



Multinational Enterprises' Knowledge Transfer Received Dimensions and Subsidiary Innovation Performance: The Impact of Human Resource Management Practices and Training and Development Types

Yu Xie^{1,2}, Francis Boadu³, Zhen Chen^{4*} and Adwoa Serwaa Ofori⁵

¹ Research Center for Enterprise Management, Chongqing Technology and Business University, Chongqing, China, ² School of Management, Chongqing Technology and Business University, Chongqing, China, ³ Faculty of Entrepreneurship and Enterprise Development, Kumasi Technical University, Kumasi, Ghana, ⁴ Dazhou Central Hospital, Dazhou, China, ⁵ Registry, Kumasi Technical University, Kumasi, Ghana

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*Correspondence:

Zhen Chen
imcaspar@gmail.com

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In this paper, we adopt the resource-based view theory as the theoretical framework to empirically investigate the relationship among knowledge transfer received dimensions (i.e., tacit and explicit), human resource management practices, training and development types (i.e., on-the-job training and development, and off-the-job training and development) and subsidiary innovation performance. Using a survey dataset from 314 subsidiaries of foreign multinational enterprises located in China, we find that: (1) knowledge transfer received dimensions contribute to subsidiary innovation performance; (2) human resource management practices can positively moderate knowledge transfer received dimensions and subsidiary innovation performance; (3) the positive effect of human resource management practices on the knowledge transfer received dimensions- subsidiary innovation performance link increases when on-the-job training and development and off-the-job training and development is high. The study also provides insight into how knowledge transfer received dimensions, human resource management practices, and training and development types matter importantly to the subsidiary's innovation performance.

Keywords: knowledge transfer received dimensions, HRM practices, training and development, subsidiary innovation performance, emerging economies

INTRODUCTION

In the knowledge-based economy, innovation has been recognized as a fundamental route for socio-economic growth (Poblete, 2022). Innovation plays a momentous function in competition at both the state and enterprise levels as it is a central driving force to economic growth (Boadu et al., 2021a). Academics' accentuated the concept as a dynamic capability that surges potentials for enterprises in addressing customer desires, outweighing rivalry, and aligning their strengths with and exploiting marketplace opportunities (Boadu et al., 2021a). Thus, enterprises' success predominantly hinges on the innovation competency that enables them to be malleable and

adapt to the speedy variation of the market arena (Li et al., 2019; Boadu et al., 2021a). Today's volatile, uncertain, complex, and ambiguous (VUCA) transnational market environment has thrust multinational enterprises and their affiliates to seek survival antidotes to boost their innovation capabilities for the fiercely competitive battle among the major players.

Among different antecedents affecting innovation, knowledge management processes (such as acquisition, storage, and transfer) are considered as an important weapon for enterprises' innovation performance, leading to growth, competitiveness, and survival in the international marketplace. Particularly, effective knowledge transfer processes allow enterprises to inflate internal knowledge resources with external knowledge resources and transform them into dynamic capabilities such as innovation (Boadu et al., 2018, Boadu et al., 2021a). Indeed, knowledge transfer is often considered a fundamental survival approach in the era of the knowledge economy, and the vital foundation of innovation to build blocks for organizational achievement (Roy and Sarkar, 2016). Academics assert that enterprises with excellent knowledge transfer can sustain their innovation performance in the market arena (Roy and Sarkar, 2016; Boadu et al., 2018; Zia, 2020). Thus, the concept improves a variety of business and marketing performance (Ganguly et al., 2019; López-Cabarcos et al., 2019; Arnett et al., 2021). Admittedly, it is an indispensable contributing factor to corporate innovation performance.

Although, knowledge transfer and firm innovation performances have received the attention of researchers in many disciplines in the extant literature. The current study contends that there is a shred of paucity evidence in the extant literature on how firms adopt knowledge transfer received (KTR) mechanisms to innovate, as researchers have accentuated the impact of knowledge transfer [i.e., from the multinational enterprises' headquarters (HQs) to the subsidiary] and reverse knowledge transfer (i.e., from the subsidiary to the multinational enterprises HQs) (Gaur et al., 2019) on firm innovation performance to the detriment of KTR (Boadu et al., 2018). Boadu et al. (2018) defined KTR as a process by which a subsidiary puts in a request and acquires knowledge (i.e., tacit and explicit) based on strategic information of the cross-border operations and focal business environment from multinational enterprises' headquarters.

Thus, the study intends to scrutinize the opportunities that KTR dimensions (i.e., tacit and explicit) bids to emerging market subsidiaries vis-à-vis innovation performance. Expressly, the relationship mechanisms of human resource management (HRM) practices and training and development types on the linkage amongst KTR dimensions and subsidiary' innovation performance (SIP) have been rare. We contend that the effects of these contextual mechanisms should not be secluded from a theoretical model in which a capability and SIP rapport are present (Schilke, 2014; Boadu et al., 2021a), in emerging economies, specifically the Chinese economy. The country supports enterprises to use their unique resources to innovate as innovation has shifted from a "nice" to have to a "must-have" phenomenon for enterprises to pursue competitiveness and sustainability. Indeed, the Chinese market environment offers

a mesmeric and apposite context to scrutinize the association between tacit and explicit KTR, HRM practices, and training and development dimensions. The research issue is novel, intriguing, and exigent that will significantly contribute to innovation ingenuities in the extant work.

First, existing scholarships demonstrate that the strength of knowledge transfer hinges on numerous contingencies comprising inner and outer strategic assets and competencies (Papa et al., 2020; Boadu et al., 2021a). Though, the former and the latter comprise entrepreneurial opportunities, environment dynamism, and HRM practice influence knowledge transfer acquired. As a result, the current study proposes to extend scholarships on how KTR work together with organizational-level contextual variable to surge the innovation performance of subsidiaries by contending that HRM practices play a significant role in deciphering KTR into grander SIP. Hence, we contend that HRM practices can support KTR to accomplish its full potential. HRM practices refer to a package of activities that mutually complement the skills, abilities, and motivations of the workforce (Guest, 2017; Li et al., 2019). More importantly, workforces within the organization hunt for external knowledge and incorporate it with internal knowledge to boost organizational operational activities and innovation outcomes (Papa et al., 2020). In addition, the innovation culture is spread among workforces as a strategic intangible asset that moves action en route for ingenuity and shared beliefs (Li et al., 2019). Thus, the concept is a potent avenue to achieve desired results of an organization (Papa et al., 2020; Zhou et al., 2021). Previous scholarships have established that HRM systems constitute the driving factors behind innovation performance and enterprises' competitive advantage (Kaabi et al., 2018; Lee et al., 2019). However, the combined effect of HRM practices and tacit and explicit KTR dimensions on innovation performance is scant (Sánchez et al., 2015; Sarala et al., 2016). Thus, additional concrete substantiation is vital to discover and explicate the probable facilitating impact of HRM practices on the correlation between tacit and explicit KTR and SIP.

Secondly, the study also explores how training and development dimensions affect the interaction of HRM practices and KTR dimensions on SIP. Training and development reflect a complex system that consists of changing the boundary of organizational effectiveness and the workforce through programs to influence the competitive advantage toward success and survival (Zhu et al., 2018). In today's knowledge-intensive era, major international business actors design comprehensive training and development programs for their workforce to develop new skills and creative ideas and discover new opportunities (Boadu et al., 2018) for innovation consequence and competitive advantage of an organization. Previous scholarships have established a more significant association between on-the-job and off-the-job training and development and innovation outcomes (González et al., 2016; Boadu et al., 2018; Dostie, 2018). The combined effect of training and development types, HRM practices, and tacit and explicit KTR on innovation performance is scant in extant works. As a result, investigating the joint effect of training and development behaviors, HRM practices and tacit and explicit KTR on SIP

is inescapable to have an impeccable comprehension of the antecedent conditions of innovation.

In addressing these gaps, this study draws on the resource-based view (RBV) theory to develop a conceptual framework to scrutinize the variables' probable associations, which is rare in the extant works? Hence, the current study intends to analyze 314 datasets from multinational enterprises subsidiaries operating in China via hierarchical linear modeling (HLM) to address the following questions:

- RQ1: Does tacit and explicit KTR affect SIP directly?
- RQ2: Does the association between tacit and explicit KTR and SIP be more pronounced when the firm has a high degree of HRM practices?
- RQ3: Does training and development types further strengthen the moderating effect of HRM practices on the linkage amongst tacit and explicit KTR and SIP?

Our study contributes to the current body of literature. First, our study extends the RBV by stressing the derelict interactions between resource received from multinational enterprises HQs and resource application: how the KTR as a resource received from multinational enterprises HQs institute the application of innovation performance - which represents a valuable contribution of this study. Second, from the RBV perspective, knowledge workforces are intangible assets that are indispensable to attaining a competitive edge; these workforces are driven by commitment (Li et al., 2019), which is a precondition for innovation culture. Our conclusion extends the RBV by shedding light on HRM practices in emerging markets: how subsidiaries can improve their KTR dimensions through HRM practices to make full use of KTR dimensions to innovate and achieve sustainable development. Third, by identifying training and development types and HRM practices' effects on the KTR dimensions on the application of innovation performance, we reveal an important interactive effect among the variables - an under-explored area in the knowledge and HRM literature.

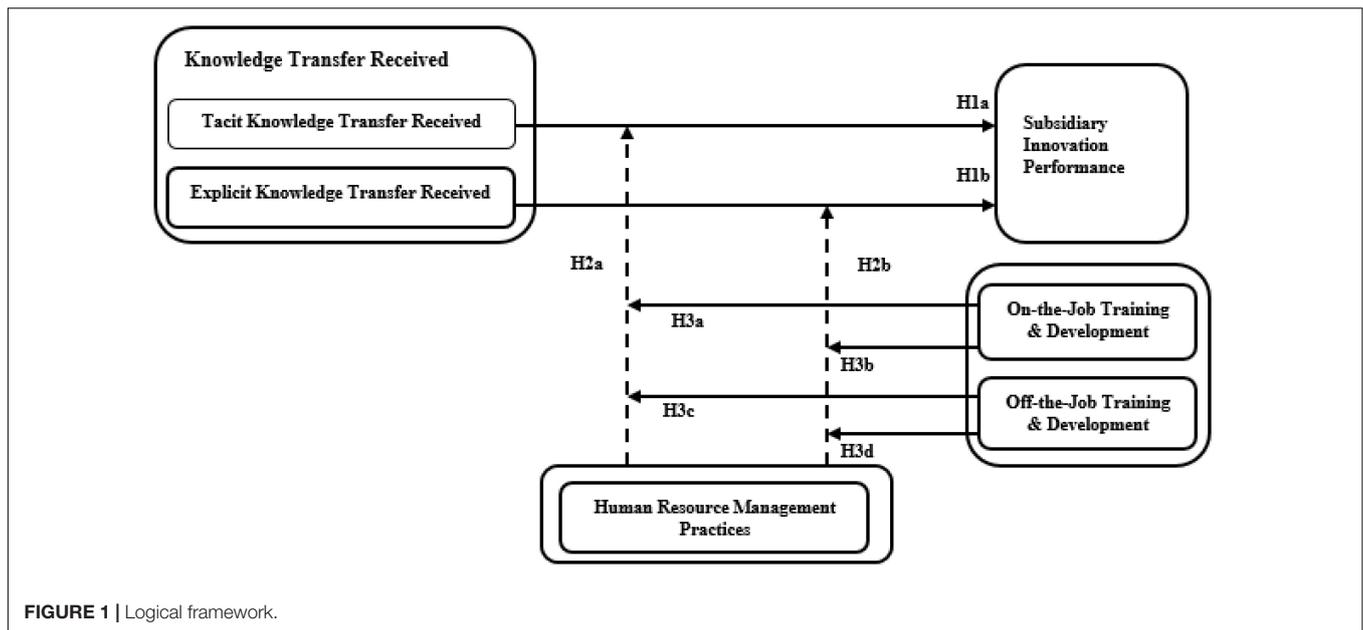
The rest of the study is organized into four parts. Part 2 deals with the theory and hypotheses development. Extant works are reviewed to elucidate the association among the variables. The next part (3) describes the method applied to assess the proposed logical framework of the study. Part 4 reports the results of the research. It deals with the assessment of descriptive and correlation as well as hypotheses tests. Finally, part 5 presents the discussions and conclusions of the study, with a concentration on the theoretical and practical contributions, limitations, and future trajectory.

THEORY AND HYPOTHESES

Resource Based-View

We adopt RBV as the theoretical context. First, the term RBV originated from research on firm-specific abilities (Lippman and Rumelt, 1982). It has been applied in different contexts to explain how firms can obtain a competitive edge and greater performance. Thus, it focuses on how enterprises leverage their strategic resources that are valuable, sporadic, and rigid

to copy by the competitors in the business environment to obtain a competitive edge and superior performance (Barney, 1991; Li et al., 2019). Exponents of the RBV accentuate that the deployment of tangible and intangible resources supports enterprises in sustaining a long-term innovation performance and continuous competitive advantage as they apply an organizational response (i.e., strategic assets and capabilities) to become more sensitive to variations in the market environment (Boadu et al., 2018; Eapen and Krishnan, 2019). Thus, the theory is deemed to be appropriate for this study due to its critical value for the development of resources and capabilities. More interestingly, if the critical resources are rare and pricy for rivals to replicate or to substitute them with alternative resources that can accomplish similar tasks, the organization achieves lasting superior performance and continues competitive advantage from those strategic resources. The study contends that resources and capabilities such as knowledge, HRM practices, and training and development satisfy the above criteria of the RBV for generating and supporting higher innovation performance and competitive advantage. Boadu et al. (2018) stated that RBV helps a firm in sensing its unique resources for enhancing performance and a competitive advantage for an organization. We contend that RBV can help firms leverage the effect of existing resources on firm performance via resources configuration and integration. Firms that learn to use knowledge resources will synthesize novel organizational processes and product development, which are essential for the competitive edge. The RBV offers that while the positive innovation consequence of knowledge is not guaranteed, KTR dimensions are vital to organizational effectiveness, competitiveness, and sustainability (Boadu et al., 2018). As a result, independent of expected or unexpected and preferred or adverse innovation outcomes in the short or long term, the impetus for the introduction of KTR dimensions is to permit subsidiaries to attain their strategic aims. Thus, we contend that KTR dimensions (Boadu et al., 2018) are a vast resource that can support organizations in explicating innovation outcomes. As scholars (e.g., Papa et al., 2020; Boadu et al., 2021a) have noticed that the strength of knowledge transfer hinges on numerous contingencies comprising inner and outer strategic assets and competencies (e.g., HRM practices) to foster innovation performance. HRM practices stimulate the workforce's capability (e.g., recruitment), motivation (e.g., compensation), and opportunity (e.g., participation) to contribute to innovation outcomes (Appelbaum et al., 2000). The primary aim of the HRM practices is to nurture, inspire, and offer opportunities to display splendid job compartments for an enterprise's continued competitive edge and grander innovation performance (Ostroff and Bowen, 2016; Li et al., 2019). While applying RBV to the HRM practices, tacit and explicit KTR, and SIP relationship, we ponder on the importance of knowledge and human resource (i.e., workforce) as critical resources and consistent with the view of RBV. For instance, knowledge and human resource that share the characteristics of rarity, unpredictability, and rigidity for actors to copy or reproduce can play a significant role in firms' superior innovation performance (Guan and Frenkel, 2018; Li et al., 2019). We, therefore, contend that HRM practices in an organization aiming at enticing, inspiring, gratifying, and



sustaining employee job behaviors can support KTR dimensions for process and product innovation to achieve superior SIP. To advance our understanding of how HRM practices facilitate the effect of KTR dimensions on SIP, the study considers the extent to which the facilitation depends on the training and development types. While applying RBV to the training and development types, HRM practice, tacit and explicit KTR, and SIP, we argue that employees develop high morale when managers or policymakers of an establishment provide higher-level competency training and development programs to upgrade their inspiration, level of self-awareness, skills, and abilities to enhance HRM activities and tacit and explicit KTR activities for greater innovation performance which invariably is capable of influencing organizational success. **Figure 1** underneath displays the logical framework and the subsequent section considers the hypotheses development.

Hypotheses Development

Knowledge Transfer Received and Innovative Performance

Drawing on the RBV, an enterprise's knowledge resources are critical for sustaining a competitive advantage in a turbulent market environment (Xue et al., 2019). Advocates of RBV contend that for enterprises to maintain their posture and superior competitive advantage in today's market, which is full of complexity, uncertainty, and volatility, espousing knowledge is considered the most crucial factor that can offer valuable, unrivaled sporadic, and exclusive resources to outweigh the competition (Boadu et al., 2018; Li et al., 2019). Thus, the changing market setting has made organizational knowledge a vital element than capital, labor, or land in most organizations worldwide in sustaining enterprises' innovation outcomes. For example, in the international market arena, the process of creating an innovative performance (e.g., new product, service,

and patent application) cannot be accomplished without the contingent nature of knowledge generation.

As a result, knowledge transfer is essential in utilizing knowledge to advance innovation activities in a business organization. The concept involves the transmission of knowledge from one organization (e.g., multinational enterprises) to another (e.g., subsidiary). It is a vital aspect of the leveraging, diffusion, and formation of knowledge and a central procedure for multinational enterprises' knowledge management (Wang et al., 2014). Also, it plays a significant function in the long-term existence of multinational enterprises. In addition, knowledge transfer aids multinational enterprises to exchange valuable legacy, novel problem-solving strategies, and techniques for the improvement of organizational innovation performance and efficiency (Foss and Pedersen, 2019).

Practitioners and researchers consider the transfer of knowledge embodied in organizations and people as an important antecedent to innovation outcome (Van Wijk et al., 2008; Manfredi Latilla et al., 2018). They believe that if business organizations can transmit the critical capabilities (knowledge) embedded within the organization, it will offer a foundation for a different type of innovation, which can lead to a competitive edge over other competitors. In other words, innovation success involves the process which hinges on knowledge interface, conversion, and exploitation. For example, previous studies have made advances in terms of relating knowledge transfer to a firm's innovative performance (Buckley et al., 2004). Chirico et al. (2011) assert that knowledge transfer impacts significantly on firm performance and sustainable growth.

Palacios-Marqués et al. (2013) studied the Spanish biotechnology and telecommunications industries, concluding that firms that associate themselves with knowledge transfer enhance their performance. However, researchers notably Nonaka (1994) distinguish knowledge transfer into two continua, tacit and explicit, respectively, and examine their influence on

firm performance. These streams of studies have considerably enhanced the understanding of a firm's uses of tacit versus explicit knowledge in different performance contexts. Even though from the extant literature, few existing empirical analyses produce contradictory results on the impacts of explicit and tacit knowledge transfer on firm performance (Dhanaraj et al., 2004; Anh et al., 2006; Becerra et al., 2008). Dhanaraj et al.'s (2004) work on Hungarian international ventures reveals a positive coefficient for the linkage amongst explicit knowledge and performance, and a negative coefficient for tacit knowledge. In contrast, scholarship steered by Anh et al. (2006) in Vietnamese international joint ventures reveals a positive coefficient for the linkage amongst tacit knowledge and performance and insignificant relation for explicit knowledge. These inconsistencies in the literature may cause by the following: (i) An absence of homogenous measurement as several researchers have developed several instruments to measure tacit and explicit knowledge; (ii) Use of different methodology by researchers; (iii) Difficulty in accessing data; (iv) Causal procedures or contingency conditions; and (v) A lack of consensus on the content domains.

Besides, previous studies have also overlooked KTR, defined as a process by which an enterprise request and acquires knowledge (i.e., tacit and explicit) based on strategic information of the cross-border operations and focal business environment from HQs (Boadu et al., 2018). In this study, we followed Nonaka's (1994) distinction of knowledge transfer (i.e., tacit and explicit) and used it to examine KTR effects on innovation performance.

Tacit and Explicit Knowledge Transfer Received and Subsidiary' Innovation Performance

Numerous academics have divergent definitions for the construct "performance" in the extant literature (Chen et al., 2011). However, the import of most of the definitions largely accentuated technical effectiveness (Chen et al., 2011). Innovation performance is the benefit of an enterprise's technological innovation activities, underlining the incorporation of all groundbreaking, radical, and cutting-edge elements (Boadu et al., 2021a). Knowledge transfer stimulates the enhancement of organizational innovation performance. It is a key to promoting the innovation capability of enterprises (Boadu et al., 2021a). From the knowledge transfer perspective, (Nonaka, 1994) divides knowledge transfer into two ways: tacit and explicit, respectively. First, Bolisani and Bratianu (2018) describe tacit knowledge as know-how built on individual experiences, insight, and opinions. Such individualistic and contextual-specific knowledge is concealed and deep-rooted within the individual's action and experience (Gaur et al., 2019). Thus, the salient features of tacit knowledge are that knowledge is fundamentally personal in nature. Scholars have recognized the concept as a critical asset and contribute to developing positive dispositions toward growth and change as enacted by individuals in an organization (Sprinkle and Urick, 2018). Admittedly, tacit knowledge transfer has a pivotal impact on firms' performance, innovation performance, and sustainable competitive edge (Farooq, 2018; Quartey, 2019).

Secondly, explicit knowledge is a know-what type of knowledge that can easily be codified and formalized (Bolisani

and Bratianu, 2018). It is one of the essential knowledge dimensions (Polanyi, 1966) that firms depend on to create a competitive advantage. Such knowledge type can be in the form of words and information written in manuals and specifications. Admittedly, it is relatively easy to recognize, accumulate, hoard, and re-claim (Bolisani and Bratianu, 2018) to trigger innovation processes. Explicit knowledge transfer can improve employees' capabilities to propose new ideas, which, in turn, enhance innovative performance. The RBV theory suggests that enterprises with intangible resources such as explicit knowledge can create innovative goods and services to address customers' needs and capture substantial international market shares to usurp a competitive edge. Thus, explicit knowledge transfer is a critical resource that supports contemporary IB enterprises operating across the globe to drive innovation and performance (Wang and Li, 2016).

We, therefore, argue that knowledge transfer dimensions are an indispensable conduit for enterprises to enhance innovation and performance. The RBV posits that knowledge is a strategic organizational attribute (Boadu et al., 2018) for enterprise value creation and sustainable competitive edge (Grant, 1996). Extant studies have proved a robust rapport among knowledge transfer dimensions and performance output (Ahammad et al., 2016; Magnier-Watanabe and Benton, 2017). For instance, Ahammad et al. (2016) conclude that knowledge transfer dimensions profoundly affect enterprises' performance. Similarly, Magnier-Watanabe and Benton (2017) discover a positive association amongst tacit and explicit knowledge transfer and performance. However, other authors, like Dhanaraj et al. (2004) discover the opposite result among the variables (-tacit impact and +explicit impact) in their studies on Hungarian transnational enterprises. While, Anh et al. (2006) studies on the effect of tacit and explicit knowledge transfer on performance revealed that tacit and explicit knowledge transfer has a significant and an insignificant effect on firm output, respectively. On the innovation front, studies have proved a strong rapport among tacit and explicit knowledge transfer and innovation output (Cavusgil et al., 2003; Harlow, 2008; Wang and Li, 2016; Terhorst et al., 2018; Asbari et al., 2019; Pérez-Luño et al., 2019; Berraies et al., 2021). Liu et al.'s (2019) studies on the impact of knowledge transfer dimensions on emerging market multinational enterprises' innovation performance reveal a positive result.

In the context of subsidiaries, the current research contends that tacit and explicit KTR from HQs can affect SIP, which, in turn, enhances competitive advantage. Thus, drawing upon the RBV, we predict that subsidiaries can leverage tacit and explicit KTR for innovation performance. Accordingly, we state that:

Hypothesis1_a: There is a positive relationship between tacit KTR and SIP.

Hypothesis1_b: There is a positive relationship between explicit KTR and SIP.

Effect of Human Resource Management Practices

From the perspective of the RBV, certain scholars have recognized that not only should an enterprise's resources be valuable

and inimitable to expedite superior lasting performance but also the enterprise must have an apt structure or system in place to take advantage of these resources (Barney, 1991; Li et al., 2019). Extant works have predominantly accentuated the direct association between individual strands or bundles of resources and performance, while less consideration has been dedicated to how management can apply their resources more efficiently (Wiklund and Shepherd, 2003). Therefore, the current study contends that HRM practices defined as a package of activities that mutually complement the skills, abilities, and motivations of the workforce (Guest, 2017; Li et al., 2019) can explicate the managerial routes that enable enterprises to acquire valuable and inimitable workforce. These valuable and inimitable workforce characteristics create a “human capital value” (Boxall and Purcell, 2016). Though, any human capital value may condense in the long run. Therefore, enterprises’ HRM practices or strategies should be well-defined and aligned to the empowerment of the enterprise’s workforce, which, in turn, fosters the enterprise’s evolution and upsurge the enterprise’s culture (McGregor, 1960). HRM practices can (a) Surge the worth and rareness of the knowledge via internal development and (b) Spur workforce comportment in the desired route. Li et al. (2019) assert that HRM practices can affect the workforce’s capability (e.g., knowledge and skills) to execute tasks. Indeed, from an organizational perspective, strategic scholars have regarded the management of workforces within an organization as one of the central engines supporting firms to reach and realize their goals (Ostroff and Bowen, 2016; Li et al., 2019). From the extant scholarships, authors have established evidence of positive effects of bundle HRM practices on knowledge (Jimenez-Jimenez and Sanz-Valle, 2012), knowledge transfer or sharing (Chuang et al., 2016; Li et al., 2019), and innovation performance (Jackson et al., 2014; Kaabi et al., 2018; Lee et al., 2019). Other scholars have established a positive correlation between individual HRM practices (e.g., compensation, participation, recruitment, and appraisal) and knowledge creation and innovation (Andries and Czarnitzki, 2014). For instance, with compensation schemes, workforces’ sense incentivized to perform well as these advantages are even resilient (Andries and Czarnitzki, 2014). Besides, job satisfaction and commitment inspire workforces to be ingenious, intricate in the enterprises’ ethics and assist in establishing an innovation philosophy (Li et al., 2019).

Given the significance of HRM practices in enterprise resource development; the current scholarship intends to scrutinize whether the effect of HRM practices on a tacit and explicit KTR can explain the SIP. According to the RBV, firms can incorporate well-structured HRM practices in their corporate maneuvers (Diaz-Chao et al., 2015) to convey intense variation to corporate strategies and resources in an aggressive environment, which, in turn, improve their innovation output and competitive advantage. We contend that HRM practices are crucial and can work in tandem with tacit and explicit KTR in an organization. Thus, the interaction of HRM practices and tacit and explicit KTR can play a decisive function in promoting organizational procedures and operational activities, which, in turn, enhances SIP in an organization. Lazzarotti et al. (2015) postulate that

enterprises should prudently manage bundle HRM practices to promote knowledge transfer and innovativeness.

When a firm has a high level of HRM practices, it can speedily reflect and address human capital matters. From this perspective, KTR can stimulate organizational processes and operational activities, thus crumpling the firm’s HRM practices for shaping human capital issues (Besson and Rowe, 2012). Drawing upon the RBV, HRM practices may nurture social relations among workforces by enhancing their capabilities, commitment, and motivation to access, mobilize, and grasp vital KTR information (Caligiuri, 2014), which, in turn, may enhance the innovation, leading to successful SIP. Therefore, we suggest that the combined effects of HRM practices and tacit and explicit KTR can surge the SIP. The study proposes a two-way interaction into a SIP. Thus, we hypothesize that:

Hypothesis 2_a: The association between tacit KTR and SIP is more pronounced when the firm has a high degree of HRM practices.

Hypothesis 2_b: The association between explicit KTR and SIP is more pronounced when the firm has a high degree of HRM practices.

Training and Development Types, Human Resource Management Practices, Tacit and Explicit Knowledge Transfer Received, and Subsidiary’ Innovation Performance

Training and development can be defined as a process apply to transfer to the workforces’ pertinent skills, knowledge, and capability to enhance their performance on current and future assignments (Esteban-Lloret et al., 2018). Training and development are also a process of improving organizational efficiency, workforces’ skills or capabilities, and productivity (Boadu et al., 2018). The training and development process helps maximize an enterprise’s ability to create an environment for perpetual learning that facilitates the exchange of knowledge and ideas among workforces, which permits them to work and accomplish aims more professionally (Li et al., 2019). The present study accentuates the types of training and development, namely, on-the-job training and development and off-the-job training and development, respectively (Boadu et al., 2018) due to its critical effects on prime organizational results such as enterprise innovation and performance (González et al., 2016; Boadu et al., 2018; Dostie, 2018). On-the-job training and development refer to a process whereby an organization equips and motivates workforces daily with practical training and other developmental skills in the workplace (Boadu et al., 2018), while off-the-job training and development refer to a process whereby an organization equips and motivates employees occasionally in a classroom, workshop, simulation exercise with theory and practical’s in a place away from the workplace (Boadu et al., 2018). The former approaches training and development activities by engaging knowledgeable professionals with more experienced to teach or give practical instructions to the workforce at the desk or the bench. In the same vein, team leaders, executives, superintendents, mentors can be contacted to teach workforces on matters concerning individual or group assignments and

projects (Armstrong and Lorentzen, 1996; Boadu et al., 2018). More importantly, such activities enhance workforce efficiencies, competence, creativity, innovation, capability, and commitment to accept new technologies and techniques, memorize and reproduce for optimal innovation outcome (González et al., 2016; Boadu et al., 2018; Dostie, 2018). While, the latter approaches training and development activities by engaging consultants or staff members in the training department of the organization to give prescribed training programs taken in a form of dialogues, colloquium, and case studies in a place away from the workplace (Armstrong and Lorentzen, 1996; Boadu et al., 2018). Such programs offer workforces full attention to concentrate on the learning activities, experiment with new ideas, and generally undertake self-analysis, which is necessary for permanent behavior change. Admittedly, the concept offers an opportunity to introduce workforces to new information, ideas, and experience outside what prevails in the job environment. Pertinently, it addresses employees' deficiencies in the working environment; and prepares them to grasp and absorb the latest information and strategies in the market environment, which can impact positively on new product and service development to enhance innovation capability.

Extant scholarships have identified training and development as key contributing factors behind innovation output (González et al., 2016; Boadu et al., 2018; Dostie, 2018). Dostie's (2018) studies on Canadian firms revealed that training and development types are crucial ways of increasing innovation. Boadu et al. (2018) asserted that training and development types are indispensable foundations and criteria for surging firms' innovation performance in multinational enterprises' subsidiaries operating in emerging economies. Bauernschuster et al. (2009) studies on German firms spanning from the 1997–2001 period established a robust and statistically significant effect of on-the-job and off-the-job training and development on innovation. Other scholars have established a positive linkage amongst training and development and staff productivity (Feltrinelli et al., 2017; Khan et al., 2017) and performance (Deming, 1982).

Drawing on RBV, enterprises that succeed in training and developing workforces to offer knowledge in assemblages and the entire workplace are probable to synthesize novel concepts and prospects and expedite innovation capability (Boadu et al., 2018). However, the concept of training and development types affects dissimilarity in the organization; it can be high or low on-the-job and off-the-job training and development. At the highest level, enterprises become proactive in accessing diversified ideas and concepts to enhance training and development programs. At the lowest level, enterprises become deskbound to search for diversified ideas and concepts crucial in developing training and development programs. Considering the significant nature of training and development in organizational growth; we intend to investigate whether a higher degree of training and development types strengthens the interactive effects between HRM practices and tacit and explicit KTR on SIP. Although, extant works demonstrate the individual effects of training and development types, HRM practices, and tacit and explicit KTR on innovation performance (Boadu et al., 2018; Li et al., 2019). Drawing upon

the RBV, we contend that during training and development programs, workforces pay attention to acquiring new skills, knowledge, and experience within and outside precincts of the workplace by observing, imitating, and modeling others who are credible and more knowledgeable in a social context, memorize and reproduce to enhance the combined effects of HRM practices and tacit and explicit KTR on SIP. We, therefore, posit that the combined effects of training and development types, HRM practices, and tacit and explicit KTR can lead to SIP. The study proposes a three-way interaction (i.e., between training and development types, HRM practices, and tacit and explicit KTR) into a SIP. Thus, we hypothesize that:

Hypothesis 3_a: The facilitating influence of HRM practices on the linkage amongst tacit KTR and SIP surges when on-the-job training and development are high than low.

Hypothesis 3_b: The facilitating influence of HRM practices on the linkage amongst explicit KTR and SIP surges when on-the-job training and development are high than low.

Hypothesis 3_c: The facilitating influence of HRM practices on the linkage amongst tacit KTR and SIP surges when off-the-job training and development are high than low.

Hypothesis 3_d: The facilitating influence of HRM practices on the linkage amongst explicit KTR and SIP surges when off-the-job training and development are high than low.

MATERIALS AND METHODS

Participant and Data Collection

Before the survey questionnaire's final design, we pretested the draft questionnaire to assess its clarity and appropriateness for the study. First, we engage five scholars from the area of knowledge, innovation, and HRM to moderate the questionnaire and provide feedback. This encounter provided a platform to assess and refine each question for precision, comprehensibility, and consistency. Second, we further survey the revised questionnaire on thirty-three MBA students from universities in China who are experts in international business. Our preliminary investigation reveals that the constructs' internal consistency is not a problem.

To gather subsidiary-level response data in the Chinese context to test the hypotheses, we adopted a survey approach to precisely measure the study's theoretical constructs as the knowledge transfer phenomenon is quite definite, and the associations among constructs are statistically testable. We draw our sample from subsidiaries of foreign multinational enterprises focusing on manufacturing and service industries. This area belongs to knowledge-intensive and high-technology environments related to high research and development outflow and short product cycles. Through, a random sampling approach, we launched the survey to 465 senior executives in the MBA and EMBA programs of the authors' university, spanning from July to October 2018, to address the research hypotheses. Explicitly, we set the following conditions for the potential executives to satisfy: (1) the executives' firm must be in existence for not less than 3 years; (2) the executives must have three or more years of international business experience; (3) the executives

must have 6 or more years of work experience; and (4) the executives must have a first degree or above. After that, we sent an email message to executives of subsidiaries to explain the study's purpose, the result's application, the relevance of the result to subsidiary practitioners and policymakers, and asked if they would join in the survey. A sizeable number of top executives responded positively to partake in the survey. Then, we applied the following process for the data collection: First, we forwarded our questionnaire via email to executives for possible responses. Second, we sent another email to the executives in 3 weeks time to draw their attention to the task ahead. In all, 399 top executives returned their questionnaires for the survey, and 314 responses remained usable. These procedures yielded a response rate of 67.52%, which is appropriate.

Measures

We used a 7-point Likert scale (1 = strongly disagree to 7 = strongly agree) to rate all the survey items. These items were translated from English to Chinese and back to English.

Independent Variable

We used two independent variables to measure SIP. These variables are tacit and explicit KT, respectively. Each dimension was measured with a four-item scale adapted from Dhanaraj et al. (2004) and Boadu et al. (2018). Sample items include "Relationships related know-how and skills from headquarters are shared with us." and "Our subsidiary receives know-how related to the market (e.g., customers, suppliers, competitors, regulators) from headquarters."

Dependent Variable

We used subsidiary innovation performance as our dependent variable. It was measured with a five-item scale adapted from Chen et al. (2011). We asked the executives to compare their innovation performance with the foremost contestants in the recent 3 years. Sample items include "our subsidiary's number of novel products or services have increased." and "Our enterprise speed of new product/service development is better."

Moderators

We selected HRM practices and training and development types as moderators for the study. First, authors (Huselid, 1995; Delery and Doty, 1996; Li et al., 2019) have underlined how certain HRM practices elements are significant to innovative performance. We adopted four items concerning the key constructs (i.e., compensation, participation, recruitment, and appraisal) associated with innovation from the existing scales developed by the above authors. Sample items include "Our subsidiary permits workforces to propose improvements in the way things are done." and "Our subsidiary pay reflects differences in employee contributions." Second, on-the-job and off-the-job training and development were measured using a four-item scale, each adapted from Delery and Doty (1996) and Rowden (2002). Sample items include "Our subsidiary offers workforces gradual training to learn from their trial and error." and "Our subsidiary organizes mockup exercises for workforces to upgrade their abilities and know-how."

Control Variables

We include various control variables (i.e., subsidiary size, subsidiary age, industry type, and R&D intensity) that could impact the SIP (Boadu et al., 2018). First, we control subsidiary size and age as the logarithm of the date of inception of operation and the number of workforces, respectively (Boadu et al., 2018). Second, we control for industry types (service and non-service), which service is code as (1), and non-service is code as (0) to establish the industry effects. Third, we control for R&D intensity by using the level of R&D outlay (low, medium, and high) relative to key competitors in the industry.

Test of the Measurement Model

The current paper engaged SPSS 25.0 to test and calculate all the relevant measurements to evaluate the measurement model. Thus, the paper performed a sequence of assessments and calculations in the areas of reliability, validity, average variance extracted (AVE), and composite reliability (CR) to measure the construct uniqueness of the six target variables (see **Table 1**). First, we tested the reliability of the survey scales using Cronbach's alpha coefficient; and our conclusions demonstrate that all factors are larger than 0.60 (i.e., exceeding the recommended threshold of 0.60), indicating a high level of credibility for all variables (Fornell and Larcker, 1981). Second, we applied exploratory factor analysis to test the validity of the model; and our results reveal a good validity. Third, we calculated the AVE and CR of all items; and our investigation reveals that the scores surpassed the suggested threshold of 0.50 and 0.60, respectively, indicating a high level of convergent validity. Lastly, we followed the Fornell-Larcker criterion (Hair et al., 2017) to gauge the study's discriminant validity (DV). From **Table 2**, the results reveal that the correlations between each factor and other factors were lesser than the AVE (see diagonal values in bold), confirming a satisfactory DV of the constructs (Hair et al., 2017). Further, we use the Psycho_v1.0 plugin to calculate the heterotrait-monotrait (HTMT) matrix. The results show that the HTMT coefficients between variables are all less than the suggested value of 0.85 by Henseler et al. (2015), and the Bootstrap confidence interval does not contain 1. Therefore, the HTMT test results further indicate that the variables in this paper have good discriminant validity.

Non-response Bias and Common Method Bias

The study conducted two biases tests: Non-response Bias (NRB) and Common Method Bias (CMB), respectively. First, we followed Lambert and Harrington (1990) to examine the NRB of the study. NRB occurs when there is a possible bias between the valid survey and the invalid survey in a study (Lambert and Harrington, 1990). The study compared the mean differences between the 339 valid surveys and the 25 invalid surveys on four key study variables and demographic characteristics (i.e., subsidiary age, size, R&D intensity, and industry type) using *t*-tests. Besides, we used independent samples *t*-test (at a 5% significant level) to compare the mean differences between early respondents and late respondents on demographic variables (Armstrong and Overton, 1977; Shi et al., 2021); none of the

TABLE 1 | Measurement test.

	Constructs	No. of items	KMO	AVE	CR	Cronbach's α
1.	Explicit KTR	4	0.726	0.506	0.804	0.674
2.	Tacit KTR	4	0.743	0.540	0.824	0.711
3.	HRMP	4	0.741	0.550	0.829	0.724
4.	On-the-Job T&D	4	0.784	0.609	0.862	0.786
5.	Off-the-Job T&D	4	0.773	0.603	0.858	0.779
6.	SIP	5	0.853	0.620	0.891	0.846

HRMP, human resource management practices.

TABLE 2 | Descriptive statistics, Pearson intercorrelations, and discriminant validity.

Variables	1	2	3	4	5	6	7	8	9	10
(1) Sage	1									
(2) Ssize	0.199**	1								
(3) Services	-0.125*	-0.203**	1							
(4) R&D Intensity	0.017	-0.038	0.081	1						
(5) On-the-Job T&D	0.089	-0.060	-0.069	0.163**	(0.780)					
(6) Off-the-Job T&D	0.070	-0.067	-0.066	0.104	0.540**	(0.777)				
7. Explicit KTR	0.030	0.073	-0.083	0.011	0.151**	0.210**	(0.711)			
(8) Tacit KTR	0.064	0.097	-0.039	0.016	0.199**	0.230**	0.222**	(0.735)		
(9) HRMP	0.068	0.058	-0.096	0.052	0.368**	0.327**	0.177**	0.096	(0.742)	
(10) SIP	0.022	0.202**	-0.062	0.310**	0.234**	0.217**	0.153**	0.181**	0.245**	(0.787)
Mean	2.7038	2.9936	0.5159	2.0478	4.8169	4.8455	4.8479	4.7317	4.8336	4.6975
SD	1.02283	1.41646	0.50054	0.65010	1.05420	1.06892	0.89447	0.90209	0.99619	1.04887

Sage, subsidiary age; Ssize, subsidiary size. $N = 314$; two-tailed tests.

* $p < 0.05$, ** $p < 0.01$.

statistics reveals a significant difference for the study. Hence, our results suggest that the data is free from NRB. Secondly, researchers' major concern about marker variable (MV) effects has been to eliminate them in all variables because this will yield more accurate estimates of zero-order correlation coefficients (Lindell and Whitney, 2001). We examined CMB by following Podsakoff et al. (2003, 2012) and Hair et al. (2017), guidelines. CMB occurs when a study counts on a single participant or the same source to collect data to assess both independent and dependent variables. The study adopted several procedural and statistical approaches to lessen the potential perils of CMB. First, we spend quality time explaining the study's purpose to the participants. Moreover, we assure the participants that their opinions and perceptions are paramount, and for that matter, there is no "right" or "wrong" answer. Second, we followed Harman's single-factor test method to perform an unrotated factor analysis to avoid CMB (Podsakoff et al., 2003). The variance explained rate of the first factor was 18.63%, the variance explained rate of the second factor was 13.27%, and the variance explained rates of the other factors were all less than 10%. It can be seen that there is no obvious CMB challenge in the dataset in this paper, as none of the factors contribute more than 50.0% of the total variance (Podsakoff et al., 2012).

Statistical Approach

We used SPSS 25.0 program to run all the measurement tests. Besides, we estimated HLM to consider how knowledge transfer dimensions, HRM practices, and training and development types

can influence SIP. We adopted this approach due to the multilevel and nested nature of our data for the study. The approach details that foreign subsidiaries in a province and across the provinces are most likely to be similar (Gooderham et al., 2015). A significant merit of the HLM is its ability to tolerate misplaced data at all echelons, apart from the uppermost phase. It also accounts for the unequal dimension of time intermissions.

EMPIRICAL RESULTS

Descriptive Statistics, Pearson Intercorrelations, and Discriminant Validity

Table 2 provides descriptive statistics, Pearson intercorrelations, and DV of all exogenous variables. The correlation amongst the various variables: on-the-job training and development ($\beta = 0.234^{**}$, $\rho = 0.01$), off-the-job training and development ($\beta = 0.217^{**}$, $\rho = 0.01$), explicit KTR ($\beta = 0.153^{**}$, $\rho = 0.01$), tacit KTR ($\beta = 0.181^{**}$, $\rho = 0.01$), and HRM practices ($\beta = 0.245^{**}$, $\rho = 0.01$), is significant, as indicated in Table 2. Besides, except for subsidiary age and industry type, all the control variables are significantly correlated with SIP. The correlation results provide an excellent base for regression analysis. The study also carried out a test to check the collinearity of the constructs. We check the value of VIF for all predictive variables and interaction terms. We record the highest VIF value

TABLE 3 | Results of the hierarchical linear regression of hypotheses.

Variables	Dependent Variable: SIP								
	M 1	M 2	M 3	M 4	M 5	M 6	M 7	M 8	M 9
Sage	-0.031(0.053)	-0.039(0.052)	-0.033(0.052)	-0.065(0.05)	-0.029(0.051)	-0.056(0.05)	-0.052(0.05)	-0.065(0.05)	-0.048(0.051)
Ssize	0.211(0.039) ***	0.198(0.038) ***	0.203(0.038) ***	0.176(0.037) **	0.184(0.037) **	0.179(0.037) **	0.183(0.037) **	0.166(0.037) **	0.183(0.037) **
Services	-0.049(0.108)	-0.046(0.107)	-0.040(0.107)	-0.029(0.103)	-0.024(0.104)	-0.026(0.103)	-0.014(0.102)	-0.023(0.101)	-0.013(0.103)
R&D Intensity	0.323(0.081) ***	0.320(0.080) ***	0.320(0.081) ***	0.282(0.078) ***	0.300(0.078) ***	0.275(0.078) ***	0.284(0.078) ***	0.263(0.077) ***	0.286(0.078) ***
Tacit KTR		0.152(0.052) **		0.129(0.051) *		0.087(0.053)		0.061(0.052)	
Explicit KTR			0.133(0.052) *		0.110(0.052) *		0.054(0.053)		0.054(0.054)
HRMP				0.207(0.051) ***	0.192(0.052) ***	0.167(0.054) **	0.138(0.054) *	0.13(0.054) *	0.124(0.054) *
On-the-Job T&D						0.103(0.058)	0.123(0.056) *		
Off-the-Job T&D								0.114(0.055) *	0.133(0.055) *
Tacit KTR × HRMP				0.174(0.045) **		0.138(0.046) **		0.126(0.046) *	
Explicit KTE × HRMP					0.145(0.046) **		0.122(0.045) *		0.17(0.049) **
HRMP × On-the-Job T&D						0.008(0.044)	0.007(0.044)		
HRMP × Off-the-Job T&D								0.150(0.057) *	0.063(0.052)
Tacit KTR × HRMP × On-the-Job T&D						0.120(0.039) *			
Explicit KTR × HRMP × On-the-Job T&D							0.168(0.052) **		
Tacit KTR × HRMP × Off-Job T&D								0.196(0.049) **	
Explicit KTR × HRMP × Off-the-Job T&D									0.133(0.04) *
R ²	0.134	0.154	0.149	0.219	0.202	0.231	0.235	0.252	0.227
F	13.095 ***	12.405 ***	11.954	13.511 ***	12.349 ***	10.411 ***	10.612 ***	11.562 ***	10.193 ***

****p* < 0.001, ***p* < 0.01, **p* < 0.05, (Standard error), *N* = 314.

of 1.9, which is < the accepted starting point of 5 (Hair et al., 2017). This result clears us away from multicollinearity.

Test of Hypotheses

Direct Effect

Hypothesis 1_a suggests that there is a positive relationship between tacit KTR and SIP. From **Table 3** (Model 2), our investigations indicate that tacit KTR is a critical factor that influences SIP ($\beta = 0.152^{**}$, $\rho = 0.01$). Besides, the entrance of tacit KTR provides further significant clarification power 15.4 % ($R^2 = 0.154$, $F = 12.405 =^{***}$, $p = 0.001$) in the variation of SIP. Thus, hypothesis 1_b is confirmed.

Hypothesis 1_b states that there is a positive relationship between explicit KTR and SIP. From **Table 3**, Model 3, the results show the coefficient of explicit KTR as positive ($\beta = 0.133^*$, $\rho = 0.05$) and significant, indicating a strong impact of explicit KTR on SIP. Besides, the entrance of explicit KTR provides further significant clarification power 14.9 % ($R^2 = 0.149$, $F = 11.954^{***}$, $p = 0.001$) in the variation of subsidiary innovation activities, therefore supporting hypothesis 1_b.

Moderation Effect

Hypothesis 2_a predicts that HRM practices positively moderate the relationship between tacit KTR and SIP. From **Table 3**, Model 4, the beta for the interaction effect between tacit KTR and HRM practices are significant and positive ($\beta = 0.174 =^{**}$, $\rho = 0.01$, $R^2 = 0.219$). As can be seen from Model 4, HRM practices moderate the association among tacit KTR and SIP. To more intuitively show the relationship between variables, we further use the process plugin to draw a moderation effect graph, as **Figure 2** shown. **Figure 2** illustrates that the effect of tacit KTR on SIP is stronger when HRM practices are high (+1 SD). In other words, when HRM practices become higher, the SIP generated by the same tacit KTR becomes higher. Thus, HRM practices positively moderate the relationship between tacit KTR and SIP, the study finds support for hypothesis 2_a.

Hypothesis 2_b states that HRM practices positively moderate the linkage amongst explicit KTR and SIP. The results in **Table 3**, Model 5 confirm the facilitating role of HRM practices on the association among explicit KTR and SIP are statistically significant ($\beta = 0.145^{**}$, $\rho = 0.01$, $R^2 = 0.202$). Indeed, the beta coefficient indicates that HRM practices have influencing tendencies on the correlation between explicit KTR and SIP as positive. In addition, to more intuitively show the relationship between variables, we further use the process plugin to draw a moderation effect graph, as **Figure 3** shown. **Figure 3** illustrates that the effect of explicit KTR on SIP is stronger when HRM practices are high (+1 SD). In other words, when HRM practices become higher, the SIP generated by the same explicit KTR becomes higher. Thus, HRM practices positively moderate the relationship between explicit KTR and SIP, the study finds support for hypothesis 2_b.

Moderated Moderation Effect

Hypothesis 3_a states that on-the-job training and development moderates the moderation of HRM practices on the tacit KTR-SIP link. **Table 3**, Model 6 illustrates the three-way interaction

(i.e., tacit KTR \times HRM practices \times on-the-job training and development) ($\beta = 0.120^*$, $\rho = 0.05$, $R^2 = 0.231$), which attests to the relationship between the variables. Thus, the study affirms that the influence of HRM practices on the tacit KTR-SIP link is generally pretentious by in-house training and development. The study used process software to map the corresponding effects to illustrate further the moderate mechanism of HRM practices and on-the-job training and development. To more intuitively show the relationship between variables, we further use the process plugin to draw a moderation effect graph, as **Figure 4** shown. **Figure 4** shows that when on-the-job training and development become a higher “+1 SD” group (bottom of **Figure 4**), the positive influence of HRM practices on the tacit KTR-SIP link will become higher. Thus, on-the-job training and development positively moderated the moderating effect of HRM on tacit KTR and SIP, the study finds support for hypothesis 3_a.

Hypothesis 3_b projects that HRM practices' positive effects on the explicit KTR-SIP link will be strengthened by on-the-job training and development. **Table 3**, Model 7 demonstrates a robust positive three-way interaction, which indicates that on-the-job training and development moderates the influence of HRM practices on the correlation among explicit KTR and SIP ($\beta = 0.168^{**}$, $\rho = 0.01$, $R^2 = 0.235$). To more intuitively show the relationship between variables, we further use the process plugin to draw a moderation effect graph, as **Figure 5** shown. **Figure 5** shows that when on-the-job training and development become a higher “+1 SD” group (bottom of **Figure 5**), the positive influence of HRM practices on the explicit KTR-SIP link will become higher. Thus, on-the-job training and development positively moderated the moderating effect of HRM on explicit KTR and SIP, the study finds support for hypothesis 3_b.

Hypothesis 3_c proposes that the positive effects of HRM practices on the tacit KTR-SIP link will be strengthened by off-the-job training and development. The coefficient estimates for the three-way interaction effects is robust and statistically significant ($\beta = 0.196^{**}$, $\rho = 0.01$, $R^2 = 0.252$, Model 8, **Table 3**), signifying that off-the-job training and development influence HRM practices on the tacit KTR-SIP link. Building on this analysis and to more intuitively show the relationship between variables, we further use the process plugin to draw a moderation effect graph, as **Figure 6** shown. **Figure 6** shows that when off-the-job training and development become a higher “+1 SD” group (bottom of **Figure 6**), the positive influence of HRM practices on the tacit KTR-SIP link will become higher. Thus, off-the-job training and development positively moderated the moderating effect of HRM on tacit KTR and SIP, the study finds support for hypothesis 3_c.

Hypothesis 3_d proposes that the positive effects of HRM practices on the explicit KTR-SIP link will be strengthened by off-the-job training and development. The three-way interaction among the variables provides a significant level ($\beta = 0.133^*$, $\rho = 0.05$, $R^2 = 0.227$); see Model 9 in **Table 3**. In addition, the study used process software to map the corresponding effects to illustrate further the moderate mechanism of HRM practices and off-the-job training and development. To more intuitively show the relationship between variables, we further use the process plugin to draw a moderation effect graph, as **Figure 7** shown.

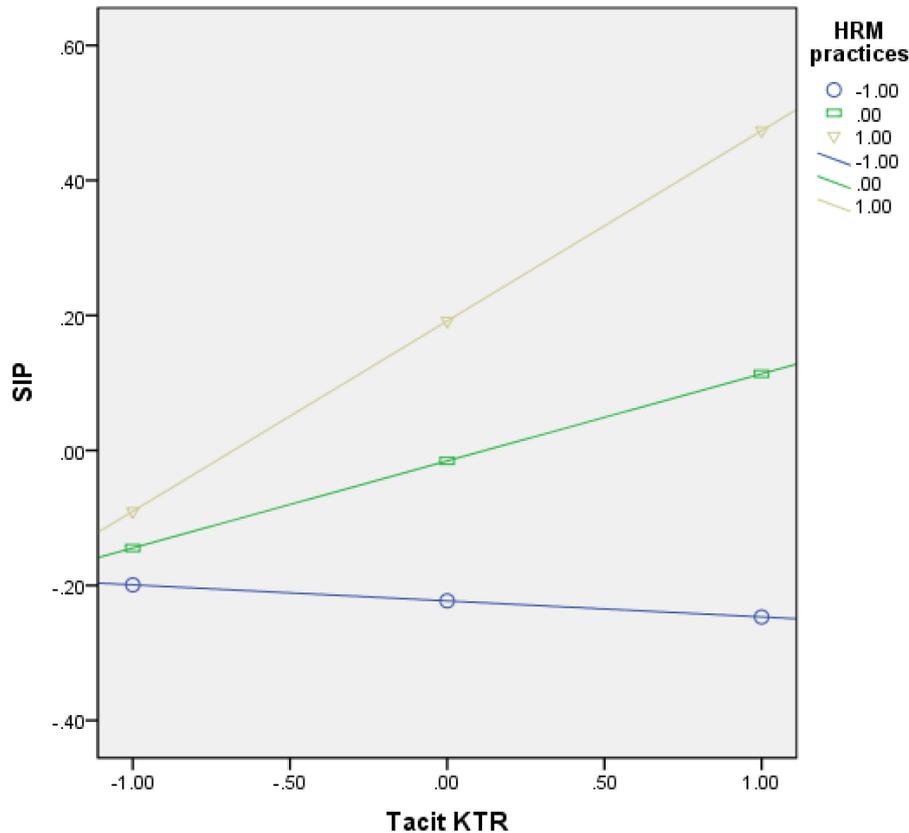


FIGURE 2 | The moderating effects of HRM Practices on the impact of tacit KTR and SIP.

Figure 7 shows that when off-the-job training and development become a higher “+1 SD” group (bottom of **Figure 7**), the positive influence of HRM practices on the explicit KTR-SIP link will become higher. Thus, off-the-job training and development positively moderated the moderating effect of HRM on explicit KTR and SIP, the study finds support for hypothesis 3_d.

Robustness Test

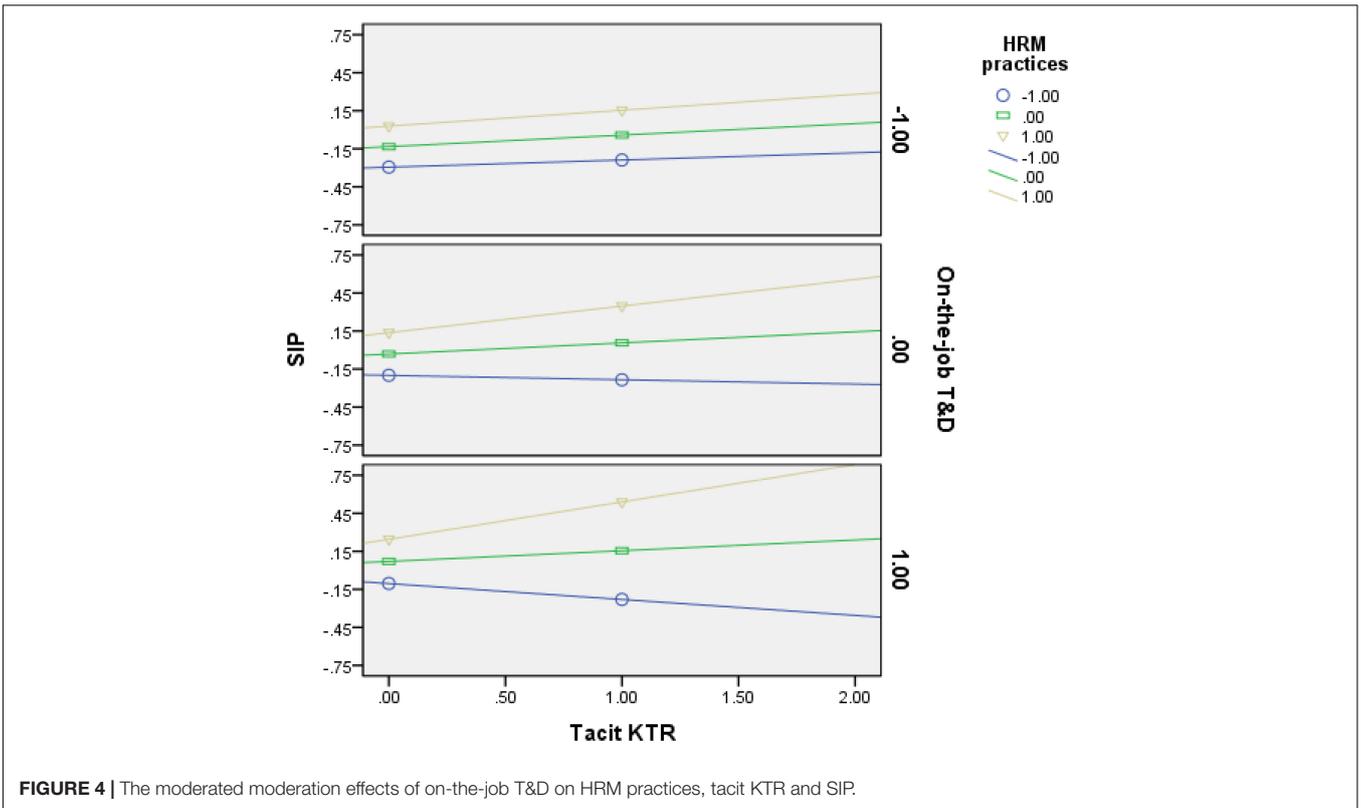
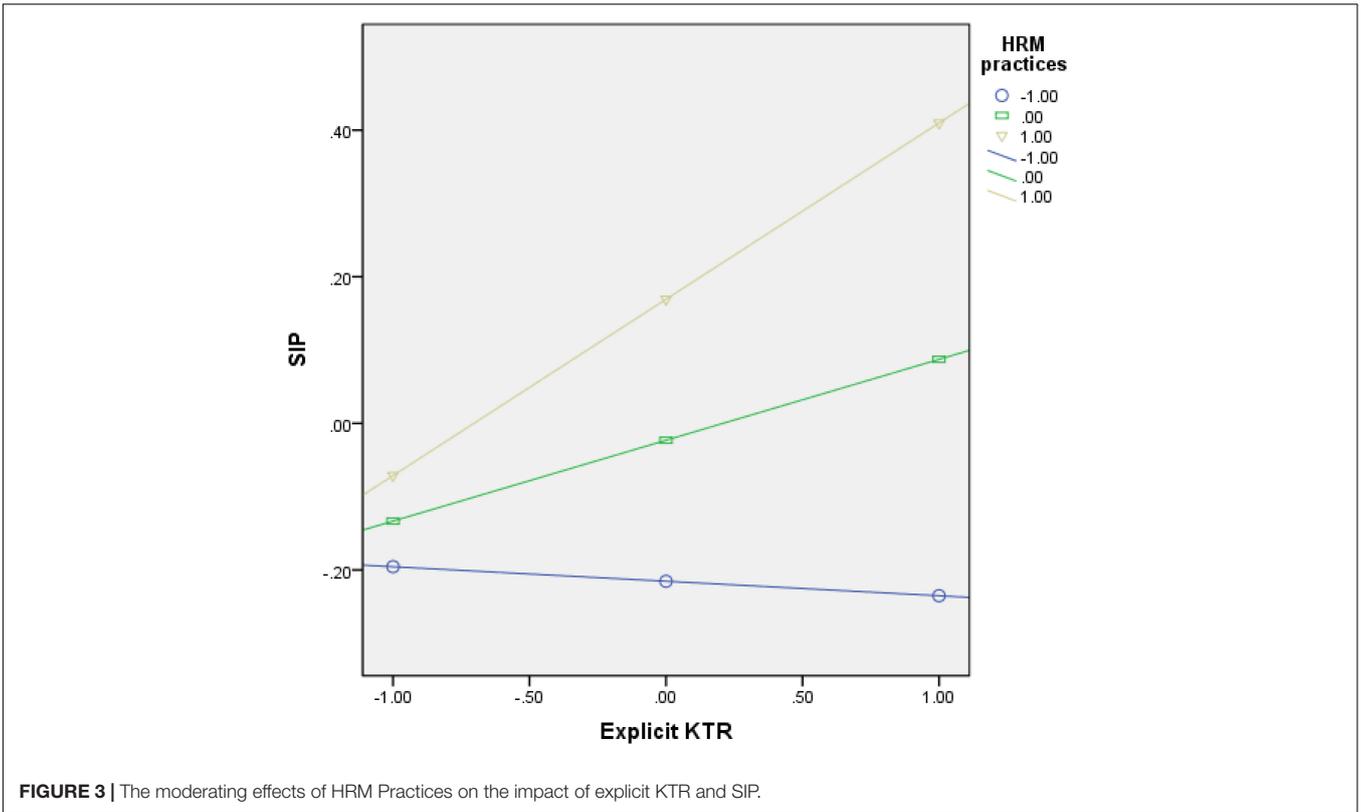
In order to test whether the sample size has sufficient power, we performed power analysis using the *pwr* function in the R language package. In the tacit KTR-HRM practices \times off-the-job T&D model with $K = 3$ (SD/+1SD/-1SD), Cohen’s *f* value was 0.309. If the power value reaches 0.8 and is significant (sig. level = 0.05), the minimum sample size should be 35; similarly, the minimum sample size required to meet the conditions calculated in other models in this paper is also less than 40. The total sample size of this paper reaches 314, so the number is enough to avoid over-fitting or parameter overestimation.

In addition, to test the robustness of the models, we further performed a bootstrap test on all moderating effects (bootstrap 5000 samples, Confidence level for confidence intervals 95%). If the interval does not contain 0, it means that the moderating effect is robust. The M4–M9 bootstrap results are shown in **Table 4**. Bootstrap does not take into account the common factor extraction of the variables, so there is a slight difference from the

hierarchical regression results. The bootstrap results in **Table 4** are basically consistent with the hierarchical regression results in **Table 3**, which indicates that the conclusions of this paper are robust to a certain extent.

DISCUSSION, IMPLICATIONS, AND CONCLUSION

Today’s volatile global market environment has thrust multinational enterprises and their affiliates to seek survival antidotes for their operational activities. Academicians have recognized knowledge transfer as an important weapon for enterprises’ competitive edge, growth, and survival in the international marketplace (Foss and Pedersen, 2019). Although scholarship has shown that knowledge management offers important signals to firm innovation, few studies have considered how knowledge transfer dimensions from headquarters make sense and influence innovation performance. Using the multinational foreign subsidiaries operating in the Chinese market as a context, we constructed a moderated moderation model to scrutinize the linkage amongst KTR dimensions and SIP as well as the effect mechanisms of HRM practices and training and development types on such relationships. Using a survey dataset from 314 subsidiaries of foreign multinational enterprises



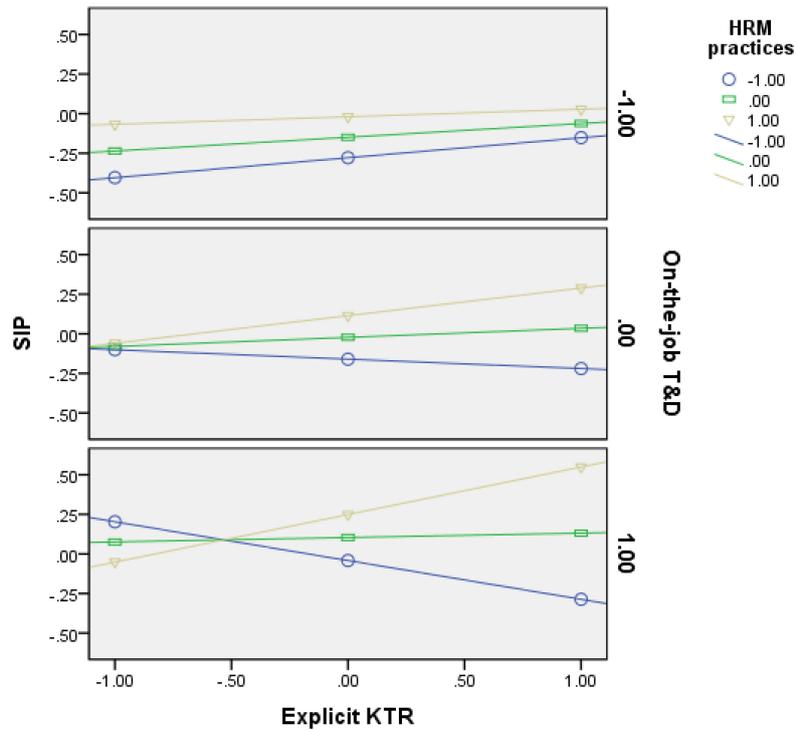


FIGURE 5 | The moderated moderation effects of on-the-job T&D on HRM practices, explicit KTR and SIP.

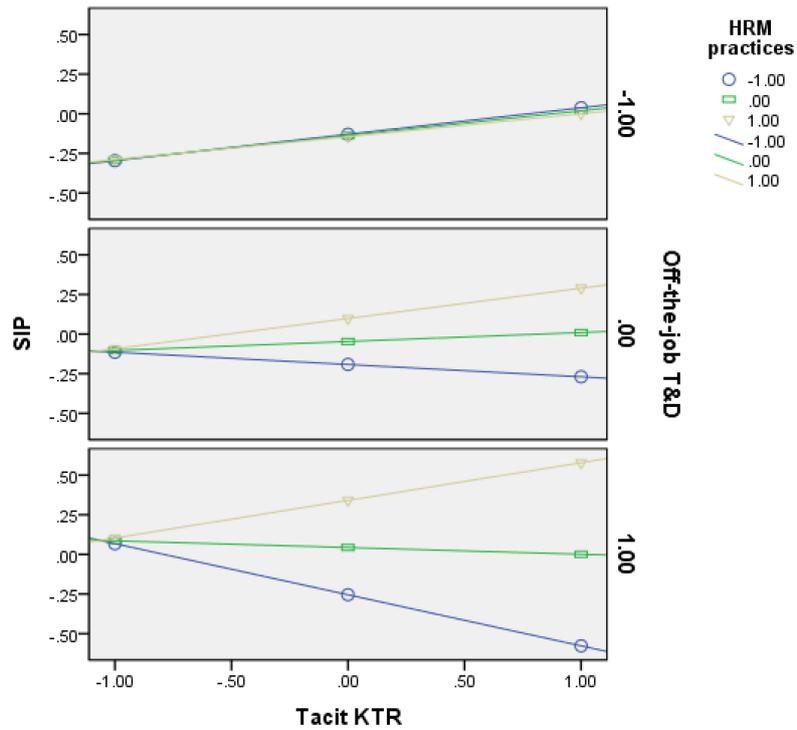


FIGURE 6 | The moderated moderation effects of off-the-job T&D on HRM practices, tacit KTR and SIP.

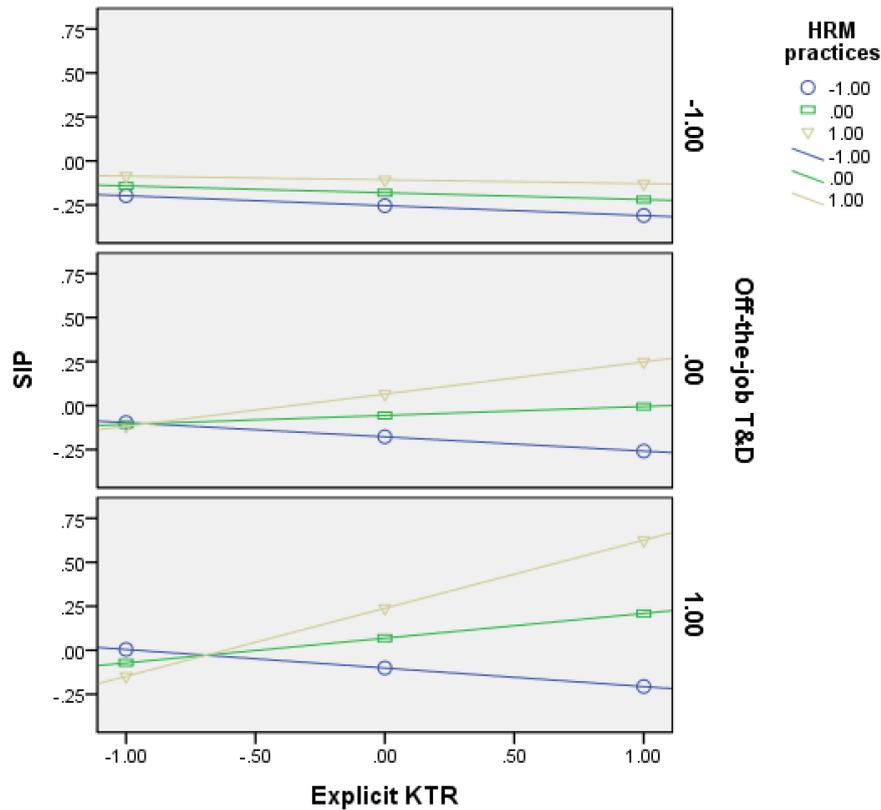


FIGURE 7 | The moderated moderation effects of off-the-job T&D on HRM practices, explicit KTR and SIP.

TABLE 4 | Robustness test by bootstrap.

Model	Coeff	Se	p	LLCI	ULCI
M4	0.1749	0.0525	0.0010	0.0717	0.2781
M5	0.1519	0.0537	0.0050	0.0461	0.2576
M6	0.0956	0.0442	0.0314	0.0086	0.1826
M7	0.1718	0.0590	0.0039	0.0556	0.2879
M8	0.1598	0.0537	0.0031	0.0542	0.2654
M9	0.1241	0.0456	0.0068	0.0345	0.2138

located in China, our HLM analysis yielded six overarching results for all the proposed associations while controlling for subsidiary age, size, R&D intensity, and industry type. First, KTR dimensions contribute to SIP. Secondly, HRM practices can positively moderate KTR dimensions and SIP. Thirdly, the positive effect of HRM practices on the KTR dimensions-SIP link increases when on-the-job and off-the-job training and development is high.

Theoretical Contributions

The study advances theory in several ways. First, the current paper contributes to advancing the RBV to comprehend what causes subsidiaries' innovation performance. Previous studies have dissected the association between knowledge transfer dimensions and performance (Dhanaraj et al., 2004;

Anh et al., 2006; Ahammad et al., 2016; Magnier-Watanabe and Benton, 2017) and innovation performance (Cavusgil et al., 2003; Harlow, 2008; Wang and Li, 2016; Terhorst et al., 2018; Asbari et al., 2019; Pérez-Luño et al., 2019; Berraies et al., 2021). Liu et al.'s (2019) studies on the impact of knowledge transfer dimensions on emerging market multinational enterprises' innovation performance reveal a positive result. In contrast, tacit and explicit KTR and SIP have rarely been probed. From the statistical discoveries of this research, we suggest that tacit and explicit KTR are strategic resources that subsidiaries should leverage to shape and implement innovation performance, which, in turn, create a competitive advantage. Thus, the results indicate that KTR dimensions are a critical determinant of the subsidiaries' innovation performance and highlight that the tacit KTR effect on SIP ($\beta = 0.152^{**}$, $\rho < 0.01$) is greater than the explicit KTR effect on SIP ($\beta = 0.133^*$, $\rho < 0.05$). The conclusions reveal that tacit KTR plays a significant role in subsidiaries' superior innovation performance. The discoveries are somewhat in line with the theoretical research conducted by scholars like Arnett et al. (2021) and Crespo et al. (2022) which reveal a significant role of tacit knowledge in creating competitive differentiation. Interestingly, Crespo et al. (2022) assert that tacit knowledge exerts conflicting facilitating influences on the transfers of marketing knowledge, carrying dissimilar insinuations for a subsidiary's knowledge management. In all, our empirical results are somewhat in line with scholarships that

have proved a significant linkage amongst knowledge transfer dimensions and innovation outcome (Cavusgil et al., 2003; Harlow, 2008; Wang and Li, 2016; Terhorst et al., 2018; Asbari et al., 2019; Liu et al., 2019; Pérez-Luño et al., 2019; Berraies et al., 2021). While applying RBV to the knowledge-innovation outcome relationship, we postulate that knowledge is a critical resource and shares the characteristics of rarity, unpredictability, and rigidity for actors to copy or reproduce (Guan and Frenkel, 2018; Li et al., 2019). Thus, we provide novel insights into a critical antecedent in cultivating the innovation capability of subsidiaries in emerging economies.

Second, scholars like Sánchez et al. (2015) and Sarala et al. (2016) accentuated the significant role of HRM practices in organizations and pointed out that notable issues related to HRM practices' facilitating effect on the knowledge transfer-enterprise performance link remain underexplored. Previous research explains how HRM practices work in tandem with knowledge transfer to enhance innovation outcomes (Chuang et al., 2016; Li et al., 2019). These studies generally emphasize the mediation consequence of knowledge transfer in the linkage amongst HRM and enterprise innovation outcomes (Jackson et al., 2014). With a few scholarships accentuating the HRM practices' facilitating effect on the knowledge acquisition-innovation performance relationship (Papa et al., 2020). In response to calls by these authors (Sánchez et al., 2015; Sarala et al., 2016) for inspections of the HRM practices' facilitating effect on the knowledge-enterprise performance link, we proposed a two-way interaction model (i.e., HRM practices and tacit and explicit KTR) into innovation performance which has rarely been investigated. Our findings demonstrate that HRM practices and KTR dimensions are critical resources that subsidiaries should hinge on to implement innovation performance. The study discoveries are somewhat in line with the theoretical research conducted on the facilitating role of HRM practices on the correlation between knowledge acquisition and innovation outcome by Papa et al. (2020). While applying RBV to the above relationship, we postulate that human resources (i.e., workforce) are vital and strategic among the organization's resources (Barney, 1991; Li et al., 2019) and should be valued, rigid, and unpredictable in a way that it becomes problematic for actors to copy or reproduce (Guan and Frenkel, 2018; Li et al., 2019). Thus, well-developed HRM practices can enhance the workforces' capabilities, commitment, and motivation, to grasp vital knowledge transfer information (Caligiuri, 2014), and contribute effectively to innovation performance (Papa et al., 2020). Equally, the study compliments RBV theory and postulates that firms should project and implement HRM practices that aim at enticing, inspiring, gratifying, and sustaining employee job behaviors to support KTR dimensions for process and product innovation to achieve superior SIP. In other words, with well-developed HRM practices, subsidiaries are more able to cultivate groundbreaking products and services to achieve superior innovation performance (Andries and Czarnitzki, 2014; Papa et al., 2020). Hence, the present scholarship incorporates the RBV theory and demonstrates why and how HRM practices and KTR dimensions stimulate SIP.

Third, we provide fresh insight into the influencing mechanism of on-the-job and off-the-job training and development on the HRM practices effect on the KTR dimensions-SIP link. Although aspects of training and development types (Boadu et al., 2018; Dostie, 2018) and HRM practices (Kaabi et al., 2018; Lee et al., 2019; Li et al., 2019) have received attention separately in different models, but the variables' combined effect is rare in the extant work. Our conclusions from the HLM suggest that workforces develop high morale and pay attention when managers or policymakers of an establishment provide higher-level competency on-the-job and off-the-job training and development programs to acquire new skills and knowledge by observing, imitating, and modeling others who are credible and more knowledgeable in a social context, memorize and reproduce to enhance HRM activities and KTR dimensions activities for greater innovation performance which invariably is capable of influencing organizational success. In general, the results reveal that training and development types, HRM activities, and knowledge assets are the foremost driving forces of essential vicissitudes in the technological path, which is very vital for enterprises to adjust and infiltrate prevailing market configurations and obtain a competitive edge in emergent client markets. We have made significant progress in developing an unfathomable comprehending of the dynamic of firm resources and their counterbalancing effects within the knowledge and innovation literature. Besides, our conclusions complement the legitimacy of RBV at a knowledge and innovation level of analysis.

Practical Contribution

The findings emanating from the study suggest the following important practical implications for IB practitioners and policymakers. First, the role and significance of knowledge in innovation performance cannot be overemphasized in emerging economies (Boadu et al., 2018). Our findings suggest that emerging market subsidiaries, tacit and explicit KTR could be an effective way to promote innovation performance. These dimensions are integral elements of the RBV (Boadu et al., 2018) and can be considered as an essential asset for organizational success and sustainable competitive advantage (Quartey, 2019). We suggest that executives should pay attention and offer the necessary protection for firms' knowledge resources, especially tacit knowledge which is an unobservable resource to enhance innovation strategies (Sprinkle and Urick, 2018) toward sustainable competitive advantage (Quartey, 2019). Besides, we suggest that top management should strengthen their collaboration and cooperation with both internal and external partners for knowledge exchange. Certainly, the linkage can offer firms access to a direct or indirect resource (including a wide range of technology and specific talent) which can broaden their internal competence to speedily address customers and environmental needs, thereby improving innovation output. Secondly, the findings of the study direct to the significance of scrutinizing the influence of HRM practices, which can provide a dynamic role in the triumph of emerging market subsidiaries. We suggest that executives must comprehend HR

policies and promote initiatives to spark HRM practices to innovation, along with specific KTR activities that can be valuable to enhance innovation (Papa et al., 2020). In the same vein, executives must also invest in HRM practices and consider it as a critical asset to steer human resources (Guest, 2017; Li et al., 2019) to complement KTR dimensions toward achieving better innovation performance. Thus, effective and efficient HRM practices or designs may stimulate the workforce behavior in grasping KTR dimensions more effectively to create new ideas, products, and services to improve innovation output. Thirdly, the finding of a positive effect of on-the-job and off-the-job training and development on the impact of HRM practices on the KTR dimensions-SIP linkages, suggests that the training and development programs are critical motivational and learning resources for organizations. High-level on-the-job and off-the-job training and development encourage HRM practices, which can be valuable to SIP. We suggest that the executive must invest in training and development activities to boost workforce morale and creative thinking toward organizational activities. Regular seminars and training sessions can change workforce attitude and perception of crucial organizational issues and emphasize corporate novelty strategies, which can enhance grander innovation activities. Besides, we suggest that executives should focus on the universal application of on-the-job and off-the-job training and development, HRM practices, and KTR dimensions to enhance SIP. The amalgamation of these variables can create a variance in the industry. Fourth, pertinent government agencies should vigorously guide and inspire multinational enterprises' subsidiaries to "create capacity-building activities." For instance, government agencies can energetically guide enterprises to "create capacity-building activities" by enhancing related laws and protocols, granting preferential interest rates, and granting tax rebates and affordable loans, specifically in the pharmaceutical and electronics industries as they hinge on knowhow. An increase in enterprises' HRM activities can bring social cohesion among workforces and foster knowledge transmission, which, in turn, enhance their technological innovation capabilities. Also, an increased innovation capacity building can bring divergent innovative ideas from workforces to lift the country's innovation index. In addition, emerging market authorities should create an enabling environment that will shield the intellectual properties and transparency of multinational enterprises' subsidiaries toward the creation of a sustainable knowledge economy.

Limitations and Future Direction

The paper possesses some shortcomings. First, all the empirical findings exhibited by this research stem from quantitative data, which was employed to examine the research phenomenon; it could be necessary for future researchers to engage the qualitative method to shed more light on the association among the variables. Second, the current research only considers the association among the constructs under the control roles of subsidiary age, size, R&D intensity, and industry type to account for dissimilarities in innovation outcome without considering their moderating influences or the other moderating roles of strategic variables such as

ownership type of subsidiaries, collaborative know-how, prior experience, learning capacity, and organizational supports (Boadu et al., 2021b; Shi et al., 2021). In future studies, we believe that researchers can scrutinize the correlation between the constructs under the moderating mechanisms of these factors to offer an unfathomable comprehension of the association among them. Besides, future researchers should consider other mediating variables (e.g., organizational agility and cross-border search capability) to expand the model. Third, hierarchical culture is assessed as contributing factor to innovation (Boadu et al., 2022), future inquiry needs to capitalize on the prospects of hierarchical culture by incessantly examining its association with knowledge management process to create superior innovation for subsidiaries. Fourth, the study focused on only foreign subsidiaries in China and did not consider other hosts and domestic peers. In future inquiries, researchers should include other host countries in their investigations. Especially, future studies could use multi-country data to examine the contingent effects of institutional environments on the relationships we explored in this paper. Finally, future researchers could engage contextual country-level factors such as government grants, and environmental dynamism among others to set the difference regarding the subsidiary's sensibility to knowledge transfer drives toward innovation capabilities.

DATA AVAILABILITY STATEMENT

The raw data supporting the conclusions of this article will be made available by the authors, without undue reservation.

AUTHOR CONTRIBUTIONS

YX, FB, ZC, and AO contributed to conception and design of the study. YX and FB collected the data. YX, FB, ZC, and AO analyzed the data and wrote the initial draft of the manuscript and putting forward the main propositions. FB and AO were responsible for reviewing and editing the manuscript. All authors contributed to manuscript revision, and read and approved the submitted version.

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REFERENCES

- Ahammad, M. F., Tarba, S. Y., Liu, Y., and Glaister, K. W. (2016). Knowledge transfer and cross-border acquisition performance: the impact of cultural distance and employee retention. *Int. Bus. Rev.* 25, 66–75. doi: 10.1016/j.ibusrev.2014.06.015
- Andries, P., and Czarnitzki, D. (2014). Small firm innovation performance and employee involvement. *Small Bus. Econ.* 43, 21–38. doi: 10.1007/s00066-014-0615-3
- Anh, P. T. T., Baughn, C. C., Hang, N. T. M., and Neupert, K. E. (2006). Knowledge acquisition from foreign parents in international joint ventures: an empirical study in Vietnam. *Int. Bus. Rev.* 15, 463–487. doi: 10.1016/j.ibusrev.2006.05.004
- Appelbaum, E., Bailey, T., Berg, P. B., Kalleberg, A. L., and Bailey, T. A. (2000). *Manufacturing Advantage: Why High-Performance Work Systems Pay off*. Ithaca, NY: Cornell University Press.
- Armstrong, J. S., and Overton, T. S. (1977). Estimating nonresponse bias in mail surveys. *J. Mark. Res.* 14, 396–402. doi: 10.2307/3150783
- Armstrong, M. A., and Lorentzen, J. F. (1996). *Handbook of Personnel Management Practice*. London: Kogan page.
- Arnett, D. B., Wittmann, C. M., and Hansen, J. D. (2021). A process model of tacit knowledge transfer between sales and marketing. *Ind. Mark. Manag.* 93, 259–269. doi: 10.1016/j.indmarman.2021.01.012
- Asbari, M., Wijayanti, L. M., Hyun, C. C., Purwanto, A., and Santoso, P. B. (2019). Effect of tacit and explicit knowledge sharing on teacher innovation capability. *Dinamika Pendidikan* 14, 227–243. doi: 10.15294/dp.v14i2.22732
- Barney, J. (1991). Firm resources and sustained competitive advantage. *J. Manag.* 17, 99–120. doi: 10.1177/014920639101700108
- Bauernschuster, S., Falck, O., and Heblich, S. (2009). Training and innovation. *J. Hum. Capital* 3, 323–353. doi: 10.1086/653713
- Becerra, M., Lunnan, R., and Huemer, L. (2008). Trustworthiness, risk, and the transfer of tacit and explicit knowledge between alliance partners. *J. Manag. Stud.* 45, 691–713. doi: 10.1111/j.1467-6486.2008.00766.x
- Berraies, S., Hamza, K. A., and Chtioui, R. (2021). Distributed leadership and exploratory and exploitative innovations: mediating roles of tacit and explicit knowledge sharing and organizational trust. *J. Knowl. Manag.* 25, 1287–1318. doi: 10.1108/jkm-04-2020-0311
- Besson, P., and Rowe, F. (2012). Strategizing information systems-enabled organizational transformation: a transdisciplinary review and new directions. *J. Strateg. Inf. Syst.* 21, 103–124. doi: 10.1016/j.jsis.2012.05.001
- Boadu, F., Xie, Y., Du, Y., and Dwomo-Fokuo, E. (2021b). Management innovation and firm innovation performance: a moderated moderation effects of absorptive capacity and environmental dynamism. *Total Qual. Manag. Bus. Excell.* 1–17. doi: 10.1080/14783363.2021.1981131
- Boadu, F., Du, Y., Xie, Y., and Dwomo-Fokuo, E. (2021a). Knowledge transfer received, entrepreneurial opportunity type, environmental dynamism, and innovative performance by overseas subsidiaries in China. *Technol. Anal. Strateg. Manag.* 1–18. doi: 10.1080/09537325.2021.1972964
- Boadu, F., Du, Y., Xie, Y., and Dwomo-Fokuo, E. (2022). Is the correlation between knowledge sharing and firm innovation performance contingent on network trust and hierarchical culture? Evidence from the Chinese high-tech sector. *Int. J. Technol. Manag.* 1–23.
- Boadu, F., Xie, Y., Du, Y.-F., and Dwomo-Fokuo, E. (2018). MNEs subsidiary training and development and firm innovative performance?: the moderating effects of tacit and explicit knowledge received from headquarters. *Sustainability* 10:4208. doi: 10.3390/su10114208
- Bolisani, E., and Bratianu, C. (2018). “The elusive definition of knowledge,” in *Emergent Knowledge Strategies*, eds E. Bolisani, and M. Handzic (Cham: Springer). doi: 10.1007/978-3-319-60656
- Boxall, P., and Purcell, J. (2016). *Strategy and Human Resource Management*. London: Palgrave Macmillan. doi: 10.1007/978-1-137-40765-8
- Buckley, P., Clegg, J., and Tan, H. (2004). Knowledge transfer to China: policy lessons from foreign affiliates. *Transnatl. Corp.* 13, 31–72.
- Caligiuri, P. (2014). Many moving parts: factors influencing the effectiveness of HRM practices designed to improve knowledge transfer within MNCs. *J. Int. Bus. Stud.* 45, 63–72. doi: 10.1057/jibs.2013.52
- Cavusgil, S. T., Calantone, R. J., and Zhao, Y. (2003). “Tacit knowledge transfer and firm innovation capability”. *J. Bus. Ind. Mark.* 18, 6–21. doi: 10.1108/08858620310458615
- Chen, J., Chen, Y., and Vanhaverbeke, W. (2011). The influence of scope, depth, and orientation of external technology sources on the innovative performance of Chinese firms. *Technovation* 31, 362–373. doi: 10.1016/j.technovation.2011.03.002
- Chirico, F., Sirmon, D. G., Sciascia, S., and Mazzola, P. (2011). Resource orchestration in family firms: investigating how entrepreneurial orientation, generational involvement, and participative strategy affect performance. *Strateg. Entrep. J.* 5, 307–326. doi: 10.1002/sej.121
- Chuang, C.-H., Jackson, S. E., and Jiang, Y. (2016). Can knowledge-intensive teamwork be managed? Examining the roles of HRM systems, leadership, and tacit knowledge. *J. Manag.* 42, 524–554. doi: 10.1177/0149206313478189
- Crespo, C. F., Crespo, N. F., and Curado, C. (2022). The effects of subsidiary’s leadership and entrepreneurship on international marketing knowledge transfer and new product development. *Int. Bus. Rev.* 31:101928. doi: 10.1016/j.ibusrev.2021.101928
- Delery, J. E., and Doty, D. (1996). Modes of theorizing in strategic human resource management: test of universalistic, contingency and configurational performance predictions. *Acad. Manag. J.* 39, 802–835. doi: 10.2307/256713
- Deming, W. E. (1982). *Quality, Productivity, and Competitive Position*; MIT Center for Advanced Engineering. Cambridge: Cambridge University Press.
- Dhanaraj, C., Lyles, M. A., Steensma, H. K., and Tihanyi, L. (2004). Managing tacit and explicit knowledge transfer in JIVs: the role of relational embeddedness and the impact on performance. *J. Int. Bus. Stud.* 35, 428–442. doi: 10.1057/palgrave.jibs.8400098
- Díaz-Chao, Á, Sainz-González, J., and Torrent-Sellens, J. (2015). ICT, innovation, and firm productivity: new evidence from small local firms. *J. Bus. Res.* 68, 1439–1444. doi: 10.1016/j.jbusres.2015.01.030
- Dostie, B. (2018). The impact of training on innovation. *ILR Rev.* 71, 64–87. doi: 10.1177/0019793917701116
- Eapen, A., and Krishnan, R. (2019). Transferring tacit know-how: do opportunism safeguards matter for firm boundary decisions? *Organ. Sci.* 30, 647–867. doi: 10.1287/orsc.2018.1236
- Esteban-Lloret, N. N., Aragón-Sánchez, A., and Carrasco-Hernández, A. (2018). Determinants of employee training: impact on organizational legitimacy and organizational performance. *Int. J. Hum. Resour. Manag.* 29, 1208–1229. doi: 10.1080/09585192.2016.1256337
- Farooq, R. (2018). A conceptual model of knowledge sharing. *Int. J. Innov. Sci.* 10, 238–260. doi: 10.1108/IJIS-09-2017-0087
- Feltrinelli, E., Gabriele, R., and Trento, S. (2017). The impact of middle manager training on productivity: a test on Italian companies. *Ind. Relat. J. Econ. Soc.* 56, 293–318. doi: 10.1111/irel.12174
- Fornell, C., and Larcker, D. F. (1981). Evaluating structural equation models with unobservable variables and measurement error. *J. Mark. Res.* 18, 39–50. doi: 10.1177/002224378101800104
- Foss, N. J., and Pedersen, T. (2019). Microfoundations in international management research?: the case of knowledge sharing in multinational corporations. *J. Int. Bus. Stud.* 50, 1594–1621. doi: 10.1057/s41267-019-00270-4
- Ganguly, A., Talukdar, A., and Chatterjee, D. (2019). Evaluating the role of social capital, tacit knowledge sharing, knowledge quality and reciprocity in determining innovation capability of an organization. *J. Knowl. Manag.* 23, 1105–1135. doi: 10.1108/JKM-03-2018-0190
- Gaur, A. S., Ma, H., and Ge, B. (2019). MNC strategy, knowledge transfer context, and knowledge flow in MNEs. *J. Knowl. Manag.* 23, 1885–1900. doi: 10.1108/JKM-08-2018-0476
- González, X., Miles-Touya, D., and Pazó, C. (2016). R&D, worker training and innovation: firm-level evidence. *Ind. Innov.* 23, 694–712. doi: 10.1080/13662716.2016.1206463
- Gooderham, P. N., Morley, M. J., Parry, E., and Stavrou, E. (2015). National and firm-level drivers of the devolution of HRM decision making to line managers. *J. Int. Bus. Stud.* 46, 715–723. doi: 10.1057/jibs.2015.5
- Grant, R. M. (1996). Toward a knowledge-based theory of the firm. *Strateg. Manag. J.* 17, 109–122. doi: 10.1002/smj.4250171110
- Guan, X., and Frenkel, S. (2018). How HR practice, work engagement and job crafting influence employee performance. *Chin. Manag. Stud.* 12, 591–607. doi: 10.1108/CMS-11-2017-0328
- Guest, D. E. (2017). Human resource management and employee well-being: towards a new analytic framework. *Hum. Resour. Manag. J.* 27, 22–38. doi: 10.1111/1748-8583.12139

- Hair, J. F., Hult, G. T. M., Ringle, C. M., and Sarstedt, M. (2017). *A Primer on Partial Least Squares Structural Equation Modeling*. Thousand Oaks, CA: Sage. doi: 10.15358/9783800653614
- Harlow, H. (2008). The effect of tacit knowledge on firm performance. *J. Knowl. Manag.* 12, 148–163. doi: 10.1108/13673270810852458
- Henseler, J., Ringle, C. M., and Sarstedt, M. A. (2015). A new criterion for assessing discriminant validity in variance-based structural equation modeling. *J. Acad. Mark. Sci.* 43, 115–135. doi: 10.1007/s11747-014-0403-8
- Huselid, M. A. (1995). The impact of human resource management practices on turnover, productivity, and corporate financial performance. *Acad. Manag. J.* 38, 635–672. doi: 10.2307/256741
- Jackson, S. E., Schuler, R. S., and Jiang, K. (2014). An aspirational framework for strategic human resource management. *Acad. Manag. Ann.* 8, 1–56. doi: 10.5465/19416520.2014.872335
- Jimenez-Jimenez, D., and Sanz-Valle, R. (2012). Studying the effect of HRM practices on the knowledge management process. *Pers. Rev.* 42, 28–49. doi: 10.1108/00483481311285219
- Kaabi, A. A. A., Elanain, H. A., and Ajmal, M. M. (2018). HRM practices and innovation performance with the mediating effect of knowledge sharing: empirical evidence from Emirati ICT companies. *Int. J. Innov. Learn.* 24, 41–61. doi: 10.1504/IJIL.2018.092922
- Khan, U. R., Perveen, S., and Shujat, F. (2017). The impact of training and development on staff productivity of the banking sector Karachi Pakistan. *Int. J. Multidiscip. Curr. Res.* 5, 393–402.
- Lambert, D. M., and Harrington, T. C. (1990). Measuring nonresponse bias in customer service mail surveys. *J. Bus. Logist.* 11, 5–25.
- Lazzarotti, V., Manzini, R., and Pellegrini, L. (2015). Is your open-innovation successful? The mediating role of a firm's organizational and social context. *Int. J. Hum. Resour. Manag.* 26, 2453–2485. doi: 10.1080/09585192.2014.1003080
- Lee, H. W., Pak, J., Kim, S., and Li, L.-Z. (2019). Effects of human resource management systems on employee proactivity and group innovation. *J. Manag.* 45, 819–846. doi: 10.1177/0149206316680029
- Li, R., Du, Y.-F., Tang, H.-J., Boadu, F., and Xue, M. (2019). MNEs' subsidiary HRM practices and firm innovative performance?: a tacit knowledge approach. *Sustainability* 11:1388. doi: 10.3390/su11051388
- Lindell, M. K., and Whitney, D. J. (2001). Accounting for common method variance in cross-sectional research designs. *J. Appl. Psychol.* 86, 114–121. doi: 10.1037/0021-9010.86.1.114
- Lippman, S. A., and Rumelt, R. P. (1982). Uncertain imitability: an analysis of interfirm differences in efficiency under competition. *Bell J. Econ.* 13, 418–438. doi: 10.2307/3003464
- Liu, Y., Deng, P., Wei, J., Ying, Y., and Tian, M. (2019). International R&D alliances and innovation for emerging market multinationals: roles of environmental turbulence and knowledge transfer. *J. Bus. Ind. Mark.* 34, 1374–1387. doi: 10.1108/JBIM-01-2018-0052
- López-Cabarcos, M. Á., Srinivasan, S., Göttling-Oliveira-Monteiro, S., and Vázquez-Rodríguez, P. (2019). Tacit knowledge and firm performance relationship. The role of product innovation and the firm level capabilities. *J. Bus. Econ. Manag.* 20, 330–350. doi: 10.3846/jbem.2019.9590
- Magnier-Watanabe, R., and Benton, C. (2017). Management innovation and firm performance: the mediating effects of tacit and explicit knowledge. *Knowl. Manag. Res. Pract.* 15, 325–335. doi: 10.1057/s41275-017-0058-6
- Manfredi Latilla, V., Frattini, F., Messeni Petruzzelli, A., and Berner, M. (2018). Knowledge management, knowledge transfer and organizational performance in the arts and crafts industry: a literature review. *J. Knowl. Manag.* 22, 1310–1331. doi: 10.1108/JKM-08-2017-0367
- McGregor, D. (1960). Theory X and theory Y. *Organ. Theory* 358:5.
- Nonaka, I. (1994). A dynamic theory of organizational knowledge creation. *Organ. Sci.* 5, 14–37. doi: 10.1287/orsc.5.1.14
- Ostroff, C., and Bowen, D. E. (2016). Reflections on the 2014 decade award: is there strength in the construct of HR system strength? *Acad. Manag. Rev.* 41, 196–214. doi: 10.5465/amr.2015.0323
- Palacios-Marqués, D., Peris-Ortiz, M., and Merigó, J. M. (2013). The effect of knowledge transfer on firm performance: an empirical study in knowledge-intensive industries. *Manag. Decis.* 51, 973–985. doi: 10.1108/MD-08-2012-0562
- Papa, A., Dezi, L., Gregori, G. L., Mueller, J., and Miglietta, N. (2020). Improving innovation performance through knowledge acquisition: the moderating role of employee retention and human resource management practices. *J. Knowl. Manag.* 24, 589–605. doi: 10.1108/JKM-09-2017-0391
- Pérez-Luño, A., Alegre, J., and Valle-Cabrera, R. (2019). The role of tacit knowledge in connecting knowledge exchange and combination with innovation. *Technol. Anal. Strateg. Manag.* 31, 186–198. doi: 10.1080/09537325.2018.1492712
- Poblete, C. (2022). The joint effects of hubris, growth aspirations, and entrepreneurial phases for innovative behavior. *Front. Psychol.* 13:831058. doi: 10.3389/fpsyg.2022.831058
- Podsakoff, P. M., MacKenzie, S. B., and Podsakoff, N. P. (2012). Sources of method bias in social science research and recommendations on how to control it. *Annu. Rev. Psychol.* 63, 539–569. doi: 10.1146/annurev-psych-120710-100452
- Podsakoff, P. M., MacKenzie, S. B., Lee, J.-Y., and Podsakoff, N. P. (2003). Common method biases in behavioral research: a critical review of the literature and recommended remedies. *J. Appl. Psychol.* 88:879. doi: 10.1037/0021-9010.88.5.879
- Polanyi, M. (1966). *The Tacit Dimension, Knowledge in Organizations*, ed. L. Prusak. Newton, MA: Butterworth-Heinemann.
- Quartey, S. H. (2019). Knowledge and sustainable competitive advantage of the Eyre Peninsula's fishing industry in Australia. *Knowl. Process Manag.* 26, 86–97. doi: 10.1002/kpm.1592
- Rowden, R. W. (2002). The relationship between workplace learning and job satisfaction in US small to midsize businesses. *Hum. Resour. Dev. Q.* 13, 407–425. doi: 10.1002/hrdq.1041
- Roy, R., and Sarkar, M. B. (2016). Knowledge, firm boundaries, and innovation: mitigating the incumbent's curse during radical technological change. *Strateg. Manag. J.* 37, 835–854. doi: 10.1002/smj.2357
- Sánchez, A. A., Marin, G. S., and Morales, A. M. (2015). The mediating effect of strategic human resource practices on knowledge management and firm performance. *Rev. Eur. Dir. Econ. Empresa* 24, 138–148. doi: 10.1016/j.redee.2015.03.003
- Sarala, R. M., Junni, P., Cooper, C. L., and Tarba, S. Y. (2016). A sociocultural perspective on knowledge transfer in mergers and acquisitions. *J. Manag.* 42, 1230–1249. doi: 10.1177/0149206314530167
- Schilke, O. (2014). On the contingent value of dynamic capabilities for competitive advantage: the nonlinear moderating effect of environmental dynamism. *Strateg. Manag. J.* 35, 179–203. doi: 10.1002/smj.2099
- Shi, X., Boadu, F., and Du, Y. (2021). Post-entry growth in scope and scale among Chinese multinational enterprises: a structural embeddedness explanation. *Cross Cult. Strateg. Manag.* 28, 235–264. doi: 10.1108/CCSM-12-2019-0231
- Sprinkle, T. A., and Urlick, M. J. (2018). Three generational issues in organizational learning: knowledge management, perspectives on training and “low-stakes” development. *Learn. Organ.* 25, 102–112. doi: 10.1108/TLO-02-2017-0021
- Terhorst, A., Lusher, D., Bolton, D., Elsum, I., and Wang, P. (2018). Tacit knowledge sharing in open innovation projects. *Project Manag. J.* 49, 5–19. doi: 10.1177/8756972818781628
- Van Wijk, R., Jansen, J. J., and Lyles, M. A. (2008). Inter- and intra-organizational knowledge transfer: a meta-analytic review and assessment of its antecedents and consequences. *J. Manag. Stud.* 45, 830–853. doi: 10.1111/j.1467-6486.2008.00771.x
- Wang, J., and Li, B. (2016). Impact of repatriate's knowledge transfer on enterprise performance?: the mediating effect of ambidexterity innovation. *J. Syst. Sci. Inf.* 4, 56–67. doi: 10.1515/JSSI-2016-0056
- Wang, Z., Wang, N., and Liang, H. (2014). Knowledge sharing, intellectual capital and firm performance. *Manag. Decis.* 52, 230–258. doi: 10.1108/MD-02-2013-0064
- Wiklund, J., and Shepherd, D. (2003). Knowledge-based resources, entrepreneurial orientation, and the performance of small and medium-sized businesses. *Strateg. Manag. J.* 24, 1307–1314. doi: 10.1002/smj.360
- Xue, M., Boadu, F., and Xie, Y. (2019). The penetration of green innovation on firm performance: effects of absorptive capacity and managerial environmental concern. *Sustainability* 11:2455. doi: 10.3390/su11092455
- Zhou, Y., Liu, G., Chang, X., and Hong, Y. (2021). Top-down, bottom-up or outside-in? An examination of triadic mechanisms on firm innovation in Chinese firms. *Asian Bus. Manag.* 20, 131–162. doi: 10.1057/s41291-019-0085-z

- Zhu, C., Liu, A., and Chen, G. (2018). High performance work systems and corporate performance: the influence of entrepreneurial orientation and organizational learning. *Front. Bus. Res. China* 12:4. doi: 10.1186/s11782-018-0025-y
- Zia, N. U. (2020). Knowledge-oriented leadership, knowledge management behaviour and innovation performance in project-based SMEs. The moderating role of goal orientations. *J. Knowl. Manag.* 24, 1819–1839. doi: 10.1108/JKM-02-2020-0127

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