LEVERAGING HUMAN CAPITAL FLOW FOR ORGANIZATIONAL INNOVATION

By

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To my husband, parents, and committee
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LEVERAGING HUMAN CAPITAL FLOW FOR ORGANIZATIONAL INNOVATION

By

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How to leverage human capital flow to enhance organizational effectiveness has emerged to be a vibrant research question. Although several studies have investigated the relation between human capital flow and firm market performance, the influence of human capital flow on organizational innovation remains unclear, let alone how to manage human capital flow to enhance innovation through Human Resource Management (HRM) practices. Therefore, the goal of this dissertation is to explicate the relation between human capital flow and innovation. Specifically, I develop a formal taxonomy to decompose human capital flow by jointly considering the nature of changes in human capital resources (i.e., quantity vs. quality) and the flow direction of human capital resources (i.e., outflow vs. inflow). Based on this taxonomy, I investigate the effects of human capital flow components (i.e., quantity of outflow, quality of outflow, quantity of inflow, and quality of inflow) on organizational innovation. In addition, taking a Human Resource Management (HRM) perspective, I examine the roles that different HRM practices may play in managing human capital flow to facilitate innovation. Specifically, guided by the Ability-Motivation-Opportunity (AMO) framework, I investigate how ability-based (i.e., selective staffing and training), motivation-based (i.e., performance management, collective-based compensation, and individual-based compensation), and opportunity-based (i.e.,
opportunity-enhancing work design) HRM practices qualify the effects of human capital outflow and inflow on innovation. Hypotheses were tested using longitudinal data (2001-2006) from a nationally representative sample of workplaces in Canada ($N = 6120$ from 1480 workplaces). The findings demonstrate the importance of decomposing human capital flow as well as unified HRM bundle in clarifying how to leverage human capital flow for organizational innovation.
CHAPTER 1
INTRODUCTION

Employee mobility is a workplace phenomenon that has attracted enormous attention from both professionals and academic scholars over the last few decades. According to U.S. Bureau of Labor Statistics data, most recently in 2016, the nationwide annual turnover rate was approximately 42% and the nationwide annual hiring rate was approximately 44% (U.S. Department of Labor, 2016). These statistics point to the importance of studying employee mobility in the workplace (Cappelli & Neumark, 2004). Especially, considering the development of knowledge-based economy nowadays, human capital resources often represent organizations’ key assets and sources of sustainable competitive advantage (Barney & Wright, 1998; Ployhart, Nyberg, Reilly, & Maltarich, 2014). Consequently, managing human capital flow over time is critical for organizations to maintain and refresh their knowledge reservoirs for value creation (Argote, 1999).

For decades, the majority of studies on employee mobility have focused on individual turnover decisions (Shaw, 2011; Hom, Lee, Shaw, & Hausknecht, 2017). Recognizing the importance of examining employee mobility at the organization level, scholars are increasingly turning their attention to studying the impact of human capital flow, which refers to the total quantitative and qualitative outflow and inflow of human capital resources (i.e., organizational resources created from the emergence of individuals’ KSAOs—knowledge, skills, abilities, and other characteristics; Ployhart & Moliterno, 2011) into and out of the focal organization (Hausknecht & Trevor, 2011; Nyberg & Ployhart, 2013). Nevertheless, compared to individual-level turnover literature, the organization-level literature on employee mobility is “much less well developed” (Shaw, 2011, p. 187). In particular, our understanding about the organization-level consequences associated with human capital flow is still limited (Hancock, Allen, &
Soelberg, 2017; Hausknecht, 2017). Specifically, although several studies have investigated the relation between human capital flow and firm market performance (e.g., Call, Nyberg, Ployhart, & Weekley, 2015; Reilly, Nyberg, Maltarich, & Weller, 2014; Shaw, Park, & Kim, 2013), the influence of human capital flow on organizational innovation remains unclear, let alone how to effectively manage human capital flow to enhance innovation through Human Resource Management (HRM) practices.

The major goal of this dissertation is to explicate the relation between human capital flow and organizational innovation. Specifically, I develop a formal taxonomy to decompose human capital flow by considering the nature of changes in human capital resources (i.e., quantity vs. quality) and the flow direction of human capital resources (i.e., outflow vs. inflow). Based on this taxonomy, I investigate the effects of human capital flow components (i.e., quantity of outflow, quality of outflow, quantity of inflow, and quality of inflow) on organizational innovation. Further, taking an HRM perspective, I examine the roles that different HRM practices may play in managing human capital flow to facilitate innovation. Specifically, guided by the Ability-Motivation-Opportunity (AMO) framework (Boxall & Purcell, 2003; Lepak, Liao, Chung, & Harden, 2006), I investigate how ability-based (i.e., selective staffing and training), motivation-based (i.e., performance management, collective-based compensation, and individual-based compensation), and opportunity-based (i.e., opportunity-enhancing work design) HRM practices qualify the effects of human capital outflow and inflow on innovation.

This dissertation contributes to the literature in three major ways. First, moving beyond market performance, this study investigates the impact of human capital flow on organizational innovation, thus providing us a more comprehensive understanding about the consequences associated with human capital flow. Although a firm’s ability to compete over time depends on
both its ability to be efficient and competitive in the current market and its ability to be innovative for new value creation (Abernathy, 1978; March, 1991), prior studies have mainly focused on the impact of human capital flow on firm market performance. Consequently, it remains unclear how human capital flow may shape organizational innovation. As such, taking organizational innovation into theoretical consideration adds much to our knowledge regarding the potential drawbacks and benefits of human capital flow for the organization.

Second, by jointly considering the nature of changes in human capital resources (i.e., quantity vs. quality) and the flow direction of human capital resources (i.e., outflow and inflow), this study furthers our understanding about the impact of different components of human capital flow on the organization. Prior studies have focused on either the collective construct of employee mobility (in strategic management and labor economics literature; see Mawdsley & Somaya, 2016 for a review) or a single component of employee mobility (e.g., turnover rate in strategic HRM literature) to probe how human capital flow relates to organizational outcomes. As a result, the inner workings of human capital flow are poorly understood. One exception is Reilly et al. (2014), who considered both human capital outflow (i.e., voluntary turnover rate) and human capital inflow (i.e., hiring rate) and found that both outflow and inflow impacted job demands and patient satisfaction in hospitals. The other exception is Call et al. (2015), who demonstrated that the effect of turnover rate change on unit performance change was qualified by turnover rate, turnover dispersion, and the quality of leavers. Building upon these two studies, this dissertation unpacks human capital flow by considering its multiple components, enriching our knowledge about the underlying complexity of the linkage between human capital flow and organizational innovation.
Third, drawing on the AMO theoretical framework, this study probes the potential theoretical mechanisms for effectively managing human capital flow to enhance innovation through HRM practices. Specifically, I examine ability-based (i.e., selective staffing and training), motivation-based (i.e., performance management, collective-based compensation, and individual-based compensation), and opportunity-based (i.e., opportunity-enhancing work design) HRM practices as boundary conditions that shape the relation between human capital flow and organizational innovation. Previous HRM researchers suggested that the turnover-performance relation depended on the HRM systems that organizations adopted. For example, both Guthrie (2001) and Siebert and Zubanov (2009) found that the relation between turnover rate and productivity was only negative when organizations adopted “high road” HRM systems (e.g., high-involvement work systems or commitment-based HRM systems) rather than “low road” HRM systems (e.g., control-based HRM systems). Nevertheless, the specific underlying theoretical mechanisms for HRM systems to impact such a relation remain unclear. Taking the AMO lens, this dissertation differentiates the potential theoretical mechanisms for different HRM domains (i.e., ability-based HRM practices, motivation-based HRM practices, and opportunity-based HRM practices) to shape the effects of human capital outflow and inflow on organizational innovation, shedding light on how human capital flow can be strategically leveraged to promote innovation through HRM.
CHAPTER 2
THEORETICAL BACKGROUND

In this chapter, I first discuss the importance of studying organizational innovation and the potential theoretical mechanisms for human capital flow to impact innovation. Second, I propose a formal taxonomy to decompose human capital flow based on the nature of changes in human capital resources (i.e., quantity vs. quality) and the flow direction of human capital resources (i.e., outflow vs. inflow). Third, I introduce the AMO framework, which provides a useful theoretical lens to decompose unified HRM bundle and clarify how to manage human capital flow through utilizing different types of HRM practices to promote innovation.

Organizational Innovation

The Importance of Organizational Innovation

Researchers have long argued that organizations’ ultimate goal is to build up the ability to compete over time for sustainable value creation (Barney, 1991; Hall, 1993; Porter, 1985; Reed & DeFillippi, 1990). According to Abernathy (1978), a firm’s ability to compete over time is rooted not only in its ability to be efficient and competitive in the current market but also in its ability to be innovative for new value creation. Similarly, March (1991) argued that organizations’ survival and prosperity depended on both their ability to exploit old certainties to stay efficient and competitive in the current market and their ability to explore new possibilities through innovation to yield new revenue-producing opportunities. In addition, Teece, Pisano, and Shuen (1997) stated that organizations’ dynamic capabilities for sustainable competitive advantage rested on their ability to improve the current competencies while developing fundamental new capabilities at the same time. To summarize, organizations’ market performance and their innovative capability are two distinct types of organizational outcomes
that both deserve research attention (Abernathy, 1978; Benner & Tushman, 2003; Chadwick & Dabu, 2009; Loury, 1979). In this dissertation, I focus on organizational innovation.

Organizational innovation refers to the intentional introduction and application of new ideas, processes, products, or procedures in the organization (West & Farr, 1990). Considering the complex and changing market environment nowadays, innovation has emerged as a crucial mechanism for firms to discover new market opportunities, adapt to rapid changes, and sustain competitive advantages (Anderson, Potočnik, & Zhou, 2014; Eisenhardt & Martin, 2000; McGrath, Tsai, Venkataraman, & MacMillan, 1996; Subramaniam & Youndt, 2005). Yet, the management of innovation is challenging, because the innovation process is discontinuous (Dooley, 1997, 2004). In particular, despite the fact that innovation arises from the coalescence of human resources, it is difficult to reduce this macro phenomenon to its constituent elements (Kozlowski & Klein, 2000). As an emergent macro phenomenon, organizational innovation is created from the emergence of individuals’ KSAOs via collective interactions (i.e., interpersonal communication and exchange of information, affect, and resources; Kozlowski & Klein, 2000). Through this process, the KSAOs embedded in individual employees represent elemental raw materials and the collective interactions denote the amplifying process whereby raw materials are combined and aggregated for the emergence of innovation (Kozlowski & Klein, 2000). Following this logic, both individual KSAOs and collective interactions are important for organizations to successfully innovate (Li, Wang, van Jaarsveld, Lee, & Ma, in press).

**Human Capital Flow and Organizational Innovation**

Taking an emergence perspective, human capital flow may shape organizational innovation by impacting both individual KSAOs and collective interactions. From the perspective of individual KSAOs, the influence of human capital flow on innovation can be viewed as a double edged sword. On the one hand, human capital flow may benefit innovation
by refreshing organizations’ knowledge reservoir, as employee mobility serves as a powerful mechanism for tacit and explicit knowledge transfer across organizations (Argote & Ingram, 2000; Chesbrough, 2003; Cooper, 2001). Specifically, human capital flow can facilitate innovation through the learning-by-hiring effect (i.e., knowledge accumulation through new employees due to knowledge diffusion) and the social network effect (i.e., departing employees stay in contact with former colleagues for knowledge exchange) (Braunerhjelm, Ding, & Thulin, 2015; Kaiser, Kongsted, & Rønde, 2011, 2015). In other words, human capital flow can update firm knowledge reservoir by infusing new knowledge, increasing the variety of perspectives, reducing information redundancy, and expanding the knowledge network (Dalton & Todor, 1979; Hancock, Allen, Bosco, McDaniel, & Pierce, 2013; Ton & Huckman, 2008).

On the other hand, human capital flow may impede organizational capability to innovate. This is because the departure of high-quality employees may associate with the loss of irreplaceable tacit expertise, knowledge, and proficiency (Amabile, 1988, 1996). For example, previous research suggests that the accumulated experience, skills, and managerial expertise of incumbent members serve as important facilitators for organizational learning (Dutton, Thomas, & Butler, 1984; Hayes & Wheelwright, 1984). Consequently, losing those high-quality members may prevent organizations from leveraging valuable but tacit knowledge and expertise for innovation (Park & Shaw, 2013). In terms of new hires, due to the lack of firm-specific human capital (i.e., KSAOs that are only useful to firm-specific productivity and cannot be readily transferred to alternative business settings; Becker, 1964), it is resource-consuming for organizations to successfully integrate their KSAOs into the current organizational process and functioning, which may distract those organizations from innovation (Hale, Ployhart, & Shepherd, 2016).
From the perspective of collective interactions, the influence of human capital flow on innovation can also be viewed as a double edged sword. On the one hand, human capital flow may benefit innovation by shifting collective interactions. Employee mobility is generally associated with changes in knowledge and resource flow and interpersonal connectivity in the organizational social networks (Brass, Galaskiewicz, Greve, Tsai, 2004; Dooley, 2004). Therefore, human capital flow serves as the basic means for organizations to reshape collective interactions, reducing the stagnation of interaction patterns (Argote & Ingram, 2000; Dooley, 2004; Hannan & Freeman, 1984). As the literature has shown, stable and long-term employment may lock organizational members into the existing interest, culture, and relations embedded in the organization (Dooley, 1997; Hannan & Freeman, 1984). Consequently, organizations with stagnated human resources tend to heavily rely on established routines (i.e., repetitive, recognizable patterns of interdependent actions carried out by multiple actors; Feldman & Pentland, 2003) and are less open to novel solutions (Argote, Beckman, & Epple, 1990; Sørensen & Stuart, 2000). As such, human capital flow can be viewed as a revitalizing process that increases the adaptability of collective interactions, thus benefiting organizational innovation (Shaw, 2011). Further, human capital flow can improve organizations’ receptivity to creative solutions that are distant from or incompatible with the current routines (Sydow, Schreyögg, & Koch, 2009). This is because employee mobility can mitigate the tendency of local search, reduce the escalation of commitment to ongoing routines, and improve organizational openness to divergent solutions (Song, Almeida, & Wu, 2003; Staw, 1981). In addition, human capital flow can reduce the formation of “groupthink” (Schneider, Goldstein, & Smith, 1995; Ployhart, Weekley, & Baughman, 2006). Consequently, organizations are less narrow-minded or
constricted in evaluating, processing, and absorbing knowledge and information, which facilitates innovation.

On the other hand, human capital flow may impede innovation due to knowledge depreciation via organizational forgetting and disruption of relational coordination. As pointed out by Argote (1999), firm knowledge acquired through learning by doing may depreciate via employee mobility. In particular, losing key employees may disrupt the organizational knowledge architecture with a specialized division of labor from different knowledge expertise (Hollingshead, 1998a, 1998b; Liang, Moreland, & Argote, 1995). As such, human capital flow may have negative consequences on the synchronization, pacing, and quality of collective interactions. Further, human capital flow may impede organizational learning by disrupting shared mental models, transactive memory system (i.e., a shared organizational system for encoding, storing, and retrieving information; Wegner, 1986, 1995; Wegner, Erber, & Raymond, 1991), and relational coordination (Argote, 1993). For example, when experiencing employee turnover, incumbent employees need to accommodate expanded responsibilities and workloads and cannot rely on their previous shared mental models and transactive memory system to perform, which may lead to suboptimal knowledge compilation process. In addition, human capital flow may erode the trusting relationships and social capital needed for knowledge exchange and aggregation (Argote & Ingram, 2000; Tsai & Ghoshal, 1998). As we know, knowledge exchange does not unfold automatically; rather, it requires deliberate collective effort due to potential motivational barriers (Dreu, Nijstad, & Van Knippenberg, 2008; Nijstad & Dreu, 2012; Szulanski, 1996, 2000). In particular, sharing knowledge with other members may conflict with individual organizational members’ self-interest, because hoarding knowledge can enhance their own knowledge assets, bargaining power, and status in the organization (Cabrera &
Cabrera, 2005; Wang & Noe, 2010). In other words, knowledge exchange processes often entail considerable sacrifice from the knowledge sharers and long-term trusting relations are important for eliciting knowledge exchange (Cabrera & Cabrera, 2002).

To summarize, human capital flow has the potential to both facilitate innovation and impede innovation. As a consequence, it is important to decompose human capital flow to better understand the inner workings for human capital flow to shape organizational innovation.

**Developing a Taxonomy for Human Capital Flow**

Despite the increased research attention on employee mobility, prior studies have focused on different theoretical constructs (e.g., voluntary turnover rate, involuntary turnover rate, hiring rate, and quit rate of good/poor performers) to probe the influence of human capital flow on the organization (e.g., Call et al., 2015; Shaw, Delery, Jenkins, & Gupta, 1998; Shaw, Dineen, Fang, & Velllota, 2009; Shaw, Duffy, Johnson, & Lockhart, 2005; Shaw, Gupta, & Delery, 2005; Reilly et al., 2014; Siebert & Zubanov, 2009). Consequently, literature in this field is fragmented and research conclusions are mixed at best (Hancock et al., 2013; Heavey, Holwerda, & Hausknecht, 2013). Departing from previous studies that used different theoretical constructs to probe human capital flow, I develop a formal taxonomy to decompose human capital flow for a more fine-grained understanding about the inner workings of this construct.

According to its definition, human capital flow denotes the quantitative and qualitative outflow and inflow of human capital resources at the organization (Nyberg & Ployhart, 2013). Based on the nature of changes in human capital resources, researchers can focus on either the quantity of human capital flow or the quality of human capital flow (Nyberg & Ployhart, 2013). Further, based on the flow direction of human capital resources, human capital flow contains both outflow and inflow (Call et al., 2015). Integrating the two dimensions (i.e., the nature of
changes in human capital resources and the flow direction of human capital resources), I propose a formal taxonomy for human capital flow and present it in Figure 2-1.

**The Quantity of Outflow and Inflow**

As shown in Figure 2-1, total turnover rate (collective turnover) and total hiring rate are the two theoretical constructs examining the quantitative aspects of human capital flow regardless of qualitative features. This approach is aligned with labor economics literature (e.g., Braunerhjelm et al., 2015; Burgess, Lane, & Stevens, 2000; Franco & Filson, 2006; Song et al., 2003), which views employee mobility as reallocation or churning of labor in the labor market. Specifically, total turnover rate focuses on the quantity of human capital outflow, which is often operationalized as the number of leavers during the period scaled by the total number of employees in the workplace (Hausknecht & Trevor, 2011). It is important to note that turnover rate is an emergent construct that describes the aggregate level of employee departures, an important organization-level outcome in its own right (Hausknecht & Trevor, 2011; Nyberg & Ployhart, 2013). Similarly, for total hiring rate, it focuses on the quantity of human capital inflow, which is usually operationalized as the number of joiners during the period scaled by the total number of employees in the workplace (Reilly et al., 2014).

**The Quality of Outflow and Inflow**

Distinct from the quantitative components, the quality of human capital flow focuses on the qualitative changes of human capital resources (Ployhart, Weekley, & Ramsey, 2009). Specifically, the quality of outflow focuses on the level of depletion of valuable KSAOs that are difficult to be imitated or replaced given the quantity of human capital outflow. For example, Call et al. (2015) probed the quality of leavers working at U.S. retail stores using the aggregated score of service orientation, because service orientation is generally viewed as a type of essential KSAOs for performing work tasks in service industries. However, this measure is specific to
service industries and may not be readily applicable to other types of organizations. Another way to probe the quality of leavers is to consider the proportion of voluntary turnover for leavers (i.e., the number of employees who voluntarily quit the organization scaled by the total number of leavers). This is because employees who voluntarily leave the organization are generally considered to be more competitive in the job market with higher-quality KSAOs and may leave the organization for more attractive market opportunities (Hulin, Roznowski, & Hachiya, 1985). In addition, voluntary turnover events are led by employees, and thus more difficult to be actively managed and controlled by the organization, which may cause more negative consequences for organizational functioning (Nyberg & Ployhart, 2013; Park & Shaw, 2013; Shaw et al., 2013). By contrast, employees who are dismissed or laid off by the organization may reflect organizational efforts of actively managing human capital flow (e.g., sorting out poor performers and reducing labor costs). Because key employees possess unique and valuable KSAOs, they are valued by the organization and are less likely to be dismissed or laid off by the organization.

In terms of the quality of inflow, it focuses on the level of infused valuable KSAOs given the quantity of human capital inflow. Firms can benefit from absorbing joiners’ new perspectives, knowledge, and skills for organizational use through the learning process (Argote, 1999; March, 1991). Effectively integrating newcomer knowledge into the current organizational processes is associated with more novel alternatives derived in problemistic search (i.e., the type of search that is stimulated by a problem and aimed at finding a solution for that problem; Cyert & March, 1963) and slack search (i.e., the type of search that is stimulated by excess resources and aimed at introducing innovation; Cyert & March, 1963), which are considered as two fundamental mechanisms for organizational learning and adaptation (Greve, 2003; Levinthal &
March, 1981). One way to probe joiners’ quality is to consider functional diversity (i.e., the extent to which joiners possess different functional backgrounds; Cannella, Park, & Lee, 2008). When joiners possess diverse functional backgrounds, the inflow of human capital as a collective can be more easily integrated into corresponding functional departments and thus diversify the set of knowledge, skills, and perspectives of the organization to a greater extent, facilitating more comprehensive information processing (Bunderson & Sutcliffe, 2002). Therefore, the organization may be able to improve its accuracy in the decision making process and derive more alternatives in problemistic search and slack search (Carpenter & Fredrickson, 2001). Following this logic, higher levels of functional diversity for joiners may imply higher quality of human capital inflow.

The Ability-Motivation-Opportunity (AMO) Framework

In this dissertation, I introduce the AMO framework to decompose unified HRM bundle and clarify how to manage human capital flow through different types of HRM practices to promote innovation. According to the performance management literature, employee performance can be viewed as a function of three components: ability, motivation, and opportunity (Jiang, Lepak, Han, Hong, Kim, & Winkler, 2012). Following this logic, to maximize employee contributions, HRM systems can be viewed as being oriented toward influencing employees’ ability to perform (A), motivation to perform (M), and opportunities to perform (O) (Becker & Huselid, 1998; Combs, Liu, Hall, & Ketchen, 2006; Boxall & Purcell, 2008; Lepak et al., 2006).

First, HRM practices influence employees’ ability by shaping their KSAOs to perform work tasks. For example, HRM practice such as selective staffing and training can enhance organizations’ human capital resources by bringing in higher-quality newcomers and developing KSAOs of incumbent employees (Snell & Dean, 1992). Second, HRM practices influence
employees’ motivation by providing different types of incentives. For example, performance management and incentive compensation (e.g., individual-based compensation and collective-based compensation) are considered as typical HRM practices used to elicit employees’ work motivation and align employee interest with organizational interest (Huselid, 1995). Third, HRM practices impact employees’ opportunities to perform through different approaches to work design. For example, HRM practices such as flexible work design, problem-solving teams, and self-directed groups provide employees opportunities to leverage their KSAOs by increasing individual discretion and collective collaboration (Liao & Chuang, 2004; Batt & Colvin, 2011; Lawler, 1986, 1992). As such, taking the three distinct HRM domains into consideration provides us a more comprehensive understanding about how HRM systems impact the organization by shaping employee attitudes and behaviors (Lepak et al., 2006; Jiang, Takeuchi, & Lepak, 2013). In this dissertation, I probe the AMO framework by investigating how ability-based (i.e., selective staffing and training), motivation-based (i.e., performance management, collective-based compensation, and individual-based compensation), and opportunity-based (i.e., opportunity-enhancing work design) HRM practices qualify the effects of human capital outflow and inflow on organizational innovation.
Figure 2-1. A taxonomy for human capital flow.
CHAPTER 3
HYPOTHESES DEVELOPMENT

In this chapter, I discuss the hypothesized research model in details (Figure 3-1).

Specifically, Hypotheses 1 and 3 focus on the effects of quantity of outflow (total turnover rate) and quality of outflow (proportion of voluntary turnover for leavers) on organizational innovation. Hypotheses 2 and 4 focus on the effects of quantity of inflow (total hiring rate) and quality of inflow (functional diversity for joiners) on organizational innovation. Finally, in Hypotheses 5-10, I adopt the AMO framework to examine how human capital flow can be managed through different types of HRM practices. It is important to point out that the following hypotheses development does not focus on between-organization comparisons to infer whether organizations with certain levels of human capital flow or HRM practices present better innovation performance. Instead, it focuses on within-organization comparisons to examine how the variations of human capital flow and HRM practices may impact innovation over time.

Human Capital Flow and Organizational Innovation

Total Turnover Rate Fluctuation and Organizational Innovation

I consider total turnover rate as a double edged sword for organizational innovation. On the one hand, a higher quantity of employee departures may benefit innovation for two reasons. First, a higher quantity of employee departures reduce organizational stagnation and unhealthy homogeneity (Hancock et al., 2013). This is because long-term employment relations lock organizational members into the existing interest, culture, and relations, build up homogeneous thinking through social interactions, and increase employees’ reliance on and commitment to ongoing routines for reliability and accountability (Hannan & Freeman, 1984; Schneider et al., 1995). With stagnated human capital resources, organizations may be less capable of developing novel solutions and be reluctant to modify or abandon established routines that they reply on in
the past. Following this logic, more employee departures provide organizations the opportunity to churn their workforce to reduce stagnation and homogeneity, which in turn facilitate organizational innovation. Second, a higher quantity of employee departures may contribute to innovation through the social network effect, as departing employees may stay in contact with former colleagues for knowledge exchange (Kaiser et al., 2011; Shipilov, Godart, & Clement, 2017). Thus, employee departures may be a useful tool for expanding the knowledge network of the organization, benefiting organizational learning and innovation. Moreover, researchers have found that employee mobility generates a communication channel between the two involved firms, which becomes a type of social capital for both parties and thus promotes knowledge transfer (Agrawal, Cockburn, & McHale, 2006; Corredoira & Rosenkopf, 2010; Kim & Steensma, 2017).

On the other hand, a higher quantity of employee departures may inhibit innovation due to the loss of tacit knowledge and the disruption of collective coordination. According to human capital theory (Becker, 1962, 1993), employees accumulate KSAOs over time in the organization. Thus, a higher quantity of employee departures indicate greater loss of accumulated knowledge, experience, and expertise, which disrupts the organizational knowledge architecture with a specialized division of labor (Argote, 1999). The disruption of the knowledge architecture in turn reduces the quality of knowledge exchange and combination, impeding innovation. In addition, a higher quantity of employee departures may hinder the concertedness of collective states and processes in cognitive, affective, and behavioral aspects, impeding effective knowledge exchange and aggregation (Ployhart & Moliterno, 2011). From the cognitive perspective, employee departures may prevent organizational members from developing shared perceptions about the organization’s values, goals, and expectations, which
decreases the synchronization of collective actions (Rentsch, 1990). From the affective perspective, employee departures may erode collective trust and cohesion, because it takes time for organizational members to develop mutual understanding and form emotional bounds with each other (Jones & George, 1998). From the behavioral perspective, employee departures interrupt the interdependent work process that requires inputs from multiple employees, preventing the formation of a unified workforce (Argote & Ingram, 2000). This argument is consistent with social capital theory (Dess & Shaw, 2001; Leana & Van Buren, 1999), which posits that employee departures imply loss of capital and resources embedded in social relations that cannot be easily replaced.

Although total turnover rate has the potential to both facilitate innovation and inhibit innovation, within each organization, a higher level of total turnover rate during a particular period is more likely to have negative impact on innovation than a lower level of total turnover rate. Specifically, when total turnover rates across times are steady and predictable, the management can create routines to replenish staff in a timely manner and manage organizational knowledge architecture effectively regardless of the absolute level of average total turnover rate (Call et al., 2015; Price, 1977). In addition, remaining organizational members can form realistic expectations of the stable turnover rate of their organization and become inured to it over time (Call et al., 2015). However, when the turnover rate during a particular period exceeds the typical level, both the management and individual members may struggle to deal with shocks, uncertainty, and disruption caused by the deviation. Consequently, such a deviation may significantly disrupt organizational knowledge architecture and collective concertedness due to maladaptation. Despite that increased turnover rate may still reduce organizational stagnation, organizations may possess impaired capability to develop novel solutions as well. Thus, in terms
of within-organization fluctuation, I expect total turnover rate to be negatively related to organizational innovation.

*Hypothesis 1.* Total turnover rate is negatively related to organizational innovation.

**Total Hiring Rate Fluctuation and Organizational Innovation**

I consider total hiring rate as a double edged sword for organizational innovation. On the one hand, a higher quantity of new hires may benefit innovation for three reasons. First, it is well established that interfirm mobility serves as the primary means for knowledge transfer and technology spillovers (e.g., Almeida & Kogut, 1999; Fallick, Fleischman, & Rebitzer, 2006; Rao & Drazin, 2002). Accordingly, joiners can facilitate innovation through the learning-by-hiring effect by infusing new knowledge and introducing new network with former colleagues from the sourcing firm (Braunerhjelm et al., 2015). Second, a higher quantity of human capital inflow can benefit innovation by shifting the knowledge and resource flow in the organizational social networks, leading to new patterns of knowledge aggregation for the emergence of innovation (Brass et al., 2004). Third, recruiting new employees also reduces organizations’ commitment to existing routines and improves their receptivity to novel solutions, because new employees have not been locked into the existing routines, interest, and relations (Hannan & Freeman, 1984).

On the other hand, a higher quantity of new hires may inhibit innovation, mainly because it is resource-consuming for organizations to effectively integrate a large number of newcomers into the organizational processes through onboarding (i.e., the specific practices initiated by an organization to facilitate employee adjustment to new roles; Wanberg, 2012). According to the socialization resources theory (Saks & Gruman, 2012), getting newcomers on board requires a comprehensive set of resources, including but not limited to social resources (e.g., social events, supervisor support, and relationship development) and work-related resources (job resources, personal planning, training, assignments, information, and feedback). Consequently, firms with a
large quantity of human capital inflow need to commit abundance of resources to facilitate newcomers to adjust to their new jobs, roles, workgroup, and organization to achieve operational efficiency. Such newcomer integration process may distract those firms from deploying their limited resources and attention to launch innovation (Ocasio, 1997). Further, new employees need to gradually acquire knowledge about and adjust to their new work context through learning and socializing as well as build up social relations with incumbent members to fit in the new settings (Ashforth & Saks, 1996; Wang, Kammeyer-Mueller, Liu, & Li, 2015; Wang, Zhan, McCune, & Truxillo, 2011). As a result, involving a large number of new members into the organizational processes at the same time may cause ineffective interpersonal communication and coordination between new members and incumbent members. In addition, adding a large number of new members into the organization may erode collective cohesion and discourage knowledge exchange among incumbent members, leading to reduced knowledge sharing, trust, and collaboration (Call et al., 2015). Consequently, a higher quantity of new hires is likely to result in suboptimal knowledge architecture and relational coordination.

Although total hiring rate has the potential to both facilitate innovation and inhibit innovation, within each organization, a higher level of total hiring rate during a particular period is more likely to have negative impact on innovation than a lower level of total hiring rate. For example, when the organization’s average total hiring rate is steady and predictable, the management can develop practices, routines, and climate (e.g., develop a climate for learning and knowledge transfer, implement practices that reward learning and adjustment, and provide adequate resources for socialization practices; Saks & Gruman, 2012) to facilitate newcomer onboarding to achieve effective newcomer integration. In addition, veteran members in those organizations are familiar with workflow changes associated with newcomer onboarding and can
modify their tasks and roles relatively easily to accommodate newcomers. However, when the hiring rate during a particular period exceeds the normal level, it becomes challenging for both the management and individual members to successfully integrate newcomers into the current organizational process. As a consequence, such a deviation may lead to chaotic collective interactions, disruptive transactive memory, and inefficient knowledge aggregation due to maladaptation. Despite that increased hiring rate is accompanied with the infusion of new knowledge, firms may have impaired capability to integrate such knowledge into the organization through innovation. Thus, in terms of within-organization fluctuation, I expect total hiring rate to be negatively related to organizational innovation.

*Hypothesis 2.* Total hiring rate is negatively related to organizational innovation.

**Proportion of Voluntary Turnover for Leavers and Organizational Innovation**

I expect that organizations may innovate less when there are a larger proportion of leavers who voluntarily quit the organization (vs. when there are a larger proportion of leavers who are dismissed or laid off by the organization). This is because employees who voluntarily quit the organization are generally considered to be more competitive in the job market with higher-quality KSAOs, which are necessary elements for innovation. Consequently, a larger proportion of voluntary turnover indicates greater loss of valuable KSAOs and may impose nontrivial setbacks on organizational innovation (Fallick et al., 2006). This is especially true when the organization has committed a large amount of research investment on these employees to advance technology (Cooper, 2001). In addition, voluntary turnover events are difficult to be actively managed and controlled by the organization and key employees that are central in the organizational social network may leave the organization through voluntary turnover (Park & Shaw, 2013). As a consequence, the organization may not be able to quickly rebuild equivalent capital and negate human capital losses (Campbell, Ganco, Franco, & Agarwal, 2012). Thus, a
larger proportion of voluntary turnover may disrupt organizational knowledge architecture and relational coordination of incumbent members, impeding knowledge exchange and aggregation (Argote & Ingram, 2000). By contrast, employee departures through involuntary turnover reflects organizations’ deliberate efforts to strategically refresh human capital resource reservoirs by sorting out poor performers who lack appropriate KSAOs to perform work tasks, cutting off labor costs, reducing work conflict, and releasing promotion opportunities (Hausknecht & Trevor, 2011; Zatzick & Iverson, 2006). In other words, employee departures through involuntary turnover may imply organizations’ attempt to remove lower-quality human capital resources to maintain operational efficiency and organizational responsiveness. Since key employees with unique and valuable KSAOs are valued by the organization, they are less likely to be dismissed or laid off by the employer. As such, organizations with a higher proportion of employee departures through involuntary turnover are more likely to quickly rebuild equivalent human capital resources for effective resource deployment. These arguments are elaborated by several meta-analyses on turnover rates, which demonstrated that voluntary turnover rate was associated with more negative consequences compared with involuntary turnover rate (Hancock et al., 2017; Heavey et al., 2013).

*Hypothesis 3.* Proportion of voluntary turnover for leavers is negatively related to organizational innovation.

**Functional Diversity for Joiners and Organizational Innovation**

I expect that organizations may innovate more when joiners possess diverse functional backgrounds because of three reasons. First, when joiners possess diverse functional backgrounds, as a collective, these joiners can bring in more diverse and comprehensive knowledge and information and thus are more likely to contribute novel perspectives to the organization (Bunderson & Sutcliffe, 2002; Dahlin, Weingart, & Hinds, 2005). Second, evenly
distributed joiners can help reduce stagnation and “groupthink” of different functional areas, which improves organizational receptivity to novel solutions (Hannan & Freeman, 1984). By contrast, when joiners possess the same functional background, human capital inflow may only reduce the “groupthink” of the particular functional areas. As idea generation and idea implementation requires the coordination of various functional areas, without inter-function collaboration, it is less likely for the organization to successfully launch innovation. Third, when joiners are evenly distributed across different functional areas, on average, they will have more opportunities to interact with and receive help from veteran employees that share similar functional backgrounds, leading to successful knowledge exchange and integration (Kammeyer-Mueller, Wanberg, Rubenstein, & Song, 2013; Rink, Kane, Ellemers, & Van der Vegt, 2013). To summarize, I expect that joiners’ functional diversity can facilitate organizational innovation.

Hypothesis 4. Functional diversity for joiners is positively related to organizational innovation.

Managing Human Capital Flow through Human Resource Management

The Moderating Roles of Ability-Based HRM Practices

Ability-based HRM focuses on enhancing the KSAOs of the workforce through HRM practices (Ostroff & Bowen, 2000). Two primary HRM practices that promote employee KSAOs are selective staffing and training (Subramony, 2009). While selective staffing can help bring higher-quality KSAOs into organizations via sophisticated selection procedures designed to screen out lower-quality employees, job-relevant training development can further advance KSAOs through developing required knowledge and expertise of current employees (Birdi et al., 2008; Combs et al., 2006; Delaney & Huselid, 1996; Posthuma, Campion, Masimova, & Campion, 2013). Thus, the level of human capital in the organization is directly influenced by these two practices (Jiang et al., 2013). Accordingly, in this dissertation, I use selective staffing
and training to probe how ability-based HRM may shape the relation between human capital flow and organizational innovation.

I expect that ability-based HRM practices (i.e., selective staffing and training) can weaken the negative relation between total turnover rate and organizational innovation. As explained earlier, employee departures may benefit innovation via reducing organizational stagnation but inhibit innovation via disrupting organizational knowledge architecture and collective concertedness. Following this logic, whether organizations can successful leverage human capital outflow to innovate depends on their capability to develop new organizational knowledge architecture and rebuild concerted collective interactions after employee departures. In organizations that invest substantially on selective staffing and training development, employees in general possess higher levels of domain-relevant knowledge and skills (e.g., factual knowledge, technical skills, and special talents), which “are the basis from which any performance must proceed” (Amabile, 1988, p. 130). Consequently, it is more likely for those organizations to successfully rebuild new organizational knowledge architecture and collective interaction patterns after employee turnover events. Therefore, I argue that selective staffing and training, as two ability-based HRM practices, can both counter the negative relation between total turnover rate and innovation. Yet, these two practices may be associated with different ability components. Specifically, selective staffing mainly seeks to improve employees’ general human capital (i.e., KSAOs that are valuable and transferable to multiple organizations), which creates the foundation for the acquisition, development, and deployment of human capital (Phillips & Gully, 2015). By contrast, work-related training is more linked to specific human capital (KSAOs that are only valuable to a specific employer) that can be deployed in specific work context (Lepak & Snell, 1999). Thus, compared with training, the KSAOs enhanced
through selective staffing may be more flexible and can be applied to a wider range of work tasks. Following this logic, it is theoretically possible that training plays a more important role in performing work task while selective staffing is more essential for organizational adaptation.

**Hypothesis 5a.** Selective staffing moderates the relation between total turnover rate and innovation, such that this negative relation is weaker when selective staffing is high (vs. low).

**Hypothesis 5b.** Training moderates the relation between total turnover rate and innovation, such that this negative relation is weaker when training is high (vs. low).

I expect that ability-based HRM practices (i.e., selective staffing and training) can also weaken the negative effect of total hiring rate on organizational innovation. As explained earlier, human capital inflow may benefit innovation via infused new valuable KSAOs for knowledge exchange and aggregation but inhibit innovation via ineffective newcomer integration. Following this logic, whether organizations can successful leverage human capital inflow to innovate depends on their capability to integrate new employees into the current organizational processes. For organizations that rely on selective staffing and training development, new employees in general possess higher levels of KSAOs at the beginning and are able to continuously develop their KSAOs to perform work tasks in the new settings (Crook, Todd, Combs, Woehr, & Ketchen, 2011; Ployhart, Van Iddekinge, & Mackenzie, 2011). Thus, with selective staffing and intensive training, joiners are more likely to quickly adapt to the new work environment, learn necessary KSAOs, and be integrated into the current organizational processes. Therefore, I argue that selective staffing and training can both counter the negative relation between total hiring rate and innovation.

**Hypothesis 6a.** Selective staffing moderates the relation between total hiring rate and innovation, such that this negative relation is weaker when selective staffing is high (vs. low).
Hypothesis 6b. Training moderates the relation between total hiring rate and innovation, such that this negative relation is weaker when training is high (vs. low).

The Moderating Roles of Motivation-Based HRM Practices

Motivation-based HRM focuses on HRM practices that are implemented to direct employees’ motivation and effort toward work-related goals (Subramony, 2009). Two primary HRM practices that organizations use to motivate employees and direct their effort are performance management and compensation (Chen & Huang, 2009; Delery & Shaw, 2001; Huselid, 1995). While performance management focuses on providing employees with timely feedback based on organizational goals to align employee behaviors with organizational strategies, compensation deals with direct and indirect employee rewards and payments and is used to compensate satisfactory performance and reinforce productive behaviors (Delaney & Huselid, 1996; Gerhart & Milkovich, 1990; Posthuma et al., 2013). According to Vroom’s (1964) valence–instrumentality–expectancy theory, employee motivation is a multiplicative combination of valence (anticipated satisfaction), instrumentality (the belief that performance will lead to rewards), and expectancy (the belief that effort will lead to the performance needed to attain the rewards). Performance management and compensation seek to motivate employees by improving the instrumentality of desired work behaviors by linking satisfactory work behavior with superior performance evaluation and incentive rewards (Liao & Chuang, 2004). In this dissertation, I focus on three motivation-based HRM practices: performance management, individual-based compensation (i.e., financial incentive that links individual performance to individual compensation; e.g., piece-work payments), and collective-based compensation (i.e., financial incentive that links collective performance to individual compensation; e.g., gain sharing and profit sharing).
I expect that performance management and collective-based compensation can weaken the negative relation between total turnover rate and organizational innovation. Performance management can facilitate innovation by closely monitoring incumbents’ performance through extensive performance appraisals to detect performance errors in a timely manner (Shaw et al., 2009). This is especially important when total turnover rate is higher than typical, because error detection can facilitate trial-and-error learning and help firms rebuild their organizational knowledge architecture and collective interaction patterns to achieve effective adaption (Levitt & March, 1988; Rerup & Feldman, 2011). Collective-based compensation is used by organizations to align employees’ self-interest with organizations’ interest by building up a strong link between collective outcomes and individual compensation (Gomez-Mejia, 1992; Welbourne, Balkin, & Gomez-Mejia, 1995). The underlying assumption for collective-based compensation is that when employees’ earnings are tied to the overall workplace outcomes, they are more motivated to work cooperatively with other members to optimize their personal income (Cooke, 1994; Snell & Dean, 1994; Werner, Tosi, & Gomez-Mejia, 2005). The implementation of collective-based compensation is especially important for organizations with a larger quantity of human capital outflow. As explained earlier, employee departures lead to knowledge loss and require knowledge exchange among incumbents to rebuild organizational knowledge architecture and collective interaction patterns. Nevertheless, knowledge exchange does not unfold automatically; rather, it is a complex and challenging process that requires purposeful efforts from both knowledge receivers and knowledge sharers (Szulanski, 1996, 2000; Wang & Noe, 2010). By implementing collective-based compensation, organizations can align employees’ self-interest with other employees’ learning and growth, which in turn facilitates the exchange of knowledge and information (e.g., technical information, information about role demands, performance
feedback, and social information) among employees and thus benefit knowledge combination and aggregation (Bartol & Srivastava, 2002).

By contrast, I expect that individual-based compensation can exacerbate the negative relation between total turnover rate and organizational innovation. Different from collective-based compensation, individual-based compensation rewards employees based on individuals’ own performance (Gomez-Mejia & Balkin, 1989; Han, Bartol & Kim, 2015). Consequently, employees are less motivated to share knowledge with others, because knowledge sharing may conflict with individuals’ self-interest and hoarding knowledge can enhance their own knowledge assets, bargaining power, and status in the organization (Cabrera & Cabrera, 2002). This is especially true when individual-based incentives are zero-sum systems where individual bonuses are distributed after the establishment of a fixed pool (Shaw et al., 2009). As larger bonuses to other employees may potentially hurt a focal employee’s reward, knowledge exchange processes often entail considerable sacrifice from the knowledge sharers (Szulanski, 1996). Following this logic, for organizations that experience a substantial number of employee departures, individual-based compensation can be detrimental to innovation, because it discourages knowledge exchange among incumbents, which is essential to make up knowledge loss and rebuild organizational knowledge architecture.

Hypothesis 7a. Performance management moderates the relation between total turnover rate and innovation, such that this negative relation is weaker when performance management is high (vs. low).

Hypothesis 7b. Collective-based compensation moderates the relation between total turnover rate and innovation, such that this negative relation is weaker when collective-based compensation is high (vs. low).
Hypothesis 7c. Individual-based compensation moderates the relation between total turnover rate and innovation, such that this negative relation is stronger when individual-based compensation is high (vs. low).

I expect that the negative relation between total hiring rate and organizational innovation is stronger when organizations adopt performance management and collective-based compensation, but weaker when organizations adopt individual-based compensation. As stated by Gerhart, Milkovich, and Murray (1992), the success of motivation-based HRM depends on the nature of employee relations and the process of communicating and administering relevant practices. In particular, whether motivation-based HRM aligns with human capital inflow to generate innovation depends on the extent to which related HRM practices may help remove the barriers for newcomer integration. According to Ashforth (2012), the rate of newcomer socialization (i.e., the speed at which newcomer learning and adjustment occur) depends on a set of situational factors. More specifically, simplifying (vs. complicating) conditions (e.g., low job complexity and high job standardization) that require less amount of effort to socialize newcomers as well as facilitating (vs. inhibiting) conditions (e.g., role clarity and tolerance of mistakes) that expedite newcomer effort are two important contextual factors that benefit newcomer integration (Ashforth, 2012). Following this logic, the extensive use of performance monitoring through appraisals may be detrimental to newcomer integration, because it emphasizes timely error detection and is incompatible with mistake tolerance. In addition, it takes time and resource for the supervisor to accurately evaluate each subordinate and the addition of a large number of new members may bias the performance ratings and reduce employees’ justice perceptions, thus impeding newcomer integration (Erdogan, 2002). Similarly, the adoption of collective-based compensation may hinder newcomer integration, because the
emphasis of collective outcomes indicates high levels of interdependence and firm specificity. Consequently, newcomers may need to adjust to new roles with core and peripheral features that are completely different from their previous ones (Ashforth, 2012). Experiencing such high-magnitude transitions, in turn, leads to newcomer maladaptation (e.g., perceptions of high role ambiguity and low self-efficacy) and thus inhibit newcomer integration (Ibarra, 2003). By contrast, the implementation of individual-based compensation can benefit newcomer integration, because it simplifies the reward conditions and improves role clarity by directly linking individual performance goals to financial incentives. Thus, newcomers can seek for task-related information from veterans more effectively and work toward their performance goals progressively, leading to effective newcomer adjustment and integration (Kammeyer-Mueller & Wanberg, 2003; Morrison, 1993).

Hypothesis 8a. Performance management moderates the relation between total hiring rate and innovation, such that this negative relation is stronger when performance management is high (vs. low).

Hypothesis 8b. Collective-based compensation moderates the relation between total hiring rate and innovation, such that this negative relation is stronger when collective-based compensation is high (vs. low).

Hypothesis 8c. Individual-based compensation moderates the relation between total hiring rate and innovation, such that this negative relation is weaker when individual-based compensation is high (vs. low).

The Moderating Role of Opportunity-Based HRM Practices

In contrast to Taylorized work design that emphasizes narrow job specifications and constricted work autonomy, opportunity-based HRM focuses on granting individual discretion and promoting collective collaboration, assuming that employees need discretion to solve
problems and problem solving is best achieved through collaboration (Boxall & Purcell, 2003; Edwards & Wright, 2001; Jiang, Lepak, Hu, & Baer, 2012; Lawler, 1986, 1992; Liao & Chuang, 2004). The typical HRM bundle that reflects opportunity-based HRM is called opportunity-enhancing work design, which consists of team-based design (e.g., problem-solving teams and self-directed groups), information sharing (e.g., employee suggestion program), and flexible job design (e.g., job rotation) (Guthrie, 2001; Haines, Jalette, & Larose, 2010; Zatzick & Iverson, 2006). Below I hypothesize how opportunity-enhancing work design moderates the effects of total turnover rate and total hiring rate on organizational innovation.

I expect that opportunity-enhancing work design can weaken the negative relation between total turnover rate and organizational innovation. As mentioned in the previous text, organizational innovation is created from the emergence of individuals’ KSAOs via collective interactions (Kozlowski & Klein, 2000). In the emergence, collective interactions denote the amplifying process whereby employees’ KSAOs are aggregated to yield innovation. As such, one important approach to creating innovation is to shift the patterns of collective interactions to alter the knowledge aggregation process. When organizations adopt opportunity-enhancing work design, members need to carry out interdependent tasks with others on a regular basis and engage in collective coordination to complete work tasks (Langfred, 2005). Thus, they may have more chances to interact with each other for the exchange of knowledge, information, and resources. In other words, for those organizations, team members are more embedded in the social relations of the organization (Brass et al., 2004). Consequently, the removal of nodes (i.e., leavers) in the knowledge network through employee departures is more likely to reshape collective interaction patterns, which can largely benefit innovation. By contrast, when the organization discourages opportunity-enhancing work design, employees tend to work independently. As such, the
removal of nodes (i.e., leavers) in the knowledge network may have less impact on the patterns of collective interactions. In addition, when organizations rely on opportunity-enhancing work design, to achieve collective goals, employees not only need to perform proficiently in their in-role tasks, but also collaborate with other members for joint tasks and even conduct extra-role behavior to help employees in need (Pearce & Gregersen, 1991). As a result, organizational members can develop their knowledge and expertise in broader areas, and can better cover the knowledge loss caused by employee turnover, facilitating the development of new organizational knowledge architecture.

**Hypothesis 9.** Opportunity-enhancing work design moderates the relation between total turnover rate and innovation, such that this negative relation is weaker when opportunity-enhancing work design is high (vs. low).

I hypothesize that opportunity-enhancing work design can weaken the negative relation between total hiring rate and organizational innovation. First, with opportunity-enhancing work design (e.g., problem-solving teams, self-directed teams, information sharing, and job rotation), employees need to engage in intensive interaction and coordination to accomplish interdependent work tasks. Through intensive interactions, particularly information seeking, newcomers can receive support from incumbent members (e.g., engaging in clarifying behaviors, offering different types of information, providing constructive feedback, and building close relationships) and gradually develop their role clarity (i.e., understanding the tasks to perform the job, task priorities, and time allocation), self-efficacy (i.e., learning the tasks of the new job and gaining confidence in the role), and social acceptance (i.e., coming to feel liked and trusted by peers), which help them successfully adapt to the new work environment and be integrated into the organizational processes (Ashforth & Saks, 1996; Bauer, Bodner, Erdogan, Truxillo, & Tucker,
Following this logic, with opportunity-enhancing work design, organizations can integrate a larger quantity of human capital inflow in a more effective manner, promoting organizational innovation. By contrast, when the organization discourages opportunity-enhancing work design, employees tend to work independently and veterans are less motivated to actively help newcomers adjust to the new work environment. As such, newcomers may experience difficulties in the information seeking process and thus it may take longer for the organization to integrate joiners into the organizational processes. Second, opportunity-enhancing work design provides newcomers more opportunities to communicate and coordinate with veterans and other joiners, thus facilitating knowledge exchange and aggregation (Lawler, 1992; Reichers, 1987). Such knowledge exchange and aggregation process is important, because the combination of joiners’ new perspectives with incumbent members’ firm-specific knowledge is crucially important for knowledge creation. Third, when the organization adopts opportunity-enhancing work design, organizational members are required to engage in a number of interdependent work tasks where interpersonal exchange of knowledge, information, and resources is necessary (Batt & Colvin, 2011; Konrad, 2006). Therefore, the addition of new nodes (i.e., joiners) in the organizational social network through hiring is more likely to reshape organizational knowledge architecture and collective interaction patterns, which in turn benefit innovation.

Hypothesis 10. Opportunity-enhancing work design moderates the relation between total hiring rate and innovation, such that this negative relation is weaker when opportunity-enhancing work design is high (vs. low).
Figure 3-1. Hypothesized research model.

*Note. H = Hypothesis.*
CHAPTER 4
METHOD AND RESULTS

Research Method

Sample

I use the Workplace and Employee Survey (WES) data collected by Statistics Canada to test my hypotheses (Statistics Canada, 2009). The WES is designed to explore a broad range of issues relating to human resource management, competitiveness, and innovation for a more comprehensive understanding about firm growth in the knowledge-based economy (Statistics Canada, 2009). The workplaces are akin to establishments, which are defined as stand-alone entities with a business address, and are distinct from firms (Takeuchi, Chen, & Lepak, 2009). The advantage of surveying establishments over firms is that multiple establishments of the same firm may pursue distinct business strategies and adopt different management practices (Lepak et al., 2006). In addition, respondents in establishments are more likely to accurately assess the specific situations within the establishments (Batt, 2002; Osterman, 1994). Previous researchers have published studies using this data set on research topics such as human resource management (e.g., Li et al., in press; Shin & Konrad, 2017; Yanadori & van Jaarsveld, 2014; Zatzick & Iverson, 2006) and strategy (e.g., Zatzick, Moliterno, & Fang, 2012).

The WES data has two unique advantages for hypotheses testing. First, it consists of two parts: Workplace Survey and Employee Survey. These two surveys were linked using workplace IDs, which allows researchers to obtain valuable information from both employees on HRM implementation and employers on workplace characteristics and performance. For the Workplace Survey, Statistics Canada used stratified random sampling by industry, region and size to build a representative sample of workplaces in Canada (i.e., business locations that had paid employees and were included in the Canada’s Business Register). The primary respondent
to the Workplace Survey was a workplace HR manager, except in small locations, where a
general manager or business owner was asked to complete the survey. For the Employee Survey,
a maximum of twelve employees were sampled at each workplace using a probability
mechanism.

Second, the WES data used a longitudinal design to follow workplaces over time, which
allows researchers to observe within-firm variation and partial out workplace heterogeneity by
conducting firm-fixed effects analysis. Specifically, the Workplace Survey was launched once a
year from 1999 to 2006 and sampled locations were followed over time with new locations
added every two years to replace those that ceased to participate due to attrition. The Employee
Survey was launched once a year from 1999 to 2005. Statistics Canada sampled participants
from the surveyed workplaces and followed them for two years. Thus, fresh samples of
employees were drawn every other year. In this dissertation, I excluded 1999-2000 waves,
because Statistics Canada revised their survey questionnaires in 2001 and the first two waves
were missing important control variables (e.g., union density) and independent variables (e.g.,
compensation). In addition, I used a lagged design to reduce common method biases (Podsakoff,
MacKenzie, Lee, & Podsakoff, 2003), so that the dependent variable (i.e., innovation) was
measured one year after the control variables (including innovation baseline) and independent
variables.

In organizing the data for the current analyses, I excluded non-profit workplaces (13%)
because this study focuses on for-profit organizations. Guided by Li et al. (in press), I excluded
the responses of Employee Survey from managerial employees and then excluded observations
with fewer than three valid employee reports on HRM practices (51%) to obtain more accurate
assessment of HRM implementation for frontline employees at each workplace across times. In
addition, I excluded observations with fewer than 10 employees at the beginning of the surveyed period (1%), because workplaces with fewer than 10 employees are viewed as micro enterprises that possess different human capital flow dynamics, have limited identifiable innovation activities, and contain many start-ups (Honig, 1998; van de Vrande, de Jong, Vanhaverbeke, & de Rochemont, 2009). After deleting observations with missing values, there were 7,810 observations from 2,680 workplaces. Finally, I excluded workplaces with fewer than three observations (22%) across five time points to better account for firm heterogeneity and facilitate the firm-fixed effects analysis.\(^1\) The final sample consisted of 28,375 employee responses and 6,120 workplace responses from 1,480 workplaces. I applied workplace sampling weights provided by Statistics Canada during the analyses to obtain population-representative sample estimation. The mean workplace size was approximately 56 employees (\(SD = 92.60\)) and the average length that workplaces had been located at their current address was 19.75 years (\(SD = 17.28\)).

**Measures**

Table 4-1 provides a summary of measures in this study, including the independent variables (i.e., total turnover rate, total hiring rate, proportion of voluntary turnover for leavers, and functional diversity for joiners), the moderators (i.e., selective staffing, training, performance management, collective-based compensation, individual-based compensation, and opportunity-enhancing work design), the dependent variable (i.e., organizational innovation), and the control variables (i.e., workplace age, workplace size, union density, profitability, workplace functional diversity, and industry sectors).

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\(^1\) I conducted a robustness check by including workplaces with two or more observations. The results were similar as the ones presented here.
**Total turnover rate** (Employer Survey). According to previous research on employee mobility (e.g., Burgess, Lane, & Stevens, 2001; Kaiser et al., 2011, 2015), two groups of employees constitute the churning labor force for a focal workplace \( w \) at a specific year \( t \): leavers (i.e., workers who were employed at the workplace \( w \) at time \( t - 1 \) and left at time \( t \)) and joiners (i.e., workers who were not employed at the workplace \( w \) at time \( t - 1 \) and joined at time \( t \)). Total turnover rate focuses on the leavers and describes the total quantitative flow of human resources out of the organization during a certain period (Nyberg & Ployhart, 2013). Following Reilly et al. (2014), I measured total turnover rate using the total number of employee departures in the workplace during the year scaled by the total number of employees in the workplace at the beginning of the year.

**Total hiring rate** (Employer Survey). Total hiring rate focuses on the joiners and describes the total quantitative flow of human resources into the organization during a certain period. Following Reilly et al. (2014), I calculated total hiring rate using the total number of joiners in the workplace during the year scaled by the total number of employees in the workplace at the beginning of the year. Similar to total turnover rate, which describes the aggregate level of employee departures, total hiring rate is also an emergent construct that describes the aggregate level of new hires in the workplace (Nyberg & Ployhart, 2013).

**Proportion of voluntary turnover for leavers** (Employer Survey). Based on employees’ reasons for leaving, total turnover can be decomposed as voluntary turnover and involuntary turnover. Voluntary turnover refers to the proportion of employee departures initiated by employees (Shaw et al., 1998). By contrast, involuntary turnover refers to the proportion of employee departures initiated by employers, including layoffs, dismissals, or a special workforce reduction (Park & Shaw, 2013). Compared with involuntary turnover,
voluntary turnover is more essential for organizational functioning, as it reflects the loss of higher-quality human capital resources and is often more difficult to be managed and controlled (Nyberg & Ployhart, 2013; Shaw, 2011; Shaw et al., 2013). Thus, a higher proportion of voluntary turnover for leavers may indicate greater loss of higher-quality employees through turnover. Accordingly, I used the proportion of voluntary turnover for leavers to probe the quality of human capital outflow and calculated this variable using the total number of employees who voluntarily quit the workplace during the year scaled by the total number of employee departures in the workplace during the year.

**Functional diversity for joiners** (Employer Survey). Following previous research on functional diversity (e.g., Cannella et al., 2008; Carpenter & Fredrickson, 2001; Michel & Hambrick, 1992), I measured functional diversity for joiners using the Blau index (Blau, 1977). Specifically, WES classified joiners into the following categories: professionals, technical/trades, marketing/sales, clerical/administrative, and production workers with no trade/certification. Accordingly, I calculated functional diversity for joiners using the formula listed below. The Blau index ranges from 0 to 1. Values close to 0 indicate lower level of functional diversity (i.e., one category of joiners account for most new hires) and values close to 1 indicate higher levels of functional diversity.

\[
\text{Blau index} = 1 - \sum_{i=1}^{S} P_i^2, \quad P_i = \frac{N_i}{T}
\]

Where \(N_i\) = the number of joiners in the \(i^{th}\) category, \(T\) = the total number of joiners, \(P_i\) = the proportion of joiners in the \(i^{th}\) category.

**HRM implementation** (Employee Survey). I directly captured HRM implementation in the three domains (i.e., ability, motivation, and opportunity) using employees’ experience with corresponding HRM practices from the Employee Survey. Specifically, for ability-based HRM
practices, I focused on selective staffing and training. Selective staffing was measured with four selection practices. Specifically, employees were asked whether they had received the following tests during the selection process (0 = no, 1 = yes): (1) tests for specific skills, (2) tests for aptitude or other personality, (3) tests for job-related knowledge, and (4) tests for general knowledge or literacy skills. The Cronbach’s alpha for this scale is .75. For training, it was measured by asking employees whether they had received any formal training during the year (0 = no, 1 = yes).

For motivation-based HRM practices, I focus on performance management and compensation. Performance management was measured with two items. Specifically, employees were asked (1) whether their job performance had been evaluated by a standard process and (2) whether their job evaluation had directly affected the level of pay or benefit. The Cronbach’s alpha for this scale was .82. Collective-based compensation was measured by asking employees whether they had received any productivity-related bonuses, profit-sharing, or profit-related bonuses during the year (0 = no, 1 = yes). Individual-based compensation was measured by asking employees whether they had received any tips, commissions, or piecework payments during the year (0 = no, 1 = yes).

For opportunity-based HRM practices, I focus on opportunity-enhancing work design. Specifically, employees were asked to rate their levels of participation in the following practices (0 = never, 1 = occasionally, 2 = frequently): (1) be asked to complete employee surveys; (2) participate in an employee suggestion program or regular suggestion meetings; (3) participate in a job rotation or cross-training program; (4) be informed about overall workplace performance, changes to workplace organization, or the implementation of new technology; (5) participate in a task team or labor-management committee that is concerned with a broad range of workplace
issues; (6) participate in a team or circle concerned with quality or work flow issues; and (7) be part of a self-directed work group. The Cronbach’s alpha for this scale was .81.

To assess the construct validity of the HRM measures, I performed an indicator-based confirmatory factor analysis. The six-factor model (i.e., selective staffing, training, performance management, collective-based compensation, individual-based compensation, and opportunity-enhancing work design) resulted in a good fit to the data: $\chi^2 = 4615.81$, $df = 92$, $p < .01$, CFI = .96, TLI = .95, and RMSEA = .04. Guided by recent studies (e.g., Li et al., in press; Liu, Gong, Zhou, & Huang, 2017; Takeuchi et al., 2009; Toh, Morgeson, & Campion, 2008), I calculated employees’ experiences with each HRM practice by aggregating employees’ ratings of their corresponding HRM experiences to the workplace level.

Organizational innovation (Employer Survey). To capture innovation, previous studies adopt various approaches including measuring innovation activities (e.g., patents; Sørensen & Stuart, 2000), innovation capability (e.g., Chang, Gong, Wei, & Jia, 2013; Patel, Messersmith, & Lepak, 2013), and innovation launches (i.e., the development of new products or processes; Greve, 2003; Joseph & Gaba, 2014; Smith, Collins, & Clark, 2005; Zhou, Hong, & Liu, 2013). Following previous researchers analyzing the WES data (e.g., Li et al., in press; Wang & Bansal, 2012; Wang, Zhao, & Thornhill, 2015; Walsworth & Verma, 2007; Zoghi, Mohr, & Meyer, 2010), I used two items to measure innovation launches: (1) product innovation: the workplace had introduced new products or services that differ significantly in character or intended use from previously produced goods or services; and (2) process innovation: the workplace had introduced new processes including the adoption of new methods of goods production or service delivery. I coded workplaces that reported no product or process innovation as 0, workplaces that reported either product or process innovation as 1, and workplaces that reported both product and
process innovation as 2. This measure corresponds closely with the definition of organizational innovation, which refers to the introduction and application of new ideas, processes, products or procedures in the organization (West & Farr, 1990).

**Control variables** (Employer Survey). Guided by previous HRM research (e.g., Yanadori & van Jaarsveld, 2014; Zatzick & Iverson 2006), I controlled for several workplace-level variables during the analyses. First, I controlled for workplace age (i.e., the length of years the workplace has been at the current location), because organizations that are able to survive for long tend to present higher levels of management quality due to the increased learning curve advantages (Guthrie, 2001). Second, I controlled for workplace size (i.e., the total number of employees\(^2\)) and profitability (i.e., return on sales; Richard, Devinney, Yip, & Johnson, 2009), because organizations with larger operating scale and higher profitability are considered to have more slack resources to manage employees and launch innovation (Adner & Helfat, 2003; Greve, 2003; Latham & Braun, 2009; Shin & Konrad, 2017). Third, I controlled for union density (i.e., the proportion of employees covered by a collective agreement), because workplaces with higher degree of unionization may provide employees with more opportunities to voice their concerns and participate in organizational processes (Edwards & Wright, 2001; Guthrie, 2001). Fourth, I controlled for workplace functional diversity, because the level of functional diversity in the workplace may influence the level of functional diversity for joiners. Finally, following previous research (e.g., Takeuchi, Lepak, Wang, & Takeuchi, 2007; Zatzick & Iverson, 2006), I controlled for industry sectors during the analysis, because human capital flow, management practices, and organizational innovation may vary across industries (Datta, Guthrie, & Wright, 2005; Rumelt, 1991).

\(^2\) Following Zatzick and Iverson (2006), I specify a logarithm function for this variable.
Analytical Strategy

I conducted firm-fixed effects analysis to account for firm heterogeneity. In addition, I controlled for the year effect by including dichotomous variables for the surveyed years. To test the moderating effects, stepwise hierarchical regressions were used. In Step 1, only the control variables were entered into the regression model. In Step 2, I entered the control variables, the independent variables (i.e., total turnover rate, total hiring rate, proportion of voluntary turnover for leavers, and functional diversity for joiners), and the moderators (i.e., selective staffing, training, performance management, collective-based compensation, individual-based compensation, and opportunity-enhancing work design) to gauge the main effects of the independent variables. In Step 3, I entered the variables in Step 2 and the two-way interaction terms to test the hypothesized moderating effects. For ease of interpretation, the continuous control variables (i.e., workplace age, workplace size, union density, profitability, and workplace functional diversity), the independent variables, and the moderators were all centered around the workplace means. The interaction terms were the products of the workplace-mean centered independent variables and the workplace-mean centered moderators. In estimating these models, I used the workplace survey weights provided by Statistics Canada for the representativeness of sample estimates. I used Mplus 7 and Stata 13 to conduct analyses.

Results

Testing the Main Effects

Table 4-2 presents the descriptive statistics and correlations of the studied variables. Table 4-3 presents the results of firm-fixed effects models for organizational innovation. As shown in Model 2 of Table 3, total turnover rate and total hiring rate were negative related to organizational innovation \( (b = -0.03, p < 0.05; b = -0.14, p < 0.01) \), providing support for Hypotheses 1 and 2. Further, proportion of voluntary turnover for leavers was negatively related to
organizational innovation ($b = -0.13, p < .01$), which supported Hypothesis 3. In addition, functional diversity for joiners was positively related to organizational innovation ($b = 0.09, p < .01$), supporting Hypothesis 4.

**Testing the Moderating Effects**

Model 3 and Model 4 of Table 4-3 present the results for the hypothesized moderating effects. I explain the moderating effects based on Model 3. In Model 3-1, the six hypothesized interaction terms between total turnover rate and HRM practices were entered into the regression model. In Hypothesis 5a, I expected that when selective staffing was higher, the negative relation between total turnover rate and innovation would be weaker. As shown in Model 3-1, the interaction between total turnover rate and selective staffing was positive and significant ($b = 1.64, p < .01$). To further examine this moderating effect, I followed the procedure described by Cohen, Cohen, West, and Aiken (2003) and plotted the interaction pattern in Figure 4-1. As shown in the figure, the relation between total turnover rate and innovation was significant and negative when selective staffing was one standard deviation below the mean (slope = -0.17, $p < .01$), but became significant and positive when selective staffing was one standard deviation above the mean (slope = 0.13, $p < .01$). Therefore, I found support for Hypothesis 5a. In Hypothesis 5b, I expected that when training was higher, the negative relation between total turnover rate and innovation would be weaker. However, the interaction between total turnover rate and training was not significant ($b = -0.04, p > .05$). Thus, Hypothesis 5b was not supported.

In Model 3-2, the six hypothesized interaction terms between total hiring rate and HRM practices were entered into the regression model. In Hypothesis 6a, I expected that when selective staffing was higher, the negative relation between total hiring rate and innovation would be weaker. As shown in Model 3-2, the interaction between total hiring rate and selective staffing was positive and significant ($b = 0.56, p < .01$). I plotted the interaction pattern in Figure
4-2. As shown in the figure, the negative relation between total hiring rate and innovation was weaker when selective staffing was high (vs. low): when selective staffing was one standard deviation below the mean, slope = -.20, p < .01; when selective staffing was one standard deviation above the mean, slope = -.10, p < .01. Therefore, I found support for Hypothesis 6a. In Hypothesis 6b, I expected that when training was higher, the negative relation between total hiring rate and innovation would be weaker. As shown in Model 3-2, the interaction between total hiring rate and training was negative and significant (b = -1.99, p < .01). I plotted the interaction pattern in Figure 4-3. As shown in the figure, the relation between total hiring rate and innovation was significant and negative when training was one standard deviation above the mean (slope = -.75, p < .01), but became significant and positive when training was one standard deviation below the mean (slope = .44, p < .01). This finding was inconsistent with Hypothesis 6b.

In Hypothesis 7a, I expected that when performance management was higher, the negative relation between total turnover rate and innovation would be weaker. As shown in Model 3-1, the interaction between total turnover rate and performance management was positive and significant (b = .62, p < .01). As shown in Figure 4-4, the relation between total turnover rate and innovation was significant and negative when performance management was one standard deviation below the mean (slope = -.20, p < .01), but became significant and positive when performance management was one standard deviation above the mean (slope = .17, p < .01). Therefore, I found support for Hypothesis 7a. In Hypothesis 7b, I expected that when collective-based compensation was higher, the negative relation between total turnover rate and innovation would be weaker. As shown in Model 3-1, the interaction between total turnover rate and collective-based compensation was negative and significant (b = -.28, p < .01). As
shown in Figure 4-6, workplaces benefited more from collective-based compensation when total turnover rate was low (vs. high): when collective-based compensation was one standard deviation below the mean, slope = .06, p > .05; when collective-based compensation was one standard deviation above the mean, slope = -.10, p < .05. This finding was inconsistent with Hypothesis 7b. In Hypothesis 7c, I expected that when individual-based compensation was higher, the negative relation between total turnover rate and innovation would be stronger. As shown in Model 3-1, the interaction between total turnover rate and individual-based compensation was negative and significant (b = -.82, p < .01). As shown in Figure 4-8, the relation between total turnover rate and innovation was significant and negative when individual-based compensation was one standard deviation above the mean (slope = -.21, p < .01), but became significant and positive when individual-based compensation was one standard deviation below the mean (slope = .18, p < .01). Thus, Hypothesis 7c was also supported.

In Hypothesis 8a, I expected that when performance management was higher, the negative relation between total hiring rate and innovation would be stronger. As shown in Model 3-2, the interaction between total hiring rate and performance management was negative and significant (b = -.63, p < .01). As shown in Figure 4-5, the negative relation between total hiring rate and innovation was stronger when performance management was high (vs. low): when performance management was one standard deviation below the mean, slope = .04, p > .05; when performance management was one standard deviation above the mean, slope = -.34, p < .01. Thus, I found support for Hypothesis 8a. In Hypothesis 8b, I expected that when collective-based compensation was higher, the negative relation between total hiring rate and innovation would be stronger. As shown in Model 3-2, the interaction between total hiring rate and collective-based compensation was negative and significant (b = -.81, p < .01). As shown in
Figure 4-7, the negative relation between total hiring rate and innovation was stronger when collective-based compensation was high (vs. low): when collective-based compensation was one standard deviation below the mean, slope = .08, \( p < .05 \); when collective-based compensation was one standard deviation above the mean, slope = -.39, \( p < .01 \). Thus, I found support for Hypothesis 8b. In Hypothesis 8c, I expected that when individual-based compensation was higher, the negative relation between total hiring rate and innovation would be weaker. As shown in Model 3-2, the interaction between total hiring rate and individual-based compensation was positive and significant (\( b = .48, p < .01 \)). As shown in Figure 4-9, the negative relation between total hiring rate and innovation was weaker when individual-based compensation was high (vs. low): when individual-based compensation was one standard deviation below the mean, slope = -.27, \( p < .01 \); when individual-based compensation was one standard deviation above the mean, slope = -.04, \( p > .05 \). Therefore, Hypothesis 8c was also supported.

In Hypothesis 9, I expected that when opportunity-enhancing work design was higher, the negative relation between total turnover rate and innovation would be weaker. As shown in Model 3-1, the interaction between total turnover rate and opportunity-enhancing work design was positive and significant (\( b = .11, p < .05 \)). As shown in Figure 4-10, the relation between total turnover rate and innovation was significant and negative when opportunity-enhancing work design was one standard deviation below the mean (slope = -.07, \( p < .05 \)), but became insignificant when opportunity-enhancing work design was one standard deviation above the mean (slope = .03, \( p > .05 \)). Therefore, I found support for Hypothesis 9.

In Hypothesis 10, I expected that when opportunity-enhancing work design was higher, the negative relation between total hiring rate and innovation would be weaker. As shown in Model 3-2, the interaction between total hiring rate and opportunity-enhancing work design was
positive and significant \((b = .21, p < .01)\). As shown in Figure 4-11, the negative relation between total hiring rate and innovation weaker when opportunity-enhancing work design was high (vs. low): when opportunity-enhancing work design was one standard deviation below the mean, slope = -.25, \(p < .01\); when opportunity-enhancing work design was one standard deviation above the mean, slope = -.06, \(p > .05\). Thus, Hypothesis 10 was supported.
<table>
<thead>
<tr>
<th>Variables</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Workplace age</td>
<td>Length of years the workplace had been at the current location</td>
</tr>
<tr>
<td>Workplace size</td>
<td>Total number of employees in the workplace</td>
</tr>
<tr>
<td>Union density</td>
<td>The proportion of employees covered by a collective agreement in the workplace</td>
</tr>
<tr>
<td>Profitability</td>
<td>Return on sales (i.e., workplace net income scaled by workplace revenue)</td>
</tr>
<tr>
<td>Workplace functional diversity</td>
<td>Blau index of current employees in the workplace from five categories: professionals, technical/trades, marketing/sales, clerical/administrative, and production workers with no trade/certification</td>
</tr>
<tr>
<td>Industry sectors</td>
<td>Fourteen dichotomous industry sectors: (1) forestry, mining, oil and gas extraction; (2) labor intensive tertiary manufacturing; (3) primary product manufacturing; (4) secondary product manufacturing; (5) capital intensive tertiary manufacturing; (6) construction; (7) transportation, warehousing and wholesale; (8) communication and other utilities; (9) retail trade and consumer services; (10) finance and insurance; (11) real estate, rental and leasing operations; (12) business services; (13) education and health services; and (14) information and cultural industries</td>
</tr>
<tr>
<td>Selective staffing (0 = no, 1 = yes)</td>
<td>Whether employees had received the following tests during selection: (1) specific skills, (2) aptitude or other personality, (3) job-related knowledge, and (4) general knowledge or literacy skills</td>
</tr>
<tr>
<td>Training (0 = no, 1 = yes)</td>
<td>Whether employees had received formal training</td>
</tr>
<tr>
<td>Performance management (0 = no, 1 = yes)</td>
<td>(1) Whether employee job performance had been evaluated by a standard process and (2) whether employee job evaluation had directly affected the level of pay or benefit</td>
</tr>
<tr>
<td>Collective-based compensation (0 = no, 1 = yes)</td>
<td>Whether employees had received any productivity-related bonuses, profit-sharing, or profit-related bonuses</td>
</tr>
<tr>
<td>Individual-based compensation (0 = no, 1 = yes)</td>
<td>Whether employees had received any tips, commissions, or piecework payments</td>
</tr>
<tr>
<td>Variables</td>
<td>Description</td>
</tr>
<tr>
<td>-----------</td>
<td>-------------</td>
</tr>
<tr>
<td>Opportunity-enhancing work design (0 = never, 1 = occasionally, 2=frequently)</td>
<td>The frequencies for employees to (1) be asked to complete employee surveys; (2) participate in an employee suggestion program or regular suggestion meetings; (3) participate in a job rotation or cross-training program; (4) be informed about overall workplace performance, changes to workplace organization, or the implementation of new technology; (5) participate in a task team or labor-management committee that is concerned with a broad range of workplace issues; (6) participate in a team or circle concerned with quality or work flow issues; and (7) be part of a self-directed work group</td>
</tr>
<tr>
<td>Total turnover rate</td>
<td>Total number of leavers in the workplace during the year scaled by the total number of employees in the workplace at the beginning of the period</td>
</tr>
<tr>
<td>Total hiring rate</td>
<td>Total number of joiners in the workplace during the year scaled by the total number of employees in the workplace at the beginning of the period</td>
</tr>
<tr>
<td>Proportion of voluntary turnover for leavers</td>
<td>Total number of employees who voluntarily quit the workplace during the year scaled by the total number of leavers in the workplace during the year</td>
</tr>
<tr>
<td>Functional diversity for joiners</td>
<td>Blau index of joiners in the workplace during the year from five categories: professionals, technical/trades, marketing/sales, clerical/ administrative, and production workers with no trade/certification</td>
</tr>
<tr>
<td>Organizational innovation (0 = no innovation, 1= introduced product or process innovation, 2= introduced product and process innovation)</td>
<td>Whether the workplace had introduced (1) product innovation (i.e., new goods or services that differ significantly in character or intended use from previously produced goods or services) and (2) process innovation (i.e., new processes that include the adoption of new methods of goods production or service delivery)</td>
</tr>
</tbody>
</table>
Table 4-2. Means, standard deviations, and correlations for studied variables.

<table>
<thead>
<tr>
<th>Variable</th>
<th>M</th>
<th>SD</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Workplace age</td>
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<td></td>
<td></td>
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<tr>
<td>2. Workplace size</td>
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<td>.79</td>
<td>.17</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. Union density</td>
<td>.16</td>
<td>.31</td>
<td>.25</td>
<td>.35</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. Profitability</td>
<td>.12</td>
<td>1.44</td>
<td>.01</td>
<td>.00</td>
<td>.00</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. Workplace functional diversity</td>
<td>.55</td>
<td>.24</td>
<td>.08</td>
<td>-.03</td>
<td>-.05</td>
<td>-.01</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6. Selective staffing</td>
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<td>.09</td>
<td>.06</td>
<td>.21</td>
<td>.11</td>
<td>-.01</td>
<td>.02</td>
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<tr>
<td>7. Training</td>
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<td>.30</td>
<td>.02</td>
<td>.11</td>
<td>.10</td>
<td>-.02</td>
<td>.09</td>
<td>.07</td>
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<td>8. Performance management</td>
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<td>.30</td>
<td>-.09</td>
<td>.15</td>
<td>-.12</td>
<td>.01</td>
<td>.11</td>
<td>.18</td>
<td>.25</td>
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<tr>
<td>9. Collective-based compensation</td>
<td>.22</td>
<td>.29</td>
<td>-.06</td>
<td>.05</td>
<td>-.16</td>
<td>.01</td>
<td>.09</td>
<td>.06</td>
<td>.14</td>
</tr>
<tr>
<td>10. Individual-based compensation</td>
<td>.14</td>
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<td>-.04</td>
<td>-.04</td>
<td>-.09</td>
<td>-.01</td>
<td>-.07</td>
<td>-.04</td>
<td>-.05</td>
</tr>
<tr>
<td>11. Opportunity-enhancing work design</td>
<td>1.23</td>
<td>.46</td>
<td>-.04</td>
<td>.16</td>
<td>.06</td>
<td>.01</td>
<td>.15</td>
<td>.20</td>
<td>.32</td>
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<tr>
<td>12. Total turnover rate</td>
<td>.24</td>
<td>.27</td>
<td>-.14</td>
<td>.08</td>
<td>-.10</td>
<td>.00</td>
<td>-.16</td>
<td>-.06</td>
<td>-.08</td>
</tr>
<tr>
<td>13. Total hiring rate</td>
<td>.29</td>
<td>.33</td>
<td>-.14</td>
<td>.07</td>
<td>-.12</td>
<td>-.01</td>
<td>-.20</td>
<td>-.06</td>
<td>-.06</td>
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<td>14. Proportion of voluntary turnover</td>
<td>.57</td>
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<td>.05</td>
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<td>15. Functional diversity for joiners</td>
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<td>.20</td>
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<td>-.01</td>
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<td>16. Innovation</td>
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<td>.78</td>
<td>.00</td>
<td>.16</td>
<td>.05</td>
<td>.02</td>
<td>.04</td>
<td>.01</td>
<td>.08</td>
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<tr>
<td>17. Innovation (t+1)</td>
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<td>.77</td>
<td>-.01</td>
<td>.17</td>
<td>.07</td>
<td>.01</td>
<td>.01</td>
<td>.05</td>
<td>.07</td>
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</table>

Notes. N = 6120 from 1480 workplaces. The workplace survey weights were used during the analysis. Dichotomous industry sectors were not listed in the table for the purpose of brevity.
<table>
<thead>
<tr>
<th>Variable</th>
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<th>13</th>
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<th>15</th>
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<tbody>
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<td>1. Workplace age</td>
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<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Workplace size</td>
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<tr>
<td>3. Union density</td>
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<td>4. Profitability</td>
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<tr>
<td>5. Workplace functional diversity</td>
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<tr>
<td>6. Selective staffing</td>
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<td>7. Training</td>
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<tr>
<td>8. Performance management</td>
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<tr>
<td>9. Collective-based compensation</td>
<td>.35</td>
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<td>11. Opportunity-enhancing work design</td>
<td>.48</td>
<td>.30</td>
<td>.23</td>
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<tr>
<td>12. Total turnover rate</td>
<td>-.06</td>
<td>-.08</td>
<td>.22</td>
<td>-.07</td>
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<td>13. Total hiring rate</td>
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<td>-.08</td>
<td>.09</td>
<td>-.07</td>
<td>.68</td>
<td></td>
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<tr>
<td>14. Proportion of voluntary turnover</td>
<td>.02</td>
<td>.01</td>
<td>.00</td>
<td>-.05</td>
<td>.19</td>
<td>.12</td>
<td></td>
<td></td>
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<tr>
<td>15. Functional diversity for joiners</td>
<td>.11</td>
<td>.07</td>
<td>-.02</td>
<td>.07</td>
<td>.00</td>
<td>.04</td>
<td>.04</td>
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<td></td>
</tr>
<tr>
<td>16. Innovation</td>
<td>.16</td>
<td>.03</td>
<td>-.07</td>
<td>.12</td>
<td>.06</td>
<td>.06</td>
<td>-.02</td>
<td>.12</td>
<td></td>
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<tr>
<td>17. Innovation (t+1)</td>
<td>.19</td>
<td>.09</td>
<td>-.07</td>
<td>.17</td>
<td>-.01</td>
<td>.00</td>
<td>-.08</td>
<td>.07</td>
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Table 4-3. Firm-fixed effects model results (2001-2006)

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<tr>
<th>Variable</th>
<th>Model 1</th>
<th>Model 2</th>
<th>Model 3</th>
<th>Model 4</th>
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<td><strong>Constant</strong></td>
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<td>1.09**</td>
<td>1.11**</td>
<td>1.07**</td>
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<td>-.006**</td>
<td>-.006**</td>
<td>-.005**</td>
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<td>Workplace size</td>
<td>.12**</td>
<td>.15**</td>
<td>.15**</td>
<td>.14**</td>
</tr>
<tr>
<td>Union density</td>
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<td>.27**</td>
<td>.27**</td>
<td>.32**</td>
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<td>Profitability</td>
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<td>-.003**</td>
<td>-.003**</td>
<td>-.003**</td>
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<td>Workplace functional diversity</td>
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<td>.03</td>
<td>.009</td>
<td>-0.04**</td>
</tr>
<tr>
<td>Innovation baseline</td>
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<td>-.05**</td>
<td>-.05**</td>
<td>-.05**</td>
</tr>
<tr>
<td>Year 2002</td>
<td>-.002</td>
<td>-.02**</td>
<td>-.02*</td>
<td>-.008</td>
</tr>
<tr>
<td>Year 2003</td>
<td>-.04**</td>
<td>-.06**</td>
<td>-.06**</td>
<td>-.05**</td>
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<td>Year 2004</td>
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<td>.09**</td>
<td>.09**</td>
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</tr>
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<td>Year 2005</td>
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<td>.04**</td>
<td>.04**</td>
<td>.04**</td>
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<td>-.10**</td>
<td>-.09**</td>
<td>-.08**</td>
</tr>
<tr>
<td>Performance management</td>
<td>.18**</td>
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<td>.16**</td>
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<td>Collective-based compensation</td>
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<td>.15**</td>
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<td>.12**</td>
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<tr>
<td>Individual-based compensation</td>
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<td>.02</td>
<td>.02</td>
<td>.02</td>
</tr>
<tr>
<td>Opportunity-enhancing work design</td>
<td>.01*</td>
<td>.01</td>
<td>.02**</td>
<td>.02*</td>
</tr>
<tr>
<td>Total turnover rate (T)</td>
<td>-.03*</td>
<td>-.02</td>
<td>-.05**</td>
<td>-.05**</td>
</tr>
<tr>
<td>Total hiring rate (H)</td>
<td>-.14**</td>
<td>-.14*</td>
<td>-.15**</td>
<td>-.13**</td>
</tr>
<tr>
<td>Proportion of voluntary turnover</td>
<td>-.13**</td>
<td>-.13**</td>
<td>-.13**</td>
<td>-.14**</td>
</tr>
<tr>
<td>Functional diversity for joiners</td>
<td>.09**</td>
<td>.09**</td>
<td>.09**</td>
<td>.09**</td>
</tr>
<tr>
<td><strong>Moderating effects</strong></td>
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<tr>
<td>Selective staffing × T</td>
<td>1.64**</td>
<td>1.66**</td>
<td></td>
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</tr>
<tr>
<td>Training × T</td>
<td>-.04</td>
<td></td>
<td>1.85**</td>
<td></td>
</tr>
<tr>
<td>Performance management × T</td>
<td>.62**</td>
<td></td>
<td>1.26**</td>
<td></td>
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<tr>
<td>Collective-based compensation × T</td>
<td>-.28**</td>
<td></td>
<td>.17</td>
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<tr>
<td>Individual-based compensation × T</td>
<td>-.82**</td>
<td></td>
<td>-2.03**</td>
<td></td>
</tr>
<tr>
<td>Opportunity-enhancing work design × T</td>
<td>.11*</td>
<td></td>
<td></td>
<td>.11</td>
</tr>
<tr>
<td>Selective staffing × H</td>
<td>.56**</td>
<td></td>
<td></td>
<td>.10</td>
</tr>
<tr>
<td>Training × H</td>
<td>-1.99**</td>
<td></td>
<td>-2.79**</td>
<td></td>
</tr>
<tr>
<td>Performance management × H</td>
<td>-.65**</td>
<td></td>
<td>-1.13**</td>
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</tr>
<tr>
<td>Collective-based compensation × H</td>
<td>-.81**</td>
<td></td>
<td>-.96**</td>
<td></td>
</tr>
<tr>
<td>Individual-based compensation × H</td>
<td>.48**</td>
<td></td>
<td>1.24**</td>
<td></td>
</tr>
<tr>
<td>Opportunity-enhancing work design × H</td>
<td>.21**</td>
<td></td>
<td>.13**</td>
<td></td>
</tr>
<tr>
<td><strong>R^2</strong></td>
<td>52.5%</td>
<td>53.2%</td>
<td>53.3%</td>
<td>53.9%</td>
</tr>
</tbody>
</table>

**Notes.** N = 6120 from 1480 workplaces. * p < .05, ** p < .01. Unstandardized regression coefficients are reported. The workplace survey weights were used during the analysis. Following Zatzick and Iverson (2006), industry effects were controlled in the analysis by including thirteen dichotomous industry variables, but were not listed in the table for the purpose of brevity.
Figure 4-1. The moderating effect of selective staffing on the relation between total turnover rate and organizational innovation.
Figure 4-2. The moderating effect of selective staffing on the relation between total hiring rate and organizational innovation.
Figure 4-3. The moderating effect of training on the relation between total hiring rate and organizational innovation.
Figure 4-4. The moderating effect of performance management on the relation between total turnover rate and organizational innovation.
Figure 4-5. The moderating effect of performance management on the relation between total hiring rate and organizational innovation.
Figure 4-6. The moderating effect of collective-based compensation on the relation between total turnover rate and organizational innovation.
Figure 4-7. The moderating effect of collective-based compensation on the relation between total hiring rate and organizational innovation.
Figure 4-8. The moderating effect of individual-based compensation on the relation between total turnover rate and organizational innovation.
Figure 4-9. The moderating effect of individual-based compensation on the relation between total hiring rate and organizational innovation.
Figure 4-10. The moderating effect of opportunity-enhancing work design the relation between total turnover rate and organizational innovation.
Figure 4-11. The moderating effect of opportunity-enhancing work design the relation between total hiring rate and organizational innovation.
CHAPTER 5
DISCUSSION AND CONCLUSIONS

This dissertation attempts to uncover the influence of human capital flow on innovation and how to leverage human capital flow to enhance innovation through HRM. Developing a formal taxonomy to decompose human capital flow, this study reveals the effects of different human capital flow components on organizational innovation. In addition, guided by the AMO framework, this study shows how different HRM practices may influence the relation between human capital flow and innovation in distinct ways. Below, I discuss the theoretical and practical implications of this research.

Theoretical Implication

It is well established that organizations’ survival and prosperity depend on both their ability to exploit old certainties to stay efficient and competitive in the current market and their ability to explore new possibilities through innovation to yield new revenue-producing opportunities (March, 1991). Moving beyond existing research on human capital flow and market performance (e.g., Call et al., 2015; Reilly et al., 2014; Shaw et al., 2009; Shaw et al., 2013), this dissertation contributes to our understanding about the impact of human capital flow on organizational innovation. While market performance focuses on the efficiency of organizational functioning and effectiveness of resource deployment, manifested as high ratios of output to input and superior performance in the current market, organizational innovation seeks to create new market disequilibrium (Abernathy, 1978; Chadwick & Dabu, 2009; Davis & Pett, 2002; Ostroff & Schmitt, 1993). Thus, by studying the influence of human capital flow on innovation, this research can provide us a more comprehensive understanding about the organizational consequences associated with human capital flow.
In this study, I focus on within-organization variations to examine how human capital flow fluctuation shapes innovation over time. In the past, strategic HRM researchers have primarily focused on between-organization comparisons (i.e., firm heterogeneity) to study how firms with different levels of human capital flow may present different performance. One exception is Call et al. (2015), who examined the dynamic properties of human capital flow by investigating the effects of changes in human capital outflow and inflow on unit performance. Building upon this study, my dissertation utilizes longitudinal WES data to conduct firm-fixed effects analysis to partial out workplace heterogeneity and examine the influence of human capital flow fluctuation on organizational innovation across years. My results showed that within each firm, increased quantity of human capital outflow (i.e., total turnover rate) and quantity of human capital inflow (i.e., total hiring rate) were negatively related to organizational innovation. These results differ from Li et al.’s (in press) study, who focused on between-organization comparisons and found that firms with higher levels of quantity of human capital flow were more likely to launch innovation. As explained earlier, human capital inflow and outflow can be viewed as double edged swords for innovation. At the within-organization level, the negative impacts of human capital outflow and inflow turned out to outweigh the positive ones. Such findings demonstrate that being out of synchronization with the general pace of human capital flow may lead to maladaptation. According to Jansen and Kristof-Brown (2005), rhythm, which defined as a regular pattern, cadence, or beat and incorporates elements of pacing and repetitive cycles, can help organizations create coherence out of chaos. By entraining (i.e., adjusting) to a dominant rhythm (average human capital flow in this study), organizations can effectively manage their human capital flow over time. By contrast, increased human capital flow, as
deviation of the dominant rhythm, may disrupt organizational knowledge architecture and collective concertedness, impeding organizational innovation.

Moving beyond the quantitative aspect of human capital flow, this study also reveals the discriminant effects of quality of human capital outflow (i.e., proportion of voluntary turnover for leavers) and quality of human capital inflow (i.e., functional diversity for joiners) on organizational innovation. As expected, the data analysis results showed that a larger proportion of voluntary turnover for leavers, which implied higher quality of human capital outflow, was detrimental to innovation. In addition, higher levels of functional diversity for joiners, which implied higher quality of human capital inflow, could benefit innovation. Such findings demonstrate that it is important to consider multiple properties of human capital flow to obtain a more comprehensive evaluation about the inner workings as well as the impact of human capital flow. It is important to note that some human capital flow constructs mix the quantitative and qualitative aspects together. For example, voluntary turnover rate, which is often operationalized as the number of employees who voluntarily quit the organization scaled by the total number of employees, can be used to capture the quantity of higher-quality human capital outflow. Thus, prior studies used voluntary turnover rate as a proxy of human capital loss for the organization (e.g., Shaw et al., 2013). Therefore, when comparing results across studies that use different constructs to probe human capital flow, it is important for researchers to be aware of the focal components of human capital flow.

Drawing on the AMO theoretical framework, this study reveals how ability-based (i.e., selective staffing and training), motivation-based (i.e., performance management, collective-based compensation, and individual-based compensation), and opportunity-based (i.e., opportunity-enhancing work design) HRM practices may serve as boundary conditions to shape
the relation between human capital flow and organizational innovation, shedding light on how human capital flow can be strategically leveraged to enhance innovation through HRM. Overall, my results showed that ability-based, motivation-based, and opportunity-based HRM practices had discriminant moderating effects on the relations between human capital outflow and inflow and organizational innovation. Consequently, it is important for strategic HRM scholars to move beyond unified HRM bundles (e.g., high-performance work systems) to examine different HRM components for a more in-depth understanding about how to manage human capital flow through HRM.

For ability-based HRM, the results showed that intensive selective staffing could not only weaken the negative effect of total hiring rate on innovation, but also reverse the negative effect of total turnover rate on innovation. This finding demonstrates the importance of building up workplaces with high-quality general human capital through selective staffing to maintain operational efficiency and workforce integration even when there is a large quantity of human capital flow. Inconsistent with my hypothesis, training did not moderate the relation between total turnover rate and innovation. One explanation is that training focuses on developing employees’ firm-specific human capital that has been routinized by the organization and thus employees may form similar and overlapping knowledge sets, have greater reliance on existing routines and become less open to innovative solutions (Cannon-Bowers & Salas, 2001; Dougherty, 1992).

Unexpected, training could exacerbate the negative effect of total hiring rate on innovation. This finding may be explained by two reasons. First, when organizations do not capitalize on training, new employees have to experience trial-and-error processes to gradually make sense of the work environment, learn task requirement, and understand organizational
expectations. Such trail-and-error learning process is essential for learning and adaptation (Argote, 1999). By contrast, intensive training that focuses on improving newcomers’ task-specific self-efficacy, and performance through routinized guidelines may restrain new employees from developing novel solution through the trail-and-error processes (Saks, 1994, 1995). Second, workplaces that rely on training tend to have higher job requirement, suggesting a stronger relation between organizational tenure and employee performance (Arthur, 1994). Therefore, it is more difficult for those organizations to quickly integrate newcomers into the current processes.

For motivation-based HRM, the results demonstrate the importance of considering the alignment between human capital flow direction and motivation-based HRM practices (i.e., performance management and compensation). Specifically, although performance management could reverse the negative effect of total turnover rate on innovation, it also exacerbated the negative effect of total hiring rate on innovation. This finding indicates that performance management aligns better with workforce dynamics where human capital outflow exceeds inflow. Following this logic, when workplaces experience downsizing, relying on performance management can significantly benefit organizational innovation and adaptation, because the quality of individual employees and their interactions improves after filtering out low performers via performance management. By contrast, individual-based compensation could weaken the negative effect of total hiring rate on innovation, but exacerbated the negative effect of total turnover rate on innovation (low individual-based compensation could even reserve the negative effect of total turnover rate on innovation). This finding demonstrates that individual-based compensation aligns better with workforce dynamics where human capital inflow exceeds outflow (e.g., expanding organizations). Thus, when workplaces are actively expanding, relying
on individual-based compensation is more likely to result in organizational innovation and growth by removing the barriers for newcomer integration. Finally, collective-based compensation had a positive direct effect on innovation, but could exacerbate the negative effects of both total turnover rate and total hiring rate on innovation (low collective-based compensation could even reserve the negative effect of total hiring rate on innovation). This finding suggests that collective-based compensation aligns better with workforce dynamics with low human capital flow. This is because collective-based compensation can best motivate employees to work collectively to achieve co-specialization when the same set of employees interact with each other for a long time (Molloy & Barney, 2015).

In terms of opportunity-based HRM, I found that opportunity-enhancing work design had a positive direct effect on innovation and could weaken the negative effects of both total turnover rate and total hiring rate on innovation. This finding suggests that implementing opportunity-enhancing work design is critical for organizations to leverage human capital flow to enhance innovation. According to Resource-Based View, opportunity-enhancing work design can create competitive advantages via promoting collective interactions, because employees are more valuable when they are interconnected and embedded in socially complex relations due to causal ambiguity and social complexity (Barney, 1991; Campbell, Kryscynski, & Olson, 2017; Coff, 1997). Based on the emergence perspective, opportunity-enhancing work design can benefit innovation via promoting collective interactions, because collective interactions serve as the amplifying process whereby individual KSAOs are combined and aggregated to yield innovation (Li et al., in press). Complementing previous research, this research implies that opportunity-enhancing work design can serve as a viable means for organizations to leverage human capital outflow and inflow for innovation.
**Practical Implication**

This research has important practical implications for professional managers. For organizations that are actively competing by innovating, this dissertation underlines the importance of managing human capital flow over time. First, for workplaces with large quantities of human capital flow, it is important to develop their absorptive capabilities that allow them to minimize the detrimental effects and maximize the beneficial effects of human capital flow. For example, organizations can develop learning culture and cooperative climate to encourage mutual learning and helping, which can reduce the adverse influence of employee departures and facilitate newcomer integration. It is also important for organizations to closely monitor their human capital flow over time to ensure that human capital flow does not exceed their absorptive capabilities, because increased human capital outflow and inflow are both detrimental to organizational innovation. For example, organizations can invest in high-commitment work systems to improve employees’ organizational commitment and reduce voluntary turnover. Organizations can also implement strategic staffing to ensure that they hire a proper number of employees with the necessary knowledge and skills to fulfill their business needs.

Second, organizations need to be aware of the qualitative features associated with human capital flow and devote efforts to controlling the quality of human capital flow. Based on this research, human capital flow has both quantitative and qualitative components. Thus, organizations need to not only manage the quantity of their human capital flow, but also control the quality of the flow. Specifically, to advance innovation, workplaces should maintain low-quality human capital outflow and high-quality human capital inflow to build up a high-quality workforce with valuable KSAOs. For example, organizations can dismiss employees with unsatisfactory performance or unqualified KSAOs to maintain low-quality human capital
outflow. In addition, all functional departments should coordinate to hire employees with diverse functional backgrounds to diversify the set of knowledge, skills, and perspectives.

Third, this study informs the critical role that HRM plays in leveraging human capital flow for innovation. Specifically, according to my research findings, selective staffing and opportunity-enhancing work design could mitigate the negative influence and maximize the positive influence of human capital outflow and inflow on innovation. The findings suggest that organizations should capitalize on these two HRM practices to effectively manage both human capital outflow and inflow to enhance innovation. In addition, this research suggests that it is necessary for organizations to design effective performance management systems and compensation systems that align with their human capital flow dynamics. For example, for manufacturing firms that implement downsizing to reduce operating costs and achieve production efficiency (Brauer & Zimmermann, in press), special managerial attention should be paid to performance management, because intensive performance monitoring can help detect employees’ errors in a timely manner, which in turn facilitates trial-and-error learning and organizational adaptation. Given another example, for high-technology firms that are expanding quickly, individual-based compensation plays an important role in aligning individual interest with firm interest via facilitating newcomer integration. In terms of stable firms with relatively low human capital flow, it is important to implement collective-based compensation to encourage mutual learning and relational coordination to promote innovation.

Limitations and Future Research Directions

I acknowledge that this study has several limitations. First, I analyzed archival data collected by Statistics Canada. Therefore, the measures were constrained by the available survey questions in WES. Specifically, as the two items used to measure innovation (i.e., product innovation and process innovation) were dichotomous, I was unable to adequately capture the
levels of product and process innovation, which limits my ability to differentiate these two types of innovation empirically (Tushman & O’Reilly, 1997). As my theoretical arguments are not specific to different types of knowledge creation (i.e., product vs. process), I adopted a general innovation measure that combined product innovation and process innovation to capture organizations’ knowledge creation for the purpose of simplification. In addition, due to the lack of direct measures for the qualitative components of human capital flow, I used proportion of voluntary turnover for leavers as a proxy for quality of outflow and functional diversity for joiners as a proxy for quality of inflow. Nevertheless, these two measures were not perfect and might not be able to adequately capture the qualitative components. Thus, I suggest future research directly measure the qualitative components of human capital flow for a more ingrained understanding of the nature of human capital flow.

Second, the scope of WES measures restricted my ability to directly test the mediating processes for proposed ability-based, motivation-based, and opportunity-based HRM practices to shape the relations between human capital outflow and inflow and innovation. In this study, I used selective staffing and training to capture ability-based HRM, performance management and compensation to capture motivation-based HRM, and opportunity-enhancing work design to capture opportunity-based HRM. As suggested by Lepak et al. (2006), there is variability in the specific HRM practices regarding their associations with the three HRM domains (i.e., ability, motivation, and opportunity), so that researchers can use certain HRM practices to probe the most relevant domains. Nevertheless, HRM practices can be associated with multiple HRM domains. For example, it is possible that training can be used to enhance both employees’ KSAOs and their intrinsic motivation. Therefore, to gain in-depth understanding regarding the process for HRM practices to shape the relation between human capital flow and innovation, I
suggest that researchers conduct field studies to empirically capture employees’ ability, motivation, and opportunity to clarify the underlying mechanisms for those HRM practices.

Third, due to the limitation of the WES dataset, I was unable to distinguish between exploitative innovation and explorative innovation, both of which are critical for organizational adaptation (Benner & Tushman, 2003; Gupta, Smith, & Shalley, 2006). As explained by previous researchers, these two types of innovation require different knowledge management processes (Andriopoulos & Lewis, 2009). Whereas exploitative innovation seeks to exploit existing products or services by leveraging current knowledge and competencies, explorative innovation develops new products or services by pursuing fundamentally new knowledge and capabilities (Benner & Tushman, 2003; Jansen, Van den Bosch, & Volberda, 2006; Jansen, Volberda, & Van Den Bosch, 2005). Therefore, I raise an important research question about how human capital flow may impact these two types of innovation in distinct ways.

Fourth, in hypotheses testing, I analyzed data from a nationally representative stratified sample of workplaces in Canada to improve research rigor. As explained by Takeuchi et al. (2007), selecting organizations that are representative of various industry sectors can minimize the potential bias introduced to the research. Nevertheless, with a stratified sample that includes a wide array of industries, I am not able to have an in-depth within-industry investigation for the studied relations. Therefore, I suggest future research studying the relation between human capital flow and innovation by focusing on certain industries (e.g., high-technology firms) or examining whether the relation between human capital flow and innovation depends on the characteristics of industries (e.g., industry capital intensity, industry growth, and industry product differentiation; Datta et al., 2005).
Finally, in this study, I focused on the interplay of human capital flow and HRM practices in influencing innovation. For simplification purpose, I did not consider the theoretical plausibility that the effects of total turnover rate and total hiring rate on innovation could be curvilinear. In the past, several empirical studies have demonstrated the existence of curvilinear relation between turnover rate and firm market performance (see Shaw, 2011 for a review). Yet, it remains unclear whether such curvilinear effect can be observed for the relation between turnover rate and innovation. In addition, there is little empirical evidence regarding the nonlinear effect of hiring rate. Thus, one promising avenue for future research is to further explore the curvilinear effects of turnover rates and hiring rates to better understand the linkage between human capital flow and organizational innovation.

**Conclusion**

In this study, I investigate how different components of human capital flow impact organizational innovation. The findings suggest that, within each organization, increased quantity of outflow (i.e., total turnover rate), quantity of inflow (i.e., total hiring rate), and quality of outflow (i.e., the proportion of voluntary turnover for leavers) reduces innovation, while increased quality of inflow (i.e., functional diversity for joiners) promotes innovation. In addition, I draw on the AMO framework to examine how ability-based (i.e., selective staffing and training), motivation-based (i.e., performance management, collective-based compensation, and individual-based compensation), and opportunity-based (i.e., opportunity-enhancing work design) HRM practices qualify the effects of human capital outflow and inflow on innovation. The findings suggest that organizations should capitalize on selective staffing and opportunity-enhancing work design to effectively manage both human capital outflow and inflow to enhance innovation. This dissertation sheds light on the importance of decomposing human capital flow as well as unified HRM bundle to clarify how to leverage human capital flow for innovation.


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