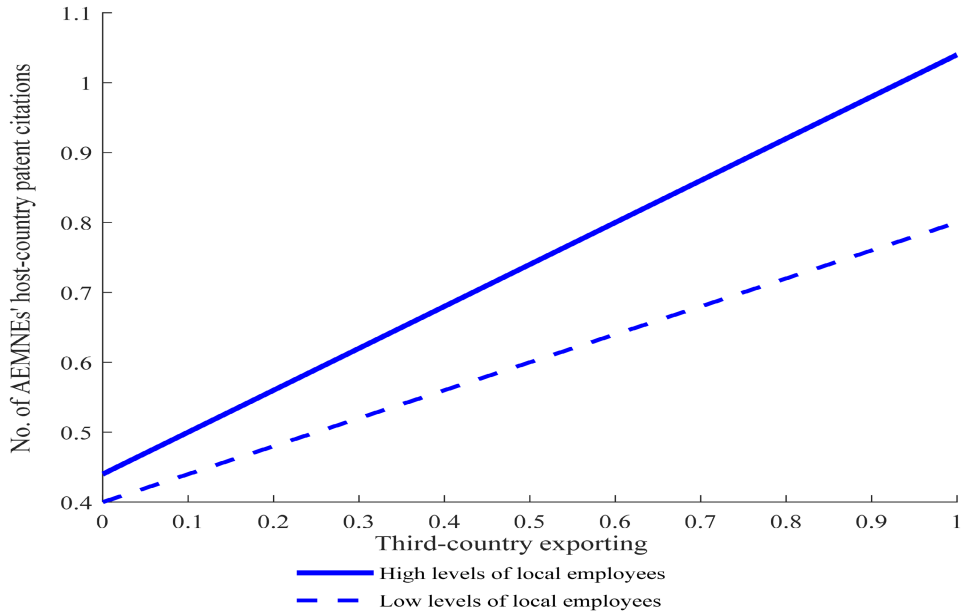

FIGURE 1 | Moderating effect of the employment of HSLEs on the relationship between third-country exporting and the novelty of AEMNEs' host-country innovation. [Colour figure can be viewed at wileyonlinelibrary.com]

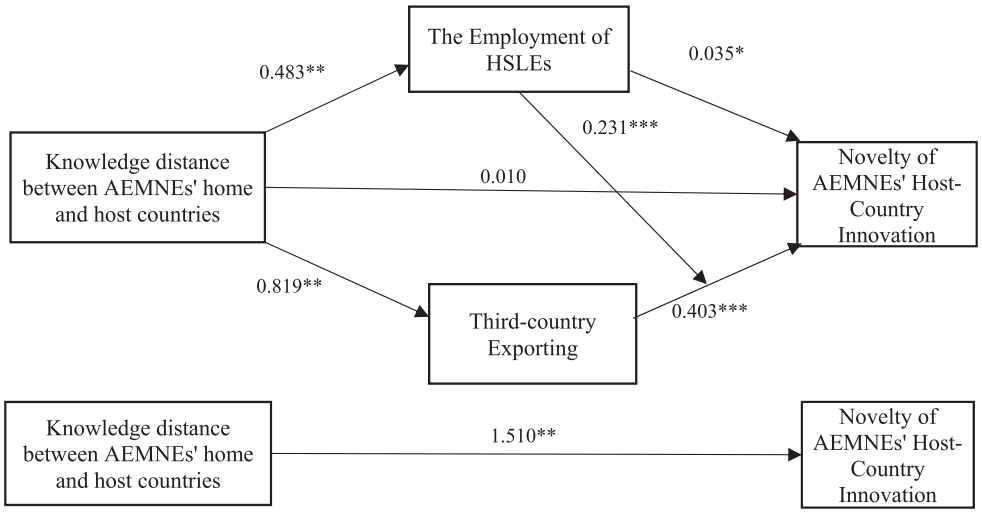

FIGURE 2 | Multimediation model. *$p < 0.05$; **$p < 0.01$; ***$p < 0.001$.

third-country exporting by including their quadratic terms in the regression analysis. The results showed that the strong linear pattern remains with no evidence of a significant non-linear effect.

5 | Discussion and Conclusions

Drawing on the embeddedness literature and logic of LBH and exporting, our study examines the relationship between cross-national knowledge distance and the novelty of AEMNEs' host-country innovation in greater depth. We unveil the underlying mechanisms that capture how AEMNEs' host-country embeddedness (through the employment of HSLEs) and third-country embeddedness strategies (through third-country exporting) mediate this relationship. The existence of knowledge distance between host and home countries provides AEMNEs with the opportunity to access a diverse set of knowledge and approaches that serve as a source of innovation. However, firms vary in their capabilities and approaches with regard to applying new external knowledge (Cohen and Levinthal 1990). Thus, variations in innovation performance may lie in the ways that AEMNEs glean insights from distant foreign knowledge and exploit such knowledge within their multiple knowledge networks around the globe (Berry 2018; Phene, Fladmoe-Lindquist, and Marsh 2006). We conceptualize and empirically corroborate that AEMNE subsidiaries are able to derive greater novelty for their EE innovation by leveraging the benefits of cross-national knowledge distance through hiring HSLEs and third-country exporting.

5.1 | Theoretical Contributions

Our study evokes new mechanisms through which MNEs leverage cross-national knowledge distance to boost the novelty of

their host-country innovation. Prior studies highlight the importance of local knowledge for MNE host-country innovation performance (Dunning 1993; Berry, Guillen, and Zhou 2010; van Hoorn and Maseland 2016), with a specific emphasis on the knowledge adoption from reverse innovation originated from EEs (Govindarajan and Ramamurti 2011; Shankar and Narang 2019). However, how AEMNEs leverage the knowledge distance between EEs and their home countries to innovate in EEs remains largely unknown, especially considering their insufficient understanding of local cultural, language, and formal institutional contexts. Specifically, AEMNEs' cutting-edge knowledge and technologies may be undervalued in the targeted emerging markets that lag behind their home countries in knowledge development, due to increasing local demands for moderately advanced products with a low-cost priority (Immelt, Govindarajan, and Trimble 2009). The complex local conditions in EEs compel AEMNEs to combine and integrate new knowledge outside their areas of expertise for innovation within their host-country operations (Phene, Fladmoe-Lindquist, and Marsh 2006). Thus, understanding the innovation strategies that AEMNEs use in their EE host countries to source knowledge both locally and internationally within their global knowledge networks is crucially important, given the cross-national knowledge distance.

Specifically, our study adds to the embeddedness literature by articulating the type and extent of embeddedness strategies (local and third-country embeddedness) across different territories of MNEs' multi-country operations that could potentially be used to leverage cross-national knowledge distance for host-country innovation. This is particularly relevant in the context of MNEs' overseas innovation activities. Our findings imply that the use of either HSLEs or third-country exporting enables AEMNEs to derive greater novelty for their local innovation by leveraging the benefits of cross-national knowledge distance. This provides empirical support for the contention that foreign operations are more likely to embrace and utilize diverse knowledge from their local working relationships and connections with third-country knowledge networks, creating more novel combinations of knowledge, specifically in the context of AEMNEs operating in EEs (Berry 2018). Moreover, we articulate to what extent the learning gained through these two different types of embeddedness channels interacts to maximize the innovation-related benefits of distant knowledge from their local working relationships and linkages with the third-country knowledge networks. More specifically, our findings suggest that LBH complements LBE in boosting AEMNEs' EE innovation performance.

From a broader perspective, we advance a better understanding of innovation gains associated with different types of embeddedness and the connections within MNEs' multiple knowledge networks. Previous studies have suggested that the combination of high host-country knowledge network embeddedness and third-country knowledge network embeddedness enhances MNEs' likelihood of engaging in radical innovation (Phene, Fladmoe-Lindquist, and Marsh 2006; Berry 2018). Our study refines these findings by enhancing the precision of the theoretical contexts and implications derived from these studies. Specifically, we demonstrate that host-country embeddedness (through the recruitment of HSLEs) is particularly useful for AEMNEs with third-country knowledge network embeddedness. When considering the boundary conditions of exploring innovation-related benefits from third-country exporting, our study suggests that AEMNEs engaged in third-country exporting may benefit the most from recruiting HSLEs in their EE host countries (or increasing their host-country embeddedness).

Our study also provides novel and deeper insights into the LBE literature in two distinct ways. First, we are able to conceptualize and empirically demonstrate the benefits of learning gained via exporting for MNEs' subsidiary innovation in a global context. The LBE literature predominantly emphasizes a headquarter-centric approach, where headquarters acts as the primary recipient and/or coordinator of global learning, with a predominant focus on how to bring back and make sense of learning gained via exporting to headquarters rather than subsidiaries (Aw, Chung, and Roberts 2000; Salomon and Jin 2010). However, our study reveals that some of the learning may be equally, if not more, advantageous for subsidiary knowledge development, adding extra value to MNEs' host-country innovation and helping to minimize cross-national knowledge distance. This phenomenon is largely overlooked in the LBE literature but is becoming increasingly important with international product fragmentation and the development of global knowledge networks. More specifically, although MNEs aim to locate different stages of product development in various regions to leverage variations in factor endowments between countries (Harrigan 1995), effectively utilizing knowledge-based resources in host countries requires overcoming cross-national knowledge distance (Berry, Guillen, and Zhou 2010). Our study takes a significant step toward addressing this gap by examining third-country exporting to elucidate its innovation-related learning gains in a global context. Additionally, our findings provide important insights and evidence supporting the contemporary outlook that advocates for subsidiaries characterized by a large presence of HSLEs to more comprehensively draw knowledge from a global context rather than from headquarters (Teodorescu et al. 2022).

Second, addressing this gap also enhances and extends our understanding of the theoretical contexts of third-country exporting as an important innovation strategy for MNEs to tap into multiple knowledge networks in order to promote their learning and innovation activities across the globe. In addition to locational and cost advantages, the learning aspect of such activities from a host-country perspective has been somewhat overlooked in the prior literature. Similar to all exporting-based activities, third-country exporting provides firms with access to unique experiential knowledge and technical resources (Tse, Yu, and Zhu 2017; Salomon and Jin 2010). However, leveraging these endowments beyond their home-country knowledge contexts is not only particularly challenging but also crucial for boosting AEMNEs' innovation in EEs. Given the knowledge distance between AEMNEs' home and EE host countries, third-country exporting may provide an opportunity to source insights or the relevant knowledge necessary to bridge the gap between two apparently different knowledge sets. This can help AEMNEs better appreciate and capitalize on the diversity of host-country knowledge for innovation. Third-country exporting may also enable MNEs to search more broadly for a conducive environment for the subsequent development of knowledge or technologies originating from EE host countries by AEMNEs (Huang and Li 2019) when the home-country demand for such knowledge is still low,

with little support for the development of such knowledge due to nature resource constraints and/or the prohibition of deliberate home government policies, and where the local rivalry is intense in host countries with a unique set of unfamiliar local competitors.

Finally, our findings are particularly relevant for AEMNEs operating in host countries with high geopolitical tensions or undergoing political or economic turmoil. In such contexts, leveraging local talents can help AEMNEs navigate local innovation challenges more effectively. Local employees' social capital, manifested in local networks, knowledge, and trust, can prove advantageous when accessing local insights, navigating regulatory complexities, and mitigating adverse government actions such as expropriation and discriminatory policies (Granovetter 1985; Inkpen and Tsang 2005; Moschieri, Ravasi, and Huy 2024). This becomes especially crucial for AEMNEs' EE innovation in tense geopolitical climates, where geopolitical tensions or institutional shocks restrict AEMNEs' operations and impede direct engagement with local business and knowledge networks (Röell et al. 2022). Furthermore, in addition to their greater familiarity with and distinct insights into complementary knowledge from third countries compared to expatriates, the moderating effect of using HSLEs on the innovation performance-enhancing impact of third-country exporting is likely amplified during periods of heightened political sensitivity and stringent visa restrictions which hinder the deployment of expatriate talent. Therefore, before asserting the generalizability of our study, future research should aim to validate our findings using more recent data. This would help assess the robustness of our findings in the face of various external shocks prevalent in today's complex and dynamic international business environment.

It should be noted that our findings were drawn from the 2004–2012 period. The external environment has substantially changed since then due to increasing geopolitical tensions between the US and China. While such changes may affect FDI inflows between China and the West, AEMNEs may hesitate to invest in high-tech industries in China due to political pressure from their home countries. However, the slowdown of inward FDI in China does not change the relevance of our findings, given that cross-national knowledge distance still affects AEMENs' host-country innovation, and these MNEs need to find ways to overcome knowledge distance while operating abroad.

5.2 | Managerial Implications

Our findings have important implications for regional executives of AEMNEs in managing their overseas innovation activities in emerging markets. First, the presence of international knowledge gaps implies that AEMNEs may need to embrace the distant foreign knowledge that lies outside the existing knowledge base within their host-country operations. This is particularly challenging for expatriates but crucial for their innovation success in host markets. Regional executives and subsidiary managers should develop a broader and more integrative view of their innovation activities within the AEMNE's global knowledge networks. In addition to employing local talents, particular attention should be paid to the innovation-related benefits of third-country exporting. This strategy allows AEMNEs to leverage learning from distant foreign knowledge and combine it with the diverse knowledge and insights gained via their multiple knowledge networks, specifically in third-country exports, to produce more innovative outputs in emerging markets.

Second, while our study demonstrates that multiple embeddedness strategies across knowledge networks in two or more countries are favorable for AEMNEs' EE innovation, it is important to note that the use of local talents benefits firms regardless of whether they have external knowledge network connections outside home or deep knowledge network embeddedness in third countries. Managers should be mindful that these two strategies reinforce each other in contributing to AEMNEs' innovation in emerging markets. Instead of exclusively focusing on one strategy (e.g., third-country exporting), subsidiary managers should also consider the other (e.g., hiring local talents) as a complementary approach to enhance the novelty of their innovation in emerging markets.

5.3 | Limitations and Future Research Directions

Our study is subject to a number of limitations which provide opportunities for future research. First, the single-country setting of our study raises concerns about the generalizability of our findings. As a host country, China may have many commonalities but also differences with other EEs where the use of local talents and third-country exporting may be complementary or less helpful for AEMNEs in embracing and making sense of distant foreign knowledge. Future studies should verify the validity of these two mediators using data from other EEs. Second, in this study, we use the citations of AEMNEs' patents applied in SIPO as a measure of their radical innovation in China only. Some AEMNEs may innovate in the host country but apply for patents at home or keep it as secret know-how. To obtain a thorough understanding of this phenomenon, future research should examine the underlying mechanisms of both innovation outcomes. Finally, due to data constraints and the quantitative nature of this study, we are unable to capture the actual learning gained through AEMNEs' multiple embeddedness in host and third countries. Further in-depth qualitative studies that examine the learning and innovation process across AEMNEs' multiple knowledge networks are certainly needed. Additionally, the lack of detailed information on the destinations of third-country exports prevents us from exploring the nuances in the learning resulting from AEMNEs' third-country-exporting activities. Future research should conduct a fine-grained analysis to compare and contrast the magnitude and significance of the impact of third-country exporting on AEMNEs' EE innovation when they target third countries with varying degrees of cross-national knowledge distance from their home countries.

Data Availability Statement

The authors have nothing to report.

Endnotes

[1] In the case of indirect exports, third-country embeddedness is entrusted to domestic intermediaries that firms collaborate with, such as trading companies, export management firms, and agents. These

intermediaries possess in-depth knowledge of international markets, extensive experience working with multiple firms across diverse markets, and broad networks in third countries, including relationships with other firms, suppliers, and industry experts. They play a crucial role in helping firms access and assimilate specialized knowledge, technologies, and valuable insights essential for innovation on a global scale.

[2]Our final sample consists of MNEs from 23 advanced economy countries, including Australia, Belgium, Canada, Cyprus, Denmark, Finland, France, Germany, Ireland, Israel, Italy, Japan, South Korea, Luxembourg, Netherlands, New Zealand, Norway, Singapore, Spain, Sweden, Switzerland, UK, and US.

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