How Does Human Resource Management Balance Exploration and Exploitation? The Differential Effects of Intellectual Capital-Enhancing HR Practices on Ambidexterity and Firm Innovation

Abstract

After decades, dialogues on human resource management (HRM), intellectual capital, and ambidexterity still continue, mirroring that the role of ambidextrous capability in translating the impact of HRM into superior performance remains unclarified. At this juncture, the current study proposes a novel theoretical framework to extend research on the relationship between intellectual capital (IC)-enhancing HR practices and innovation. It is done sophisticatedly by examining how firm exploitative and exploratory capabilities mediate the relationship between different combinations of HR configurations and firm innovation. To this end, we designed rigorous time-lagged research with three waves of data collection from the Iranian healthcare sector. Our analyses revealed that firm explorative and exploitative capabilities significantly mediate the relationship between human, social, and organizational capital-enhancing HR configurations and firm innovation. More conspicuously, by unraveling interaction patterns among distinct HR configurations, our study revealed the intricacies of the functioning of IC-enhancing HR practices in fueling firm ambidexterity. Hence, our study offers design options to navigate through exploitation and exploration in light of the firm's core innovation strategy. We discuss the theoretical and practical implications of our findings and suggest future research avenues.

Keywords: Intellectual capital-enhancing HR practices, ambidexterity, exploratory capabilities exploitative capabilities, innovation performance, healthcare industry

Introduction

Over several decades, intensified competition and leap-frogging technological advancement in the business landscape have imposed enormous pressure on firms to innovate ceaselessly. In this space, intellectual capital has gained much traction in management studies, recognized as a primary vehicle for firms to rejuvenate their innovation capacity (Wang, Cai, Liang, Wang, & Xiang, 2021). By definition, the concept of intellectual capital involves developing knowledge, skills, abilities (KSAs), and experiences (i.e., human capital), eliciting unique individual knowledge residing in the network of relationships (i.e., social capital), and utilizing institutionalized knowledge within the system and routine (i.e., organizational capital) (e.g., Kianto, Sáenz, & Aramburu, 2017). Meanwhile, scholarly endeavors on this front have significantly expanded by integrating core propositions with the study of human resource management (HRM), establishing such vital connectivity among HRM systems, intellectual capital, and firm innovation (Kang, Snell, & Swart, 2012; Swart & Kinnie, 2013; Youndt & Snell, 2004). In this line of inquiry, *intellectual capital (IC)-enhancing HR practices* were characterized as policy intervention designed to cultivate intellectual capital and, subsequently, to spur firm innovation (Youndt, Subramaniam, & Snell, 2004). Behind the concept was concern over generic HRM systems often skewed towards the human capital side. Namely, some shared understanding emerged that the breadth of HRM should be expanded to encompass other types of vital capital (e.g., Soo, Tian, Teo, & Cordery, 2017). Indeed, prior research substantiated that an IC-enhancing HRM system builds firms' stock of knowledge, placing firms in a better position to reconfigure operations and generate innovation (Kianto et al., 2017; Soo et al., 2017; Yang & Lin, 2009). However, we evaluate that there is a lack of fine-grained understanding of how knowledge embedded in people, networks, and routines work together to effectuate firm innovation.

In a bid to gain insight, we begin by proposing that firm ambidexterity bridges IC-enhancing HR practices and firm innovation. Indeed, ambidextrous capability is a solid intervening mechanism between HR configurations and firm innovation since it equips organizations with dual arms that utilize existing resources, knowledge, and assets (i.e., exploitation) and simultaneously capitalize on opportunities by benefiting from new knowledge outside the firm boundary (i.e., exploration) (e.g., Tarba, Jansen, Mom, Raisch, & Lawton, 2020). Moreover, it is suggested that ambidexterity is an archetype of capability that represents the reservoir of human, social, and organizational capital, serving as a conduit through which the messages of HRM systems are manifested in innovative performance (Kang & Snell, 2009). On this matter, prior studies demonstrated that HR practices and intellectual capital positively impact a firm's exploitative and exploratory capabilities (Swart, Turner, Van Rossenberg, & Kinnie, 2019; Turner, Maylor, & Swart, 2015). However, a lingering question exists regarding the manner in which sub-configurations of an IC-enhancing HRM system specifically stimulate firm ambidexterity (Andriopoulos & Lewis, 2009; Junni, Sarala, Taras, & Tarba, 2013; Prieto & Pilar Pérez Santana, 2012). Partially, such a lack of commensurate scholarly endeavors can be ascribed to the predominant logic of strategic HRM (SHRM) research, wherein individual HR practices are assumed to generate synergistic effects when bundled together (Chung & Pak, 2021). Predicated upon such a premise (c.f., Becker & Gerhart, 1996), SHRM researchers have mainly taken the system approach to investigate the HRM-ambidexterity relationship (Cabello-Medina, López-Cabrales, & Valle-Cabrera, 2011; Kianto et al., 2017; Patel, Messersmith, & Lepak, 2013). Nevertheless, several adjacent studies have addressed the possibility of differential effects of HR practices on performance (De Winne & Sels, 2010; Pak & Chang, 2023; Donate, Peña, & Sanchez

de Pablo, 2016; Han, Sun, & Wang, 2020), raising some cautious views on the dominant tradition in the SHRM literature (Boxall, 2011; Delery & Gupta, 2016; Delery & Shaw, 2001).

Holding the view that relationships among HR practices are more nuanced than conceived (Delery & Doty, 1996; Posthuma, Campion, Masimova, & Campion, 2013; Subramony, 2009), we maintain that SHRM and ambidexterity literature must delve into intricate dynamics brought forth by utilizing different HR configurations (Boon, Den Hartog, & Lepak, 2019; Huang & Kim, 2013; Kang & Snell, 2009). In this study, we advance the current debate on the functioning of the IC-enhancing HRM system by positing differential effects of HR configurations (i.e., human, social, and organizational capital-enhancing HR practices), tending to the innate functionality of each (Arthur & Boyles, 2007; Delery, 1998; MacDuffie, 1995; Posthuma et al., 2013). Specifically, we not only attempt to capture the relative strength among different IC-enhancing HR configurations in fueling ambidextrous processes and subsequent innovation but deliberately drill down the interactive effects among IC-enhancing HR configurations. In doing so, we offer insights into the debate over the role of HR configurations in effectively balancing competing demands for exploitation and exploration. Overall, we contribute to the growing body of scholarship by drawing a nuanced picture of how HRM systems trigger intervening mechanisms necessary for innovation goals (Mom, Chang, Cholakova, & Jansen, 2019; Swart et al., 2019). Theoretical model is shown in figure 1.

Insert figure 1 about here

Literature Review

Intellectual capital and HRM

Over decades, the concept of IC has been positioned as the centerpiece of firm innovation (de la Lastra, Martín-Alcázar, & Sánchez-Gardey, 2022). Early on, IC was characterized as the stock of human, social, and organizational capital (Nahapiet & Ghoshal, 1998). Specifically, human capital is defined as KSAs of individuals, social capital as network knowledge elicited from interpersonal relationships of quality, and organizational capital as codified knowledge embedded in physical systems, structures, and routines, all of which, bound together, play a quintessential role in achieving competitive advantage (Subramaniam & Youndt, 2005). Over the course of development, scholars in the field have increasingly recognized HRM systems as the bedrock of the IC building process (e.g., Minbaeva, 2013). Accordingly, efforts have been made to establish the crucial interlink between HRM and IC, emphasizing that organizations benefit further in the form of flourishing innovation if their HR practices are specifically designed to target the elements of IC (Cabello-Medina et al., 2011; De Winne & Sels, 2010; Donate et al., 2016).

Our literature review reveals that dialogues on the relationship between HRM and IC have primarily anchored in human capital-centered HR practices. Hence, the extant HRM literature has a somewhat narrow understanding of other HR configurations that are equally critical such as social and organizational capital (Boon, Eckardt, Lepak, & Boselie, 2018; Coff & Kryscynski, 2011; Kim, Pathak, & Werner, 2015; Teo, Le Clerc, & Galang, 2011). More particularly, related research has often treated IC-enhancing HR practices as a single-dimensional construct, thereby failing to account for the potentially different functioning of individual policies (Han et al., 2020). In the meantime, some evidence indicated that, albeit designed to facilitate the same goal, the combined effect of HR practices on innovation may still be insignificant or even undermining

(Laursen & Foss, 2003, 2013; Minbaeva, 2013). In a bid to clarify further, subsequent studies started to investigate complementarity between HR practices of interest. Indeed, several studies offered evidence of a significant combinatory effect among HR practices and added value for the organization (Beugelsdijk, 2008; Foss, Pedersen, Reinholt Fosgaard, & Stea, 2015; Shipton, West, Dawson, Birdi, & Patterson, 2006). Yet, we evaluate that the body of research still reports mixed findings, often demonstrating that different HR configurations and combinations generate differential strategic values (Ogbonnaya & Messersmith, 2019).

Intellectual capital-enhancing HRM, ambidexterity, and firm innovation

Research demonstrated that ambidextrous capability allows firms to capture emerging knowledge and opportunities (i.e., exploration) and utilize existing knowledge and assets to rethink and reconfigure existing work processes (i.e., exploitation) (Loon, Otaye-Ebede, & Stewart, 2020; Mom et al., 2019; Raisch & Birkinshaw, 2008). In this light, it is reasonable to posit that ambidexterity can facilitate the transition from IC-enhancing HR practices to firm innovation. To delineate, Youndt and Snell (2004) have categorized human capital-enhancing HR configurations into acquisition and developmental configurations. *Acquisition* configuration is related to selective staffing and attracting high-caliber job candidates, while *developmental* ones pertain to building human capital through extensive training and constant feedback. The central idea behind human capital-enhancing HRM is that employees hired based on their knowledge and potential are more likely to bring their new insights, knowledge, and ideas into their work and leverage exploratory capabilities of firms. In addition, employees exposed to an array of developmental programs are more inclined to utilize their expertise and demonstrate more efficiency at work, allowing firms to make a virtue of existing knowledge and potential further. In this vein, we postulate that human capital-enhancing HR configurations can effectively cultivate their talents and elicit employees'

knowledge to elevate their exploratory capacities. Plus, such HR configurations are expected to develop an appropriate context in which employees' existing knowledge and skills are applied to firms' exploitative capabilities.

Concurrently, Youndt and Snell (2004) have introduced social capital-enhancing HR configurations as *egalitarian* and *collaborative* practices. An egalitarian work setting breaks down power distance and associated communication barriers, increasing the organization's capacity to share and leverage knowledge quickly. Collaborative HR configurations also eliminate horizontal barriers by encouraging social networks and cross-functional interactions. The philosophy behind social capital-enhancing HR configurations is that adopting specific HR practices to blur lines between functional departments and keep employees close to each other is supposed to provide more space for knowledge and ideas to be cultivated and shared. With this, firms can streamline their operational processes or respond to changing environment upon innovative ideas and emergent knowledge and accelerate their innovation performance (Bornay-Barrachina, López-Cabrales, & Valle-Cabrera, 2017; Subramaniam & Youndt, 2005).

In addition, Youndt and Snell (2004) have characterized organizational capital-enhancing HR practices into two sub-configurations: *documentation* and *information systems*. The former involves codifying knowledge in physical databases and embedding it in operating procedures, whereas the latter concerns user-friendly and widely accessible systems for employees to refer to and employ whenever necessary. Such institutionalized experience and knowledge management enhance organizational learning, reduce operating costs, and re-purpose stored knowledge for other applications, thereby rendering firms' exploitative capabilities and improving performance (Martín-de-Castro, Navas-López, López-Sáez, & Alama-Salazar, 2006; Wang, Wang, & Liang, 2014). Moreover, documentation and information systems configurations facilitate knowledge

acquisition, transformation, and sharing, all of which create a solid basis for enriching forms' capacity for learning and expansion to benefit exploration and innovation performance (McDowell, Peake, Coder, & Harris, 2018). Taken together, we suggest the following:

***Hypothesis** 1: a) Human capital (HC)-, b) social capital (SC)-, and c) organizational capital (OC)-enhancing HR configurations positively influence a firm's innovation performance through a firm's exploratory capability*

***Hypothesis** 2: a) Human capital (HC)-, b) social capital (SC)-, and c) organizational capital (OC)-enhancing HR configurations positively influence a firm's innovation performance through a firm's exploitative capability.*

Interaction Effects Predicting Exploratory Capability

This study posits that human, social, and organizational capital are inherently interactive and do not operate in neatly separated packages (Ali, Shujahat, Ali, Kianto, Wang, & Bontis 2022; Bontis, 1998; Turner et al., 2015). For example, Kostopoulos, Bozionelos, and Syrigos (2015) stated that while human and social capital is crucial in fortifying firm exploration, organizational capital tends to serve exploitative activities. Even more, organizational capital is detrimental to firm exploration at certain levels by bringing inertia into the organization. Research also demonstrated that focusing on human capital enhancement is insufficient for firm exploration. That is, operating social capital-enhancing practices in conjunction with human capital-centered ones is paramount to maximizing exploratory capability (Kang & Snell, 2009; Snell, Shadur, & Wright, 2000). Human capital-enhancing HR configurations seek talented and knowledgeable employees to bring novel insights into the organization and forge the basis of exploration. Nevertheless, in the absence of social capital-enhancing HR configurations, isolated ideas and

knowledge stored in employees' minds that cannot be heard are unlikely to yield the desired level of exploration. Here, social capital-enhancing HR configurations encourage and support recruited talents to present their ideas within the network of relationships (Kang et al., 2012). In other words, although human capital-enhancing HR configurations address individuals' KSAs to render firm exploration, ideas and knowledge are prone to obsolescence if constructive and multi-directional relationships among employees are not established. Thus, social capital-enhancing HR configurations play a vital role in allowing human capital to voice their knowledge and ideas and fostering the interlink between human capital-enhancing HR configurations and exploratory capability. Therefore, in line with the findings of prior studies (de la Lastra, Martín-Alcázar, & Sánchez-Gardey, 2019; Turner & Lee-Kelley, 2013), we argue that merely investing in human capital-enhancing HR configurations might be futile in tapping exploration when there are no vertical and horizontal relationships in which employees can continually improve themselves. Thus, the absence of either could make it difficult for the organization to induce exploratory capability.

Furthermore, we establish that codified and documented knowledge accumulated by organizational capital-enhancing HR configurations is also associated with the level of exploration (Martín-de-Castro et al., 2006). Some studies suggested that organizational capital is rigid and static and is mainly associated with firm exploitative capability (e.g., Kostopoulos et al., 2015). However, research has also shown that if organizational capital is supported by human and social capital, it serves as a framework for human and social capital to stretch beyond current knowledge domains and stimulate firm exploration (Ali et al., 2022; Fu, Ma, Bosak, & Flood, 2016; Subramaniam & Youndt, 2005). In fact, without social capital-enhancing HR configurations, employees' knowledge and skills would remain only latent. Therefore, organizational capital-

enhancing HR practices have a meager chance to codify and disseminate them for exploration. Hence, we propose that human, social, and organizational capital-enhancing HR configurations in isolation would represent a limited function in rendering firm exploration (c.f., Ali et al., 2022). In contrast, co-presence can be vital in strengthening its exploratory capability. Taken together, we hypothesized that:

Hypothesis 3a*: There is a positive interaction between human capital (HC)-enhancing HR configurations and social capital (SC)-enhancing HR configurations in predicting a firm's exploratory capability.*

Hypothesis 3b*: There is a positive interaction between human capital (HC)-enhancing HR configurations and organizational capital (OC)-enhancing HR configurations in predicting a firm's exploratory capability.*

Hypothesis 3c*: There is a positive interaction between social capital (SC)-enhancing HR configurations and organizational capital (OC)-enhancing HR configurations in predicting a firm's exploratory capability.*

To build further from here, we anticipate that social capital-enhancing HR configurations play a central role in complementing human and organizational capital-enhancing ones. The literature has stressed that firms' exploratory capability is mainly the result of emerging knowledge and the exposition of novel ideas residing in social connections (Heavey, Simsek, & Fox, 2015). Although human and organizational capital-enhancing HR configurations are necessary to enrich a firm's exploratory capability, social capital-enhancing HR configurations play a preeminent role in cultivating different innovation-related knowledge sources embedded in human and organizational capital. Earlier, we argued that human and organizational capital-enhancing HR

configurations are essential to observe firm exploratory capability. However, social capital-enhancing HR configurations can significantly intensify such an assumption by providing access to diverse knowledge, perspectives, ideas, and cutting-edge reorientations. In this line of reasoning, we expect that human and organizational capital-enhancing HR configurations, either in isolation or in combination, could not offer the desired level of exploration unless social capital-enhancing HR configurations strengthen their functioning. Therefore, we put forth the following hypothesis:

Hypothesis 4*: The combinations of 1) HC and SC-enhancing HR configurations and 2) SC and OC- enhancing HR configurations more strongly predict explorative capability than the combination of HC and OC- enhancing HR configurations.*

Interaction Effects Predicting Exploitative Capability

Human capital-enhancing HR configurations constantly improve employees' KSAs through developmental programs so as to elicit and utilize employees' knowledge and experience to gain efficiency, improve functioning areas, and enrich firms' exploitative capabilities (Soo et al., 2017; Yang & Lin, 2009; Youndt, Snell, Dean, & Lepak, 1996). Social capital-enhancing HR configurations can foster this relationship by accelerating employee learning and enhancing expertise. Also, social capital-enhancing HR configurations tie together employees in constructive interactions. Hence, employees are more likely to receive feedback on their performance and learn from others, utilizing their colleagues' knowledge and ideas (Brown & Duguid, 2001). In this light, we propose that social capital-enhancing HR configurations create learning and constructive relationships, strengthening human capital learning and expertise and its subsequent impact on exploitative capability.

Meanwhile, organizational capital-enhancing HR configurations principally pursue institutionalizing and preserving well-tested knowledge to efficiently exploit existing knowledge assets (Kostopoulos et al., 2015). However, this relationship could potentially deteriorate in the absence of human capital-enhancing HR configurations. On this matter, related research demonstrated that although organizational capital fundamentally enriches a firm's exploitative capability, the execution of human capital-enhancing HR configurations reinforces the link by developing employees' KSAs and reinvigorating firms' existing stocks of knowledge (Subramaniam & Youndt, 2005). Indeed, organizational capital-enhancing HR configurations focus on exploitative capability through efficient completion of tasks, optimization of processes, and well-tested knowledge in the past. On top of that, implementing human capital enhancement practices strengthens the relationship by leveraging employees' learning and efficient task fulfillment. Despite the high degree of exploitation potential offered by organizational capital-enhancing HR configurations, the condition must be met in establishing relationships and networks to refuel the relationship between organizational capital-enhancing HR configurations and exploitative capability (Yang & Lin, 2009). Social capital-enhancing HR configurations facilitate continual exchanges of information and knowledge, thereby refreshing firms' existing knowledge stock and renewing standardized work processes. Therefore, organizational capital-enhancing HR configurations have more power to affect exploitation. From this line of reasoning, we hypothesized that:

Hypothesis 5a*: There is a positive interaction between human capital (HC)-enhancing HR configurations and social capital (SC)-enhancing HR configurations in predicting exploitative capability.*

Hypothesis 5b*: There is a positive interaction between human capital (HC)-enhancing HR configurations and organizational capital (OC)-enhancing HR configurations in predicting exploitative capability.*

Hypothesis 5c*: There is a positive interaction between social capital (SC)-enhancing HR configurations and organizational capital (OC)-enhancing HR configurations in predicting exploitative capability.*

Previously, we noted that organizational capital-enhancing HR configurations seek to preserve knowledge and information in organization systems to secure exploitative performance. Nevertheless, some studies suggested that such a relationship could become frail if human and social capital-enhancing HR configurations are not included (e.g., Fu et al., 2016). In other words, human and social capital-enhancing HR configurations provide dual attention to exploitation and exploration, but organizational capital-enhancing HR configurations are more exploitation-oriented. Hence, organizational capital-enhancing HR configurations, in combination with either human or social capital-enhancing HR configurations, should build a stronger momentum in exploitation. Otherwise, in isolation or combination, human and social capital-enhancing HR configurations are unlikely to generate a desired level of exploitative capability when organizational capital-enhancing HR configurations are poorly implemented (Kang & Snell, 2009; Turner et al., 2013). Therefore, we propose the following:

Hypothesis 6*: The combinations of 1) HC and OC- enhancing HR configurations and 2) SC and OC- enhancing HR configurations more strongly predict exploitative capability than the combination of HC and SC- enhancing HR configurations.*

Methods

The Research Context

The data for this study were obtained from companies listed in the Iranian healthcare industry from February 2019 to July 2021. The Iranian healthcare and pharmaceutical industry grew annually by 30 percent, reaching about $10 billion US in 2020 (Zartab, Koopaei, Abbasian, Koopaei, & Koopaei, 2020). Local manufacturers maintained a 95 percent market share in volume and approximately a 25 percent share in value. Notwithstanding the country is experiencing tight internal and external economic pressures, the healthcare industry is on a growth trajectory (UNESCO science report, 2021). Yet, Iranian healthcare firms are operating under tough global economic sanctions. Indeed, international sanctions imposed on Iran only allow importing vitally needed products and medicine, while purchasing from outside raw materials, related technologies, and devices is prohibited. In response, the government has adopted supportive measures, allocating a substantial budget to domestic institutions and firms to produce sanctioned items. For example, in terms of education, universities have considerably broadened their capacity for attracting talented students in such health-related programs as pharmacy, biomedical engineering, and healthcare management. Firms were also offered financial support from the government to further invest in research and development (R&D) and training and development.

Our motivation to focus on the healthcare industry is that healthcare firms (i.e., pharmaceutical and medical device manufacturers) are tasked with two competing strategic goals. On one side, healthcare firms are under tight pressure to serve their society with high-quality yet affordable products and services. On the other, firms ought to walk on the tightrope of discovery and innovation (Farzaneh, Wilden, Afshari, & Mehralian, 2022). More subtly, the industry tolerates intense regulations and high demands for price reduction and efficiency, implying the importance of firms' exploitative capability. At the same time, the knowledge-driven nature of the

healthcare industry has made it subject to fundamental transformation, accentuating the significance of firms' exploratory capability (Gilsing & Nooteboom, 2006; Hohberger & Wilden, 2022). Hence, firms operating in the context are under the immense pressure of simultaneously utilizing their existing knowledge at their best (i.e., exploitation) and constantly searching for new opportunities to guarantee their sustained growth and innovation (i.e., exploration) (Hess & Rothaermel, 2011). Therefore, the sector provides an ideal setup to test our conceptual model.

Sampling and Procedure

About 1500 registered companies operate in this industry (FDA, 2020). Initially, we screened the product profile of the companies and selected those that have introduced at least one new product per year in the last three years. This leads to reaching 743 companies. It is estimated that out of 10000 compounds initially screened, about five products are released to the market (Wouters, McKee, & Luyten, 2020). Therefore, given these sophisticated and costly processes, it was assumed that when firms could launch at least one product over three preceding years, they could be deemed innovative companies (Farzaneh et al., 2022). Consistent with some previous studies, to ensure that our targeted sample has a formal HRM system in place and their R&D activities are internally performed (i.e., idea generation, search, and experimentation), we further limited our sample (743) to firms that employ at least 50 employees (Lau & Ngo, 2004; Prieto et al., 2012) and have in-house R&D departments, reaching a sample size of 646. There were two types of firms included in our sample. The first is pharmaceutical firms, which account for approximately 40 percent; the second is medical device manufacturers.

Then, we sent an email invitation via a letter explaining our research purpose to the companies to participate in this study. Of those who corresponded, 329 were accepted to participate, meeting the inclusion criteria. Furthermore, a multi-source method was used to collect

data to reduce single-source and common-method bias. Furthermore, surveys were administered at three points in time to minimize the potential for common method bias (CMB) and better infer the causal relationships in our model, allowing us to control for cross-sectional bias and ensure rigorousness (Podsakoff, 2003). At all three times, the survey was conducted through mailed questionnaires, and a cover letter explained the objectives of the study and assured respondents of the confidentiality of their responses and the voluntary nature of their participation. To minimize single-source bias, at time one (T1), HR managers or CEOs were invited to provide information about IC- enhancing HR practices and firm characteristics such as age, size, and ownership type. The second wave of the study (T2) was conducted 12 months after completing the T1 survey to measure organizational ambidexterity. Accordingly, R&D managers were asked to present information about their firms' explorative and exploitative capabilities. The third round was carried out one year later (T3) to measure innovation performance. R&D managers were recruited to measure innovation performance to accurately reflect firm innovation performance since they are closely engaging in releasing new services/products to the market. After all, of the 329 firms, 263 companies were listed with completed questionnaires for all constructs, yielding a 40 % response rate.

Measures

The survey questionnaires were translated into Persian using a back-translation procedure (Brislin, 1970). Unless otherwise noted, all measures were rated on a five-point Likert-type scale ranging from one (strongly disagree) to five (strongly agree).

IC-enhancing HR practices. A 43-item scale developed by Youndt and Snell (2004) was employed to measure human, social, and organizational capital-enhancing HR configurations. Human capital-enhancing HR practices consist of *acquisition* and *developmental HR*

configurations. Acquisition practices are mainly instruments for recruiting the best candidates among knowledgeable, high performers and talents. A 6-item scale was adopted to measure acquisition. Developmental practices trigger training and development programs, motivating compensation systems, and developmental performance appraisal. An 11-item scale was used to measure developmental configurations. Social capital-enhancing HR practices are comprised of Egalitarian and collaborative HR configurations, pursuing social capital enrichment via breaking down the firm's vertical and horizontal barriers. A 5-item egalitarian scale and a 10-item collaborative scale were employed to measure social capital-enhancing HR practices. Organizational capital-enhancing HR practices have been built on documentation and information system HR configurations. A total 11-item scale was employed by Youndt and Snell (2004) and Ravichandran, Lertwongsatien, and Lertwongsatien (2005) to measure documentation and information system HR practices concerning facilitating knowledge codification and knowledge management within the firm. We performed confirmatory factor analysis (CFA) to test how our theorized second-order factor model, encompassing the three sets of HR configurations with six first-order factors, fits the data. The results ($\chi 2/df = 5.14$, comparative fit index (CFI) = .96, goodness of fit index (GFI) = .92, Tucker-Lewis Index (TLI) = .95, root mean square error of approximation (RMSEA) = .08) provide evidence of the discriminant validity of the measure.

Organizational Ambidexterity. We adopted a 12-item scale developed by Lubatkin, Simsek, Ling, and Veiga (2006) to evaluate firm ambidexterity in terms of exploitative and exploratory capabilities. The 6-item scale measures exploitative activities, and the 6-item scale measures exploratory operations. Given we conceptualized organizational ambidexterity as a multidimensional construct consisting of both exploration and exploitation, it is first operationalized as a second-order formative latent variable with exploratory and exploitative

capabilities. Comparing the second-order model with the one-factor model, confirmatory factor analysis indicates that the former fits the data adequately ($\chi 2/df = 4.25$, CFI = .79, GFI = .98, TLI = .97, RMSEA = .08). Then, we operationalized both explorative and exploitative ambidexterity through multiplying their measurement items.

Innovation performance. There are quite a few ways of measuring innovation performance. In this study, as product innovation is a dominant prerequisite for the healthcare and pharmaceutical industry to determine a competitive position in the market, we selected a measure that better reflects product innovation rather than process innovation. Consequently, we used a 5-item scale developed by De Luca and Atuahene-Gima (2007) to measure the firms' innovation performance.

Control variables. Several variables have a high potential to influence our dependent variable. Since prior works show that firm innovation and firm age are related (Coad, Segarra, & Teruel, 2016), years of activity (operation) were used to control for the firm's age. As previous research has reported a negative effect of the firm's size on innovation performance (Juliao-Rossi, Forero-Pineda, Losada-Otalora, & Peña-García, 2020), we also controlled for the firm size as measured by the number of employees in the year of study. We also entered ownership type (public/private) to control possible effects on firm innovation performance (Iwasaki, Ma, & Mizobata, 2022).

Data Validation and Analytical Approach

A second-order factor analysis was conducted for IC-enhancing HR practices, and we performed a first-order factor analysis for explorative and exploitative capability and innovation performance. As shown in Table 1, Cronbach's alpha coefficients for all the variables are above

the acceptable threshold of .7, which supports the reliability of our constructs. According to Table 1, all scores of average variances extracted are greater than .5, and all factor loadings are equal and greater than .63, reaching the acceptable level (Fornell & Larcker, 1981). We first performed the second-order CFA on the IC-enhancing HR practices to establish its discriminant validity. We used IBM SPSS Statistics version 25 for initial preliminary data analyses. We then used AMOS maximum likelihood estimation (Arbuckle & Wothke, 1999) to establish the measurement properties of the latent variables. We also tested a series of CFA models.

The results showed that the hypothesized six-factor of three IC-enhancing HR practices factors, one explorative capability, one exploitative capability factor, and one innovation factor demonstrated a good fit: $\chi 2/df = 1.78$; degree of freedom = 411, CFI = .92; RMSEA = .06; SRMR = .05), indicating that the six variables in the conceptual model are distinctive constructs and were therefore retained in the subsequent analysis. In order to demonstrate discriminant validity, we compared the measurement model with three alternative models, including a four-factor model: IC-enhancing HRM system, explorative capability, exploitative capability, and innovation; a three-factor model: Three IC-enhancing HR configurations, explorative capability, and exploitative capability combined, and innovation; a three-factor model: three IC-enhancing HR configuration, explorative capability combined, and innovation, and exploitative capability; a two-factor model: three IC-enhancing HR configuration, exploitative capability, and innovation combined and explorative capability; a two-factor model: three IC-enhancing HR configuration explorative capability combined and exploitative capability and innovation combined; a two-factor model: three IC-enhancing HR configuration and innovation combined and explorative capability and exploitative capability combined; and a single-factor model: all items loaded onto one factor. All in all, the hypothesized mode was found superior to the alternative specifications; thus, we

concluded that the measures were sufficiently distinctive. Also, variance inflation factor (VIF) was in check throughout the hypotheses testing, and there was no sign of multicollinearity with VIF values consistently below the threshold (i.e., less than 2.11 in all the models) (Cohen, Jacob, Patricia, Cohen, Stephen, West, Leona, & Aiken, 2003). In addition, the bootstrapping technique embedded in Smart-PLS was used to test the hypotheses concerning the mediation effect of organizational ambidexterity in the relationship between HR configurations and firm innovation. PLS-SEM is a causal-predictive approach to SEM that emphasizes prediction in estimating statistical models, whose structures are designed to provide causal explanations and offer a solid basis for predictions and managerial implications.

Insert table 1 about here

Findings

Descriptive statistics (i.e., mean value, standard deviation, and correlation) for the variables addressed in this study are reported in Table 2. We found significant positive correlations between our dependent and independent variables, including three sub-configurations of IC-enhancing HRM systems, ambidexterity (i.e., exploration and exploratory capabilities), and innovation performance. Hence, consistent with previous studies, all correlations were in the expected direction and supported further testing of the hypotheses.

Insert table 2 about here

As presented in table 3, the indirect effects of human capital (HC)- ($\beta = .13$, $p < .05$) and social capital (SC)-enhancing HR configurations ($\beta = .17$, $p < .05$) on innovation performance through exploratory capability were positive and significant. However, such an indirect

relationship was positive but non-significant in the relationship between organizational capital (OC)-enhancing HR configurations ($\beta = .9$, $p < .05$) and innovation performance, indicating that $H_{1a,}$ and $H_{1b,}$ are confirmed, but H_{1c} is not supported. In addition, as table 4 reports, the indirect effects of HC- ($\beta = .14$, $p < .05$), SC- ($\beta = .12$, $p < .05$), and OC-enhancing HR configurations ($\beta = .17$, $p < .05$), through exploitative capability on innovation performance were positive and significant. Hence, $H_{2a,}$ $H_{2b,}$ and H_{2c} are supported.

Insert tables 3 and 4 about here

Next, the authors turn to test the interactive effects of factors predicting explorative and exploitative capabilities. First, we test if there are positive interactions among HR configurations and explorative capability. As shown in Model 3 table 5, the interaction term between HC-enhancing HR configuration and SC-enhancing HR configuration is positive and significant ($\beta = .25$, $p < .01$). The result of the simple slope test indicated a parameter estimate of .36 ($t = 7.09$, $p < .01$), demonstrating that when HC-enhancing HR configuration is high, the effect size improves to a greater degree. Similarly, Model 3 also illustrates that there is a positive interaction between HC-enhancing HR configuration and OC-enhancing HR configuration in predicting explorative capability ($\beta = .15$, $p < .05$), indicating that when HC-enhancing HR configuration is high, OC-enhancing HR configuration is a stronger predictor for explorative capability. The result of the simple slope test is reflected in a parameter estimate of .22 ($t = 3.32$, $p < .01$). Additionally, our results further represent that there is a positive interaction between SC-enhancing HR configuration and OC-enhancing HR configuration in predicting explorative capability ($\beta = .22$, $p < .01$). The result of simple slope test showed a parameter estimate of .31 ($t = 6.15$, $p < .01$), highlighting that when OC-enhancing HR configuration is high, SC-enhancing HR configuration

is a stronger predictor for explorative capability. Therefore, $H_{3a,}$ $H_{3b,\ and}$ H_{3c} received support. The interaction plots are depicted in Figures 2-4.

Insert figure 2-4 about here

Similarly, this study hypothesized positive interactions among HR configurations in predicting exploitative capability. As shown in Model 7 table 5, our findings support the positive moderation hypotheses, indicating that the interaction term between HC-enhancing HR configuration and SC-enhancing HR configuration is β = .17, $p < .05$. The result of the simple slope test indicated a parameter estimate of .24 ($t = 3.73$, $p < .01$), demonstrating that when HC-enhancing HR configuration is high, SC-enhancing HR configuration is a stronger predictor for exploitative capability. In other words, the effect size improves to a greater degree. Moreover, Model 7 demonstrates that there is a positive interaction between HC-enhancing HR configuration and OC-enhancing HR configuration in predicting exploitative capability (β = .24, $p < .01$), indicating that when HC-enhancing HR configuration is high, OC-enhancing HR configuration is a stronger predictor for explorative capability. The result of the simple slope test is reflected in a parameter estimate of .30 ($t = 4.91$, $p < .01$). Finally, our results further show that there is a positive interaction between SC-enhancing HR configuration and OC-enhancing HR configuration in predicting exploitative capability (β = .19, $p < .01$). The result of simple slope test signified a parameter estimate of .25 ($t = 3.88$, $p < .01$), highlighting that under high OC-enhancing HR configuration, SC-enhancing HR practices is a stronger predictor for exploitative capability. Therefore, Hypotheses $H_{5a,}$ $H_{5b,\ and}$ H_{5c} are supported. The interaction plots are depicted in Figures 5-7.

Insert figure 5-7 about here

To examine whether the difference between the beta weights for the combination of 1) HC- and SC- and 2) SC- and OC- and that of HC- and OC-enhancing HR configurations for explorative capability is statistically significant, their corresponding 95% confidence intervals were estimated via bias correcting bootstrap (i.e., 1000 re-samples). The confidence intervals overlapped by less than 50%. Therefore, the difference between beta weights was statistically different ($p < .05$, Cumming, 2009). Specifically, half of the average of the overlapping confidence intervals was calculated (0.091 and 0.084) and added to the lower bound estimate (0.351 and 0.412) of the combination of 1) HC- and SC- and 2) SC- and OC-enhancing HR configurations, which reaches 0.442 and 0.496, respectively. As the combination of HC- and OC-enhancing HR configuration's upper bound estimate (0.354) did not exceed the value of 0.442 and 0.496, there was a significant difference in the beta weights in question. Thus, H4 is confirmed.

The same procedure was used to test whether the difference between the beta weights for the combination of 1) HC- and OC- and 2) SC- and OC- and that of HC- and SC-enhancing HR configurations for exploitative capability were statistically significant. Again, the confidence intervals overlapped by less than 50%. Therefore, the beta weights were statistically different. Specifically, half of the average of the overlapping confidence intervals was calculated (0.093 and 0.088) and added to the lower bound estimate (0.414 and 0.394) of the combination of 1) HC- and OC- and 2) SC- and OC-enhancing HR configurations, which reaches 0.507 and 0.482, respectively. As the combination of HC- and SC- enhancing HR configuration's upper bound estimate (0.328) did not exceed the value of 0.507 and 0.482, the difference in the beta weights was statistically significant. Hence, H6 is supported.

Supplemental Analysis

Furthermore, as our study focused on revealing two-way interactions, we did not hypothesize three-way interaction among HR configurations. Yet, our *post-hoc* examination found that when OC-enhancing HR configuration is high, SC-enhancing HR configuration had a significantly positive impact on explorative capability under a high HC-enhancing HR configuration (t = 4.14, p < .01). Nevertheless, the relationship between SC-enhancing HR configuration and explorative capability was not significant for the firms that reported a low OC-enhancing HR configuration (t = 1.08, p < .36). Likewise, our findings approved that when SC-enhancing HR configuration is high, OC-enhancing HR configuration had a significantly positive impact on exploitative capability under a high HC-enhancing HR configuration (t = 3.17, p < .01). Nonetheless, the relationship between OC-enhancing HR configuration and exploitative capability was not significant for the firms that reported a low SC-enhancing HR configuration (t = 0.94, p < .41).

Discussion

The extant literature has long pointed to the interconnectedness of HRM systems, ambidexterity, and firm innovation. However, empirical inquiries in this space have not been through enough to offer a fine-grained understanding of the linkages, and therefore further scrutiny into this territory is commended (Ahammad, Glaister, & Junni, 2019; Huang & Kim, 2013; Prieto et al., 2012). At this juncture, the present study attempted to answer the recent call for unpacking the connecting mechanisms between IC-enhancing HR practices and firm innovation (Kianto et al., 2017; Soo et al., 2017). In particular, we aimed to untangle how different combinations of IC-

enhancing HR practices contribute to strengthening firms' exploitative and exploratory capabilities (i.e., ambidexterity) in predicting firm innovation (Han et al., 2020; Hansen, Güttel, & Swart, 2019).

Theoretical Implications

We purposefully focused on the Iranian healthcare industry to test our conceptual model. There is mounting evidence that global outbreaks, intensified demands for healthcare services, fundamental transformations in healthcare technologies, and high costs of innovation in this knowledge-intensive industry have prompted healthcare firms to address challenges and stay innovative (Paolon, Mattei, Strologo, & Celli, 2020). Such attributes of the context make it particularly relevant to our inquiry on intellectual capital-oriented people management, ambidextrous processes, and innovation outcomes. Although the Iranian healthcare sector has witnessed significant changes to become more competitive and less vulnerable to external shocks such as universal sanctions (Mehralian, Sheykhi, Zatzick, & Babapour, 2022; Zartab et al., 2020), management scholars, particularly in the field of HRM, have paid relatively less heed to it until today. Conducting research in new institutional settings is a worthwhile pursuit that offers merits. It allows us to either reveal unique patterns among study variables and thus create tension in established theories for further investigation or reaffirm the strength of the core propositions if the findings come out, to a large extent, as anticipated. From this angle, we have corroborated the validity of the theoretical arguments of IC-enhancing HRM systems and ambidexterity literature. Our findings are backed up by a rigorous research design involving a large sample of representative firms operating in the Iranian healthcare industry and data gathering in three waves, enabling us to test our hypotheses on an enriched dataset. Therefore, through this research, we have laid the ground for future scholarly endeavors of similar nature in other contexts.

In several meaningful ways, our study extends the current debate. So far, scholars have made efforts mainly to identify how ambidexterity operates as a linking mechanism between generic HRM systems (e.g., HPWS, HR best practices) and firm innovation (Mom et al., 2019; Patel et al., 2013; Zhang, Edgar, Geare, & O'Kane, 2016). However, there are two lingering concerns with this line of inquiry. On the one hand, the prevalent HRM systems are often centered on human resources *per se* and overlook the cultivation of social and organizational fabrics (Foss, 2011; Laursen & Foss, 2003; Soo et al., 2017). On the other, though investigating mechanisms of exploitation and exploration has always been a topical challenge (Luger, Raisch, & Schimmer, 2018; Tarba et al., 2020), empirical studies in the HRM territory are startlingly rare regarding how distinct HR practices or different HR combinations correspond to exploratory and exploitative capabilities. To offer clarity in this space, our study depicted a more nuanced picture of the intervening roles of exploratory and exploitative capabilities between human, social, and organizational-enhancing HR configurations and firm innovation. By doing so, we have, in the space of IC-enhancing HRM system, corroborated the insights from prior scholars that certain HR practices are more critical for ensuring specific outcomes (Arthur & Boyles, 2007; Gould-Williams, & Gatenby, 2010). Specifically, consistent with prior research (Arthur & Boyles, 2007; Brown & Duguid, 1991; Chang, 2015; Lepak & Snell, 1999), our results unveil that human capital-enhancing HR configuration infuses a new stream of knowledge, skills, and innovative ideas to address firms' exploratory capability. Such HR configuration also invests in extensive training and development programs to improve the existing workforce's skills and expertise to cultivate exploitation of the organization. Indeed, it highlights that human capital-enhancing HR configuration operates as a bidirectional and dual-purpose HR arrangement that predicts exploratory and exploitative capabilities and spurs innovation significantly (Soo et al., 2017).

Further, our findings offer insights regarding social capital-enhancing HR configuration in rendering ambidexterity and firm innovation. Namely, exploratory capability has more chance of being built upon renewed knowledge and generated ideas within the network of relationships and collaborations by embodying new knowledge, perspectives, and skills in internal and external ties (Florin, Lubatkin, & Schulze, 2003; Laursen, Masciarelli, & Prencipe, 2012; Zahra, 2010). In addition, social capital-enhancing HR configuration accelerates exploitative processes through constructive and continual interactions among individuals, offering firms a reliable basis for innovation (Cao, Simsek, & Zhang, 2010; Kostopoulos et al., 2015; Turner et al., 2013). Furthermore, we found that organizational capital-enhancing HR configuration significantly impacts firm innovation via exploitation, whereas this relationship was not significantly mediated by exploration. Borrowing from the literature (Gürlek, 2021), it can be said that organizational capital-enhancing HR configuration is fundamentally designed to systematically maneuver the stored and codified knowledge to maximize operational excellence.

Beyond the conventional logic portrayed in the SHRM literature that often emphasizes the bundling of HR practices (Delery & Gupta, 2016; Guest, Conway, & Dewe, 2004), we unraveled the intricacy among different combinations of HR practices in targeting exploitative and exploratory capabilities and subsequent innovation. Indeed, evidence suggests that the interactions among HR practices are more complicated than previously thought (Chung & Pak, 2021). That is, different interactions among HR practices might exhibit different effect sizes depending on dependent variables of interest (Ehrnrooth & Björkman, 2012). Predicated upon the recent development, we tested interactions among IC-enhancing HR practices and how these interactions predict exploitative and exploratory capabilities differently. Consistent with our predictions, the test of two-way interaction hypotheses corroborated that the interactions of human, social, and

organizational capital-enhancing HR configurations generate distinct effects. Specifically, we demonstrated that the combination of human and social capital-enhancing HR configurations and social and organizational capital-enhancing HR configurations are stronger predictors of exploratory capability than that of human and organizational capital-enhancing HR configurations. Our results are compatible with those of adjacent studies (e.g., Adler & Kwon, 2002; Subramaniam & Youndt, 2005; Tortoriello, Reagans, & McEvily, 2012), which demonstrated that social capital facilitates identifying significant changes and revolutionary ideas through internal and external communications that fuel exploration and discovery, while human and organizational capital strengthen the links. In a similar vein, our analyses uncovered that organizational capital-enhancing HR configuration plays a central role in different combinations. Namely, the interaction of organizational and human capital-enhancing HR configurations and that of organizational and social capital-enhancing HR configurations presented more substantial power to render firm exploitative capability than that of human and social capital-enhancing HR configurations. On this matter, prior research noted that organizational capital mainly concerns using existing knowledge and dominant assumptions and employing solutions that have been successful in the past (Kostopoulos et al., 2015). Hence, organizational capital-enhancing HR practices are more oriented toward exploitation, while human and social capital-enhancing HR configurations might fortify the relationship.

Our demonstrated patterns of interactions signify a dynamic and fluid layout of architecting HR configurations in addressing firm ambidexterity (c.f., Kang & Snell, 2009). Our models also accentuate the exigency behind capturing the intricacies of different HR practices since designing HRM systems to fit specific strategic intent increases the possibility of achieving outcomes of interest and makes it harder for rivals to imitate (Laursen & Foss, 2003). Despite an accumulated

body of literature investigating the impact of different HRM systems on various dependent variables, research on interactions within HRM systems still appears nascent (Chung & Pak, 2021). In this respect, our investigation adds meaningful insight into the current discourse and adjacent fields of SHRM research since our knowledge beyond the functioning of additive models consisting of human, social, and organizational capital-enhancing HR configurations is yet limited. Therefore, we provide a closer inspection of the prevailed view in the HRM-ambidexterity link (c.f., Faisal Ahammad, Mook Lee, Malul, & Shoham, 2015; Junni et al., 2013; Mom et al., 2019; Patel et al., 2013).

Practical Implications

Our empirical assessment of the IC-enhancing HRM system suggests that firms and HR managers can spark ambidexterity (i.e., exploitative and exploratory capabilities) and innovation through HR investments to hire talents and extensive training programs for the existing workforce. Plus, ambidexterity is expected to increase by flattening hierarchies and facilitating cross-functional interactions to encourage a collaborative workspace and knowledge sharing and support functional areas through adequate documentation and information systems. In this light, HR managers globally and in industries of any type should be resourced to exercise greater influence on firm innovation by utilizing IC-enhancing HR practices and playing an active role in rendering ambidextrous processes. Namely, managers should broaden their view and not limit themselves to individual-centered HR practices when the IC-enhancing HRM system aids them in eliciting human capital's inputs and reaping the profound competitive merits embedded in social relationships and organizational capital.

Further, our research implies that balancing exploitation and exploration is a complicated task for HR experts and does not happen on its own (Kang & Snell, 2009, Tarba et al., 2020).

Based on our findings, we would advise managers that common descriptions of implementing HR practices as a collective system may not effectively guarantee the desired level of exploitative and exploratory capabilities and, therefore, may eventually fail to render innovation if HR practices do not purposefully direct toward exploitation and exploration. More precisely, the proper combinations of human, social, and organizational capital-enhancing HR configurations are unlikely to occur naturally. Instead, managers need to combine and enact HR practices compatible with their preferred outcomes. In our case, for instance, although social capital-enhancing HR configurations emit higher effect power to trigger exploratory capability, human or organizational capital-enhancing HR configurations can reinforce this link. In this respect, the provision of commensurate social capital-enhancing HR configurations in combination with human or organizational capital assists managers in predicting exploratory capability with more probability and confidence. Alternatively, to address firm exploitative capability, although firm documentation and information system (i.e., organizational capital-enhancing HR configurations) demonstrate higher power, commensurate implementation of either social or human capital-enhancing HR configurations can intensify this relationship. Thus, by demonstrating different architecture of HR practices, firms, and HR practitioners should be aware that the enrichment of exploitative and exploratory capabilities could vary contingent upon the potential dynamics in different designed HR combinations. If properly comprehended, practitioners would gain a deeper understanding of the power of different combinations of HR configurations and then appropriately re-architect and re-arrange their HR configurations and pay adequate and concurrent attention to both mechanisms of exploration and exploitation.

Limitations and Future Research Directions

Despite our contributions to the current discourse, the findings should be viewed cautiously, which paves the way for future endeavors. To begin with, we purposefully chose the Iranian healthcare industry as the research setting and found the results consistent with the adopted theoretical underpinnings. Yet, we suggest that replication efforts are needed in other national and industry contexts to further corroborate the generalizability of core propositions. In addition, in our study we controlled the effect of firm size when testing our hypotheses. However, it will be worthwhile if future research empirically articulates the relative impact of IC-enhancing HR practices on the ambidextrous processes in firms of different sizes that are exposed to similar competitive pressure to pursue exploitative and exploratory orientations simultaneously. Similarly, we limited our surveys to R&D managers when collecting the data about ambidexterity and innovation to minimize the likelihood variability among different respondents. In this light, future studies may consider expanding to different cohorts of respondents. Doing so can offer unique insights into the phenomena, given that members of the organization in different hierarchical positions and functional areas may perceive reality accordingly (Pak, 2022; Pak & Kim, 2018; Wright & Nishii, 2013). Additionally, one possible concern that may arise is that our chosen measure of innovation in this study focuses mainly on product innovation. In contrast, relatively less weight is placed on service innovation. In fact, the measure was carefully selected to ensure that our innovation construct is representative of the characterization of our sample (i.e., pharmaceutical and medical device manufacturers). However, given the intricacy laid in measuring innovation, future scholars are recommended to measure innovation, paying equal and concurrent attention to product and service innovation.

On another, the dominant approach in the field of research has been to inquire about how to maximize ambidexterity. However, some opine that the highest level of ambidexterity is not necessarily ideal since the demand for exploration or exploitation depends on participating firms' industry and strategic orientations (e.g., Simsek, 2009). In this light, research in architecting different HR arrangements intended to target distinct levels of exploitative and exploratory capabilities will provide profound theoretical and practical insights. That is, future studies are necessary to uncover further how tailoring their HRM systems supports firms' innovation endeavors by obtaining the desired level of ambidexterity. In this vein, an emerging stream of SHRM research has demonstrated that there are potentially negative interactions, or substitute effects, among sub-dimensions of HRM systems, casting a more cautious view on the internal fit premise that has dominated the SHRM literature (e.g., Chung & Pak, 2021). Thus, we propose future studies inquire further into this space as the current understanding of the phenomena is limited. Pursuing an investigation of this nature, future research may consider adopting more tailored, novel analytical tools beyond the traditional variance-based methods (i.e., regression). For instance, qualitative comparative analysis (QCA) is promising because it enables researchers to plug in multiple factors simultaneously when typical regression techniques are not suited to handle such nuance and complexity (Rihoux & Ragin, 2008).

Conclusion

In a business landscape where turbulence and unpredictability are increasingly becoming the norm, HRM is not merely a matter of directing personnel behavior but a primary vehicle for helping firms to take advantage of knowledge resources and gain required organizational capabilities for growth (Huang & Kim, 2013; Kang & Snell, 2009). Though progressions have been made to elucidate how an effective HRM system helps enrich intellectual capital and ambidexterity,

insights into balancing exploitation and exploration through HRM still lack clarity. It has been so because studies in this line of inquiry have primarily followed the conventional premise that there is utmost synergy among HR practices to maximize firm ambidexterity. To enrich the current discourse in this space, our study aimed to capture the dynamics in different configurations of IC-enhancing HRM systems and examine how such distinct architectures work toward ambidextrous processes and subsequent innovation. Our analyses unveiled that different HR combinations offer varied effect sizes to render firm exploitation and exploitation, thereby innovation performance accordingly. More nuanced, our empirical study significantly contributes to the literature by providing a framework guiding how human, social, and organizational capital-enhancing HR configurations should be architected with one another to fuel exploitation and exploration, respectively. We hope this endeavor provides a new way of seeing the phenomena and helps advance research on this critically important theme.

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Table1

List of measurement items and constructs' validity

Variables		Measurement items	AVE (%)	Cronbach's alpha	t-value
		HR configurations			
Human capital-enhancing HR configurations	**Acquisition**	We apply a thorough process to hire new employees. To fill job vacancies many applicants will be screened. We consider different sources of recruitment (i.e., agencies, universities, etc.). We pay above-market compared to our rivals. The learning potential of candidates is an important factor for us. We consider job candidates' knowledge and experiences related to our industry.	.68	.84	11.58
	Developmental	The amount of budget we spend on training is more than our rivals. Our employees receive considerable regular training programs than that of our competitors. We serve our employees with continuous developmental opportunities. We have comprehensive plans for our peoples' training and development. We provide a variety of training programs. Our performance appraisal process doesn't highlight non-repetitive mistakes. We send a great deal of developmental feedback to our employees Promoting employees within the company is our priority. Employees' knowledge/skill development is considered in our rewarding system. We try to develop our firm-specific skills/knowledge through our training and development activities. On-the-job experiences or training in central in our training and development activities.	.67	.79	10.14
Social capital-enhancing HR configuration	**Egalitarian**	We try to slim down status symbols We try to keep our organization's hierarchy to a minimum. Empowerment and participation are encouraged in our jobs. Our job classifications are limited. Our payment system is based on a narrow range of pay grades.	.71	.82	11.76
	Collaborative	Interpersonal skills are determinant in the selection of job candidates. The ability to collaborate and work as a team member is a determinant item in the candidate selection process. Team building skill is part of our training and development programs. We use 360- degree performance appraisal system (i.e., peers, customers, subordinates, etc.). Our incentive scheme includes group-based incentives (gain sharing, group bonuses, etc.).	.69	.78	11.42

		Teamwork is a core requirement of our jobs. Participating in cross-functional teams and networks is essential for employees to perform their jobs. Our jobs demand employees engage in employee-customer networks Working with others is reflected in our performance appraisal system. Instructing others (i.e., teaching, coaching, or mentoring others) is incorporated in our incentives/reward system.			
Organizational capital-enhancing HR configurations	**Documentation**	Employees are encouraged to write and share "lessons learned" brought by their experiences (i.e., employee exchange programs, projects, etc.). Our employee suggestion programs have been successful. Employees are encouraged to continuously update the organization's knowledge databases. Employees are encouraged to share their ideas and make suggestions to redesign work processes and systems.	.72	.79	11.38
	Information systems	We have user-friendly information systems. All employees have access to our information systems. There is good integration between our information systems. Our information systems offer an adequate capacity to meet our current business needs. We continuously improve our information systems based on the users' feedback. The effective use of our information systems could be learned during our training and development activities. Our information systems facilitate sharing of data within business units or departments.	.76	.83	12.41
		Organizational ambidexterity			
Exploitative capability		Our firm commits to improving quality and lowering costs. Our firm continuously improves the reliability of its products and services. Our firm increases the levels of automation in its operations. Our firm constantly surveys existing customers' satisfaction Our firm fine-tunes what it offers to keep its current customers satisfied, Our firm penetrates more deeply into its existing customer base.	.63	.88	13.65
Exploratory capability		Our firm consistently looks for novel technological ideas by thinking outside the box. Our firm bases its success on its ability to explore new technologies. Our firm creates products or services that are innovative to the firm. Our firm looks for creative ways to satisfy its customers' needs. Our firm aggressively ventures into new market segments. Our firm actively targets new customer groups.	.61	.76	10.15
		Innovation performance			
Innovation performance		Our development in terms of product and service fulfills our market share expectations relative to the firm's defined objectives. Our sales targets relative to stated objectives are achieved through the product development plans. Product development in our firm meets the target return on assets relative to defined objectives. Product development in our firm meets target return on investment related to defined objectives. Product development in our firm meets target profitability relative to defined objectives.	.62	.73	9.89

Table2

Means, standard deviations, and correlations

Variables	Mean	SD	1	2	3	4	5	6	7	8	9
1. Firm age	25.23	17.98	-								
2. Firm size	400.67	212.74	.17*	-							
3. Sector	1.13	.35	.11*	.12*	-						
4. Human capital- enhancing HR Practices	3.23	.59	-.18*	.17*	.08	-					
5. Social capital- enhancing HR Practices	3.05	.37	.19*	.18**	.07	.42**	-				
6. Organizational capital- enhancing HR Practices	3.12	.33	.16**	-.13*	.11*	.47**	.43*	-			
7. Explorative capability	3.21	.64	.09	.04	.06	.51**	.44**	.38**	-		
8. Exploitative capability	3.17	.77	.18**	.07	.11**	.48**	.41**	.43**	.47**	-	
9. Innovation performance	3.28	.63	.07	-.08	.05	.55**	.52**	.51**	.41**	.52**	-

Note: N = 263. **. P <0.01 (2-tailed) was considered as the significance level. *. P <0.05 (2-tailed) was considered as the significance level. Sector = private; coded 1 and public; coded 2. Firm size = number of employees.

Table3

Mediation analysis of exploratory capability

Relationship	Direct effect	95% confidence interval of the direct effect	T value	Indirect effect	95% confidence interval of the direct effect	T value
Human capital- enhancing HR Configurations → Innovation performance	.31	(.11-.52)	3.04	.13	(.03-.04)	1.7
Social capital- enhancing HR Configurations → Innovation performance	.43	(.32-.61)	4.3	.17	(.04-.40)	2.1
Organizational capital-enhancing HR Configurations → Innovation performance	.24	(.22-.52)	2.7	.09	(-.01-.13)	.09

Table4

Mediation analysis of exploitative capability

Relationship	Direct effect	95% confidence interval of the direct effect	T value	Indirect effect	95% confidence interval of the direct effect	T value
Human capital- enhancing HR Configurations → Innovation performance	.36	(.271-.658)	.41	.14	(.032-.0412)	1.7
Social capital- enhancing HR Configurations → Innovation performance	.23	(.306-.734)	2.9	.12	(.015-.261)	.19
Organizational capital-enhancing HR Configurations → Innovation performance	.41	(.441-.717)	.45	.17	(.038-.402)	2.3

Table 5

Results of interaction hypotheses

Variables	Explorative Capability				Exploitative Capability			
	M1	**M2**	**M3**	**M4**	**M5**	**M6**	**M7**	**M8**
Firm age	.07	.06	.04	.05	.05	.11	.08	.03
Firm size	-.09	-.11*	-.14*	-.13*	-.07	-.09	-.13*	-.14*
Sector	.06	.04	.03	.03	.04	.04	.03	.02
HC		.28**	.25**	.18*		.25**	.21**	.17*
SC		.31**	.26**	.22**		.22**	.17*	.14*
OC		.23**	.19**	.17**		.29**	.25**	.19*
HC*SC			.25**	.19**			.17*	.14*
HC*OC			.15*	.11*			.24**	.19*
SC*OC			.22**	.18*			.19**	.16*
HC*SC*OC				.24**				.17*
R^2	.14	.22	.33	.45	.12	.19	.27	.37
Adjusted R^2	.15	.19	.32	.44	.10	.17	.26	.36
ANOVA F	22.41**	35.48**	71.16**	94.16**	19.3**	26.23**	39.28**	68.41**

Note: N = 263. Standardized coefficients are shown. $p \leq 0.05$, **$p \leq 0.01$, **$p \leq 0.001$. Firm size = number of employees. Sector = private; coded 1 and public; coded 2. Firm size = number of employees.

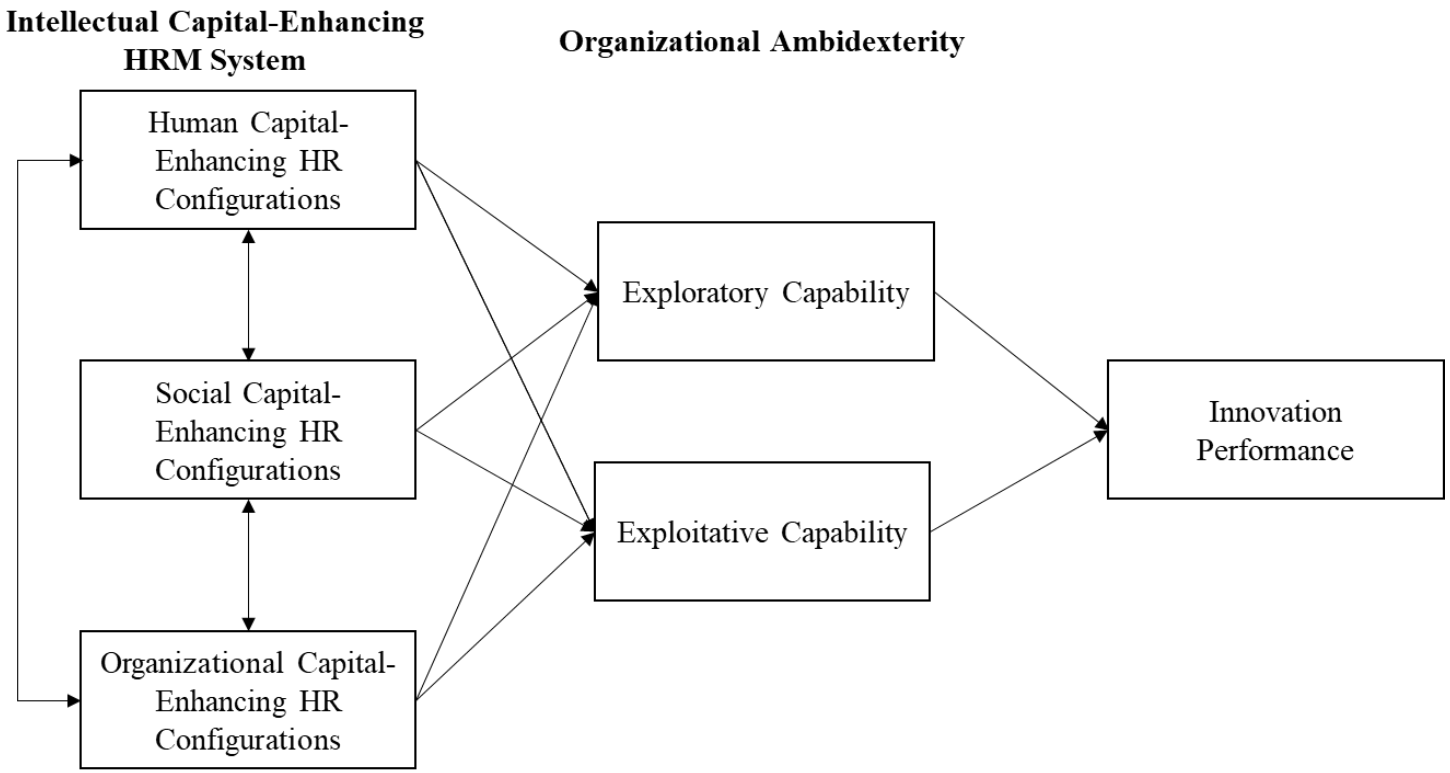

Figure 1 Proposed Model

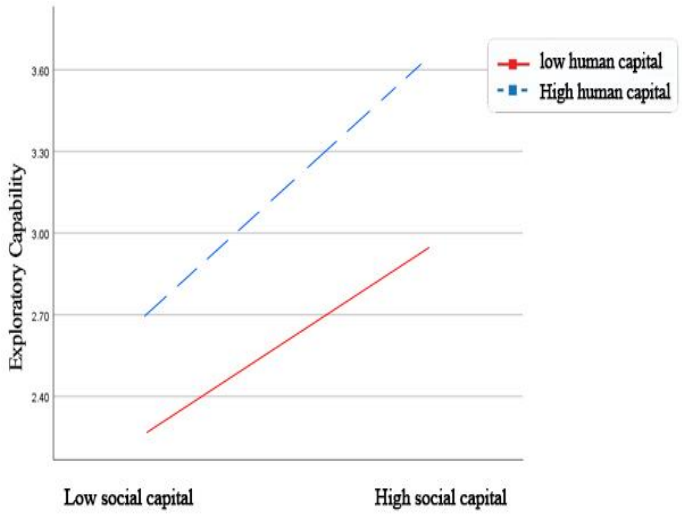

Figure 2 Two-way interaction between human capital and social capital on exploratory capability**.** ***Note.*** High: mean + 1 SD, Low: mean − 1 SD.

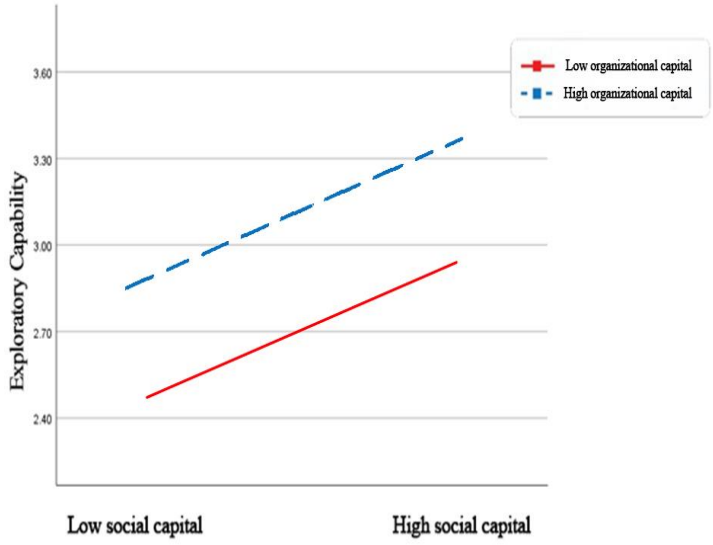

Figure 3 Two-way interaction between social capital and organizational capital on the exploratory capability**.** ***Note***. High: mean + 1 SD, Low: mean − 1 SD.

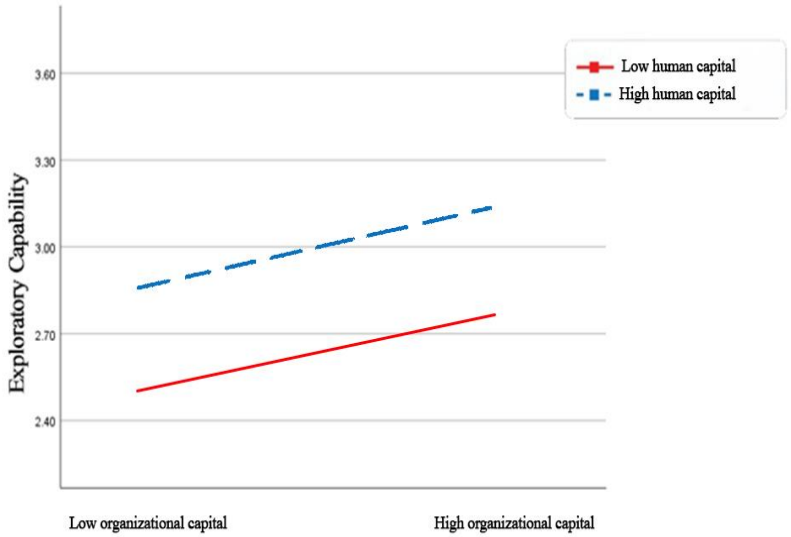

Figure 4 Two-way interaction between human capital and organizational capital on the exploratory capability. ***Note.*** High: mean + 1 SD, Low: mean − 1 SD.

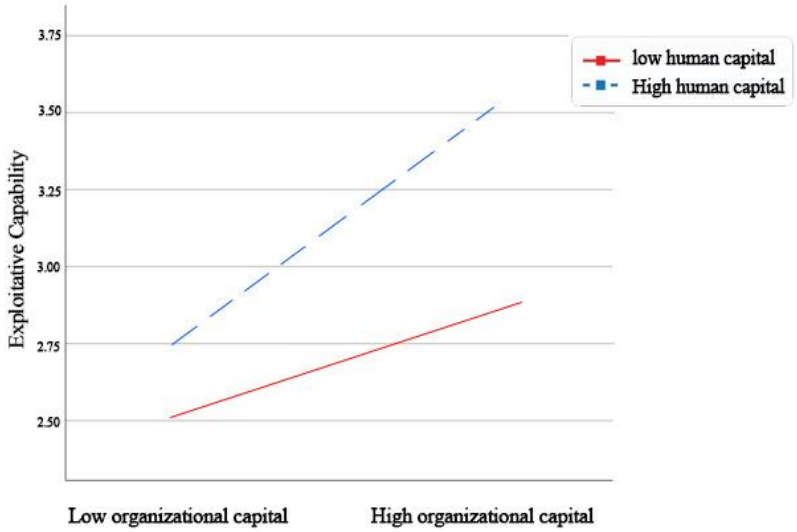

Figure 5 Two-way interaction between human capital and organizational capital on the exploitative capability. ***Note.*** High: mean + 1 SD, Low: mean − 1 SD.

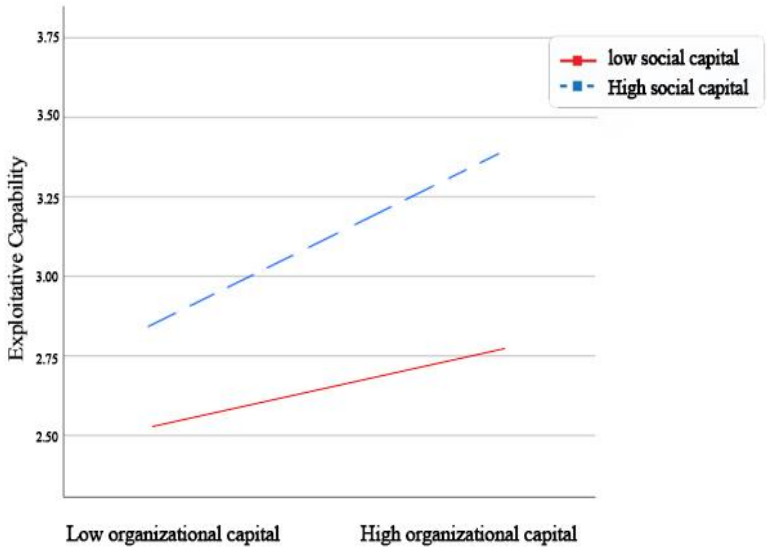

Figure 6 Two-way interaction between social capital and organizational capital on the exploitative capability. ***Note.*** High: mean + 1 SD, Low: mean − 1 SD.

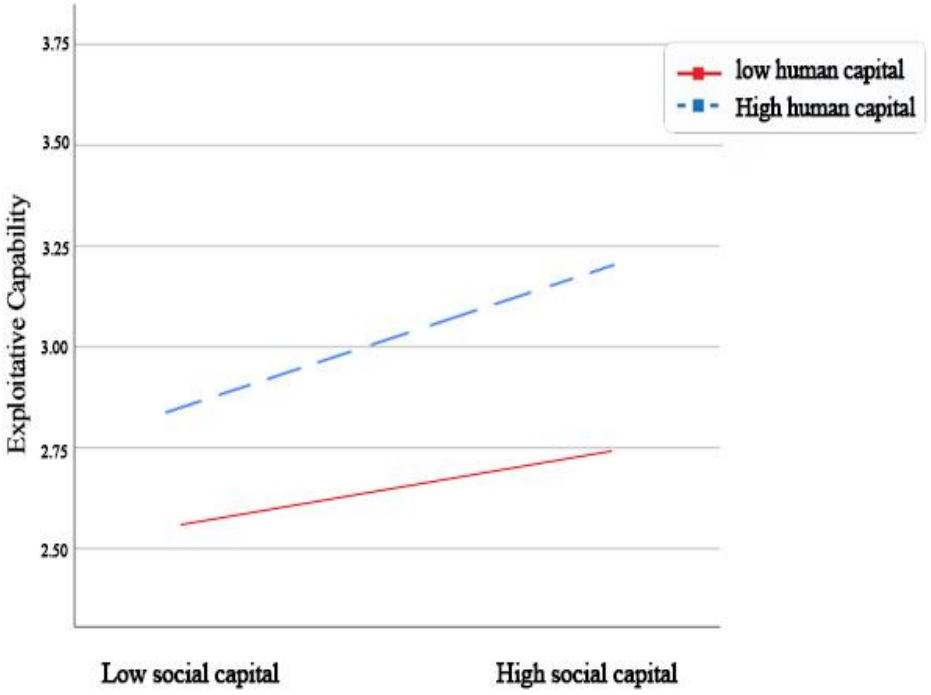

Figure 7 Two-way interaction between human capital and social capital on the exploitative capability ***Note.*** High: mean + 1 SD, Low: mean − 1 SD.