7-6-2016 12:00 AM

Human Resource Management Practices and Performance: A General Systems Perspective

Duckjung Shin, *The University of Western Ontario*

Supervisor: Alison M. Konrad, *The University of Western Ontario*

A thesis submitted in partial fulfillment of the requirements for the Doctor of Philosophy degree in Business

Abstract

This thesis consists of three essays on strategic human resource management (SHRM) based on general systems theory. The first essay introduces a systems perspective on SHRM, the second essay applies the feedback concept, and the third essay considers implementing human resource management (HRM) practices as adaptive systems. The three essays suggest that general systems theory extends the SHRM literature by considering antecedents, processes, and consequences of HRM in modern organizations.

In the first essay, I review the SHRM literature and identify four traditions in SHRM studies (economic, psychological, sociological, and critical perspectives). I propose a systems perspective on SHRM as an effort to provide an integrative framework for the field. The framework based on general systems theory also directs research efforts to focus on under-studied areas in SHRM. I further identify fundamental principles, or grand propositions, in the HRM systems perspective, as a potential basis for evaluating the HRM systems perspective in future studies.

In the second essay, causality between HRM practices and organizational performance is examined. Previous researchers have questioned whether the association between high performance work systems (HPWS) and organizational performance indicates causality. This study takes a general systems theory approach to explain why performance could affect HPWS as well as the reverse. The causal associations between HPWS and performance are tested using a large longitudinal dataset with three time points. Past HPWS positively contributes to later productivity, and the positive link between past productivity and later HPWS is also found. The

reciprocal relationship suggests that SHRM theories need to be extended by considering productivity as an antecedent to as well as an outcome of HRM investment.

The third essay investigates the longitudinal relationship between HPWS and productivity over a six-year period. This study suggests that the implementation of HRM practices is an adaptive process. Latent growth modeling analyses reveal that the intercept of HRM practices positively affects the slope of productivity. Continuous increases in HRM investments are not necessary to maintain productivity gains, and the data also did not support the pernicious "Red Queen" effect whereby continuous improvements in productivity required continuous increases in HRM investments. Establishment size and age moderate these effects in theoretically important ways.

Keywords: Human resource management (HRM), human resources (HR), strategic human resource management (SHRM), general systems theory, management practices, adaptive process, causality, feedback, performance, productivity

Co-Authorship Statement

I hereby declare that this thesis contains some material that is a result of joint collaboration. Three essays were co-authored with Dr. Alison M. Konrad. Dr. Konrad as a supervisor contributed throughout the research process by editing and revising the complete drafts. As the first author, I took the lead on initiating and developing the projects and am fully responsible for every aspect of the papers, including research questions, literature review, research design, data analysis, and discussion. I also note that the second essay was published Online First in the *Journal of Management* co-authored with Dr. Konrad. An earlier version of the manuscript appeared in the proceedings of Administrative Sciences Association of Canada (ASAC) 2012 conference. With the above exception, I certify that this dissertation is fully a product of my own work.

Essay 2 – Status: published Online First

Shin, D., & Konrad, A. M. (in press). The causality between HPWS and organizational performance. *Journal of Management*.

Epigraph

易者 陰陽之變, 陰陽 二氣也, 一陰一陽者 太一也, 二故化 一故妙, 非化之外別有所謂妙者, 二氣之所以能生生化化而不已者 即其太極之妙. – 徐敬德 –

(Translated by the author) Change is Yin and Yang transformation. Yin and Yang are two "Qi"s. One Ying and one Yang are one "Tai". Because the two can be changed into one, it is mysterious. The mystery is not separate from change. The two are the cause of endless production after production and change after change. That is the mystery of "Tai Qi." – Seo, Gyeong-deok (Korean Neo-Confucianism philosopher, 1489–1546) –

Dedication

This dissertation is dedicated to the loving memory of my grandmother, Keum-Sun Kim.

Acknowledgments

I am exceedingly thankful to everyone who has encouraged and supported me during my time at Ivey Business School. First and foremost, I would like to thank my advisor, Dr. Alison M. Konrad, for her excellent guidance and incredible support. From the beginning, Alison has been a wonderful mentor and exceptional collaborator. She offered me many opportunities to develop my skills and confidence with her continued support and encouragement. She has been an outstanding example all along as an academic researcher for me to follow.

I extend my sincere thanks to the thesis supervisory and examination committees – Professors Ann C. Frost, W. Glenn Rowe, Ann C. Peng, Linda Schweitzer, Johanna Weststar, for their time and insights. Also, I would like to acknowledge support from the Ivey Organizational Behaivour faculty and fellow doctoral students. Professors Lynn Imai, Andreas Schotter, Paul Beamish, and Dominic Lim are very deserving of thanks for their tremendous support and advice. I acknowledge the generous scholarship by Mr. and Mrs. Brock as well. My sincere gratitude also goes to Professor Hae-Deok Song, my previous supervisor in South Korea.

The Statistics Canada Research Data Center at the University of Western Ontario provided data used in this dissertation. I extend my gratitude to RDC analysts Orsolya Gyorgy and Ashley Calhoun. I would also like to thank former analysts Dr. Bradley A. Corbett and Nathalie Metzer for their kindness towards me.

I cannot overstate the importance of my family. My one true love, Jihyung Ryu, has been an unfailing source of encouragement during my doctoral study. This journey would not have

been possible without her enormous support and sacrifice. I would also like to express my sincere gratitude to my parents and parents-in-law. My brother, Ducksang, and my sister, You-Kyung, have provided me tremendous inspiration to knuckle down and follow my dreams. I also honor the memory of my grandmother, Keum-Sun Kim, who passed away during the time when I was studying in Canada. I am deeply sorry to have missed her funeral.

Table of Contents

List of Tables

List of Figures

List of Appendices

CHAPTER 1. INTRODUCTION

This thesis consists of three essays on strategic human resource management (SHRM). Particularly, I present three essays utilizing general systems theory as a theoretical framework for SHRM. The first essay introduces the general systems perspective to SHRM conceptually. In the second essay, I examine the causal association between high-performance work systems (HPWS) and organizational performance. In the third essay, I investigate the longitudinal relationship between HPWS and organizational performance over a six-year period.

In Chapter 2, I present the first essay, entitled "Revisiting Theoretical Perspectives for Strategic Human Resource Management: Toward an Integrative Framework." In this paper, I conduct a literature review on SHRM theories, and introduce a general systems theory as an integrative framework for SHRM. Despite the development of SHRM, the literature still requires a strong and integrated framework that incorporates existing theoretical perspectives. The framework based on general systems theory provides an alternative perspective to integrate different approaches to SHRM. General systems theory provides a rationale as to why HRM works as a system and also provides directions for future studies.

In Chapter 3, I present the second essay, entitled "Causality between High-Performance Work Systems and Organizational Performance." This study introduces general systems theory as a framework to consider the possible impact of feedback from the outcomes of the HRM process. Theories in SHRM have treated HR practices as closed systems, considering HR systems as an input and organizational performance as an output (Wright & McMahan, 1992). General systems theory stresses that outputs are re-input to a system, which leads to maintenance of the system (Katz & Kahn, 1966). Within this framework, performance is an antecedent as well

as a consequence of HR practices. As the general systems theory perspective suggests a virtuous cycle between HRM practices and performance, the first essay examines a positive effect of HRM practices on organizational performance at a later time point and a positive effect of performance on later HRM practices.

In Chapter 4, I present the third essay, entitled "Human Resource Management as an Adaptive System: Longitudinal Relationships between High-Performance Work Systems and Performance." This study investigates the longitudinal relationship between HPWS and productivity over a six-year period. Based on general systems theory, this study suggests that implementation of HPWS is an adaptive process. The general systems theory approach explains how HRM systems can provide sustained competitive advantage for organizations. In order to examine the systemic evolutionary process in implementing HPWS over time, a longitudinal data analysis is applied to investigate HPWS as an adaptive system. This study contributes to the HR literature by introducing an alternative perspective in which HR needs to be understood as an adaptation process as well as top-down implementation at will.

While the field of HRM has suffered from its lack of compelling meta-theory (Butler, Ferris, & Napier, 1991; Fleetwood & Hesketh, 2008), the application of general systems theory provides an integrative theoretical lens integrating each stream of research in the SHRM field. This dissertation suggests that general systems theory extends the SHRM literature by providing explanations of how and why HRM practices are implemented over time.

REFERENCES

Butler, J. E., Ferris, G. R., & Napier, N. K. (1991). *Strategy and human resources management*. Cincinnati, OH: South-Western Publishing Company.

Fleetwood, S., & Hesketh, A. (2008). Theorising under-theorisation in research on the HRM-performance link. *Personnel Review, 37*(2), 126-144.

Katz, D., & Kahn, R. L. (1966). *The social psychology of organizations*. Oxford, UK: Wiley.

Wright, P. M., & McMahan, G. C. (1992). Theoretical perspectives for strategic human resource management. *Journal of Management, 18*(2), 295-320.

CHAPTER 2. REVISITING THEORETICAL PERSPECTIVES FOR STRATEGIC HUMAN RESOURCE MANAGEMENT: TOWARD AN INTEGRATIVE FRAMEWORK

INTRODUCTION

Scholars in the field of strategic human resource management (SHRM) have argued that advanced HRM practices enhance organizational effectiveness (Pfeffer, 1998; Wright & McMahan, 1992). For decades, researchers have reported the positive association between certain HRM practices and organizational outcomes (Combs, Liu, Hall, & Ketchen, 2006; Jiang, Lepak, Hu, & Baer, 2012). Researchers have also reported conditions upon which the effectiveness of HRM practices depends (e.g., Datta, Guthrie, & Wright, 2005; Delery & Doty, 1996; Rabl, Jayasinghe, Gerhart, & Kühlmann, 2014) and the mechanisms linking HRM practices to organizational outcomes (e.g., Aryee, Walumbwa, Seidu, & Otaye, 2012; Liao, Toya, Lepak, & Hong, 2009; Patel, Messersmith, & Lepak, 2013).

Although SHRM researchers have accumulated empirical work on the effectiveness of HRM practices, the field of SHRM suffers from the under-theorization issue (Fleetwood & Hesketh, 2006; Guest, 1997). For example, Fleetwood and Hesketh (2008) argued that "theoretical underpinnings will not emerge and develop simply by doing more, and/or better, empirical work," (p. 127). According to them, this under-theorization is not due to lack of theories, but rather lack of a strong and integrative theoretical perspective. As an applied

science, SHRM has borrowed from other fields such as economics, psychology, and sociology in advancing the literature theoretically (e.g., Jackson, Schuler, & Jiang, 2014; Wright & McMahan, 1992). However, the problem of borrowing theories from related fields resulted in disconnects in SHRM theorizing and such disconnection hinders further development of SHRM theories (Way & Johnson, 2005). While each stream of research has limited their interests in specific dimension of HRM processes, it is important to see the whole picture because the efficiency of systems depends upon the most weak part that has potential to disrupt the whole system (Goldratt, 1990).

While researchers have borrowed theories from related fields, SHRM has not sufficiently evolved into an integrated discipline. Theoretical perspectives used in the SHRM literature remains heterogeneous, and researchers have selected one out of many theories in explaining the HRM-performance link (Kaufman, 2010). For example, Fleetwood and Hesketh (2008) listed 49 different theoretical predictions used in SHRM studies. Even though researchers have adopted various theoretical perspectives, very few studies are theory-driven (Boselie, Dietz, & Boon, 2005). While most studies have not sufficiently involved in developing a theory, the SHRM literature is still limited in explaining how and why HRM is related to performance (Wright & Haggerty, 2005). After reviewing papers on the SHRM literature, Fleetwood and Hesketh (2008) found that most studies are empirically driven without sufficiently delivering reasons. They argue that the so-called black box metaphor reveals the lack of theoretical explanations in explaining the HRM and performance relationship. In sum, the current theoretical approach is largely eclectic (i.e., different theories are applied in explaining different aspect of HRM implementation) (Boselie, Dietz, & Boon, 2005). The lack of integrative approach retards the growth of SHRM.

Departing from the current eclectic paradigm, this study suggests that SHRM can be understood as an integrative framework, applying a meta-theoretical perspective. For example, SHRM researchers have been silent about evolutionary processes of HRM. Questions remain how HRM practices are implemented and integrated over time, why some organizations have not adopted advanced HRM practices while researchers have repeatedly reported positive associations between the advanced HRM practices and organizational performance, how HRM practices can contribute to organizational growth, how HRM outcomes influence future decisions on HRM practices, and how external environments influence HRM decisions. This paper takes a general systems approach combining different perspectives to develop an integrative theoretical overview for the SHRM field. Some researchers have noted general systems theory as having potential for developing theory in the SHRM field (e.g., Fleetwood & Hesketh, 2008; Jackson & Schuler, 1995; Jackson, et al., 2014; Wright & McMahan, 1992), but the systems perspective has not been fully embraced in the SHRM literature. For example, system concepts in the field of SHRM have been largely limited to external consistency (i.e., alignment of HRM practices to business strategies) and internal consistency (i.e., interaction among individual HRM practices) (Wright & Snell, 1998). The systems perspective on SHRM can go beyond the current utilization of systems concepts in SHRM studies. The general systems approach can be utilized as a meta-theoretical framework that offers an integrative theoretical foundation for SHRM (Fleetwood & Hesketh, 2006, 2008). According to Boulding (1956), "General Systems Theory is the skeleton of science in the sense that it aims to provide a framework or structure of systems on which to hang the flesh and blood of particular disciplines and particular subject matters in an orderly and coherent corpus of knowledge." (p. 208).

A systems perspective on SHRM includes a process-oriented approach as well as a content-based approach. Researchers have identified contents in SHRM such as which individual HRM practices should be included in HRM bundles, key stakeholders who shape HRM contexts, and desirable organizational outcomes that can be influenced by HRM (e.g., Way & Johnson, 2005). SHRM researchers have increasingly recognized the importance of the implementation process and how HRM practices are enacted by line managers and employees in an organization (Arthur, Herdman, & Yang, in press; Gondo & Amis, 2013; Sanders, Shipton, & Gomes, 2014). According to the systems perspective, system elements and system processes are not separated, but rather, tightly interlocked (Luhmann, 1995). As such, this paper proposes SHRM system dynamics that include both SHRM system elements and SHRM system processes. SHRM system elements are key components of HRM systems such as recruitment, training, and compensation. These SHRM system elements interact with key stakeholders of SHRM systems, including the external environment, internal environment, employees, etc. SHRM system processes refer to the implementation of HRM practices in an organization through repetitive cycles of input, throughput, output, and re-input.

The SHRM field can be further advanced by undertaking scholarly debates on its core assumptions. In this paper, we provide fundamental principles, or grand propositions, of the systems perspective on SHRM. Explicitly stating principles can be beneficial for advancing theoretical arguments and empirical testing in future studies (Kozlowski & Klein, 2000). HRM systems principles provide directions for developing explanations in SHRM and set common ground upon which theory is questioned and advanced. Researchers can rely on HRM systems principles to evaluate strengths and weaknesses of the proposed systems perspective on SHRM and identify research gaps by considering underexplored dimensions.

The purpose of this study is to provide a framework to integrate the different approaches to SHRM extant in the literature by proposing a general systems framework for SHRM. The systems framework contains system elements identifying key contents for SHRM theory and system processes indicating factors affecting SHRM implementation. In addition, fundamental underlying assumptions in a systemic perspective on SHRM, or SHRM systems principles, are introduced in the hope that future studies will embrace a systems perspective on SHRM theory.

THEORETICAL PERSPECTIVES IN SHRM

SHRM studies have developed theoretical explanations borrowing from economics, psychology, sociology, and critical management (Wright & McMahan, 1992). Each stream of research is based upon different assumptions and has contributed to the literature in different ways (Table 2-1).

The economic approach to SHRM includes human capital theory, transaction cost economics, agency theory, the resource-based view of the firm (RBV), etc. The economic tradition stresses the role of HRM practices in contributing to organizational performance. Researchers have focused on strategic human capital inputs or rational resource allocation decisions (Greenwood, 2013; Watson, 2004). For example, the RBV, which is one of the most impactful theories in SHRM, suggests that the HRM system creates organizational value because competitors cannot easily copy its complexities, complementarities, and interdependencies as compared to the ability to copy individual HRM practices (Wright, Dunford, & Snell, 2001). Consequently, most studies under the economic tradition have examined the effects of HRM practices on organizational outcomes (Wright & Boswell, 2002). Particularly, the economic tradition has focused on corporate financial performance, such as Tobin's Q (i.e., ratio of the

market value of the firm's stock over the book value of its assets), return on assets, and return on equity. As such, the economic tradition has been largely stockholder-oriented. For example, the economic tradition stresses that developing employee skills and knowledge is based on cost-benefit analysis, or return on investment such that marginal revenues should equal marginal costs (Kaufman, 2015). Despite this focus on financial performance, organizational performance is a multi-dimensional construct (Way & Johnson, 2005); therefore, the contributions of SHRM to organizational outcomes need to include non-financial outcomes such as employee dispute, creativity, and learning.

The economic tradition also typically posits a causal effect from HRM practices to organizational outcomes. However, according to Wright et al. (2005), most research designs used are post-predictive (i.e., performance is measured up to the point of the survey when current HRM practices are assessed) to test the effects of HRM on organizational outcomes. Therefore, empirical findings actually support reverse causality (i.e., performance predicts the adoption of HRM practices). As such, advancing understanding of the impact of HRM requires methodological controls to rule out the possibility of reverse causality. Reverse causality also suggests the intriguing possibility that theory needs to consider the influence of organizational outcomes on implementation of HRM systems. For example, firm performance predicts future investment in HRM practices by providing evidence that past investments have paid off as well as slack resources to cover further HRM costs (Shin & Konrad, in press).

The psychological approach to SHRM includes a behavioral perspective, expectancy theory, the job characteristics model, the ability-motivation-opportunity (AMO) framework, etc. The behavioral perspective, grounded in psychology, stresses the role of employee perception and behaviors to link HRM practices to organizational outcomes (Wright & McMahan, 1992). A

fundamental assumption in the behavioral perspective is that SHRM elicits desirable employee behaviors, which are beneficial for organizations (Liao, 2005; Wright & Snell, 1998). For example, researchers have proposed that HRM practices contribute to organizational outcomes by enhancing employee AMO (Jiang, Lepak, Hu, et al., 2012).

While the role of employees has been understood as recipients of strategic decisions, employees are also potential change agents who initiate and implement new processes. As Gondo and Amis (2013) emphasize, participants range from active to passive to resistant in implementing HRM practices. Consistent with this point, recent attempts to differentiate SHRM practices such as high-performance work systems (HPWS) as experienced by employees from HPWS as intentionally implemented by firms help to explain employee psychological experiences as a key mechanism linking HPWS to organizational outcomes (Aryee, et al., 2012; Choi, 2014; Liao, et al., 2009; Piening, Baluch, & Ridder, 2014). Accumulated tacit knowledge of employees in using HPWS can increase productivity (Nelson & Winter, 1982; Nonaka & Takeuchi, 1995), and employees' shared perceptions of HPWS can strengthen the linkage between HPWS and productivity. In addition, some researchers suggest that systems of HRM practices perform better than individual practices because an internally consistent set of practices delivers a strong and clear message to employees regarding the firm's HRM philosophy, which increases employee commitment if employees perceive that HPWS (i.e., high-road HRM systems) are adopted (Bowen & Ostroff, 2004). At the core of such a configurational perspective lies the holistic principle (Delery & Doty, 1996; Marler, 2012), which is one of key principles of general systems theory.

The sociological approach considers the impact of institutional contexts on the adoption of SHRM. Some researchers have linked the development of HRM practices to institutional

dynamics, arguing that firms build their HRM practices to fit rules and structures that are part of the institutional contexts in which they operate (Boon, Paauwe, Boselie, & Den Hartog, 2009; Paauwe, 2004). For example, Paauwe and Boselie (2003) argued that the presence of professional HRM departments leads to the development of systems that fit "normative" views of HRM practices. In this view, organizations adopt HRM practices developed by leaders in the profession as best practices without questioning their validity or applicability. In the institutional view, uncertainty regarding the performance effects of management practices drives firms to mimic the HRM practices of industry leaders.

Relatively few studies have adopted institutionalism as a theoretical rationale in SHRM studies (Wright & Haggerty, 2005). For instance, Tannenbaum and Dupuree-Bruno (1994) found that public scrutiny was positively associated with the development of innovative HRM practices. Datta, Guthrie, and Wright (2005) reported that industry characteristics, such as industry capital intensity, growth, and differentiation, affect adoption levels of HRM practices. Despite the ability of the sociological approach to recognize the influence of external environments, these environments are largely perceived as givens. There has been limited empirical investigation focused on how HRM practices interact with environments and evolve with such interactions, but fit of HRM systems to environments can be critical. For example, Rabl et al. (2014) reported that the effect size of HPWS on performance was dependent on national culture. In addition, while researchers have reported globalization results in standardization of HRM practices across countries by adopting US-style "best practices" (e.g., Pudelko & Harzing, 2007), foreign organizations may decouple the enacted day-to-day operations in their countries from the global best practices. While recent work recognizes that management practices are not entirely passively determined by institutional forces (Arthur, et al.,

in press; Gondo & Amis, 2013; Oliver, 1991), future research can investigate how SHRM evolves under institutional pressures.

According to Greenwood (2013), the mainstream SHRM literature has focused on rational decision making while ignoring the socio-political aspects of HRM (Greenwood, 2013). The functionalistic approach taken by mainstream SHRM theorizing has focused upon how firms can fully utilize human resources. Functionalism assumes that management and employees have a common interest, underestimating organizational politics and the breadth of values held by employees (Guest, 1990). The critical perspective recognizes politics in an organization, power and inequality issues, and agency problems (Watson, 2004). A critical approach to SHRM argues that the management-centered tradition of SHRM studies neglects the underlying conflict between management and employees (Watson, 2004). "A critical perspective started developing - broadly rooted in labour process analysis or Marxist political views – which viewed HR ideas (such as competitive advantage, empowerment and trust) as rhetoric designed to mask the reality of centralisation of power and control" (Greenwood, 2013, p. 358). While most HRM researchers regard the adoption of an advanced set of SHRM practices as a "win-win situation for employers and employees" because it gives employees an opportunity to be involved in decision making and to build skills (Meyer, Jackson, & Maltin, 2008, p. 38), critics argue that increased participation leads to worker exploitation and increases work intensity and resulting strain. For example, Graham (1995) pointed out that teamwork is used as a stronger control system that intensifies work. Similarly, Godard (2004) argued that organizations achieve better performance by exploiting employee labor through increased surveillance and control under HPWS.

Application of a critical approach to HRM has implications for the other three approaches. Critics of HRM argue that "HRM considers management to be the primary actor in the employment relationship, responsible for designing and implementing the appropriate HRM practices to produce gains for both employees and employers"(Janssens & Steyaert, 2009, p. 115). The critical approach suggests that the psychological approach to HRM needs to consider negative employee responses to the implementation of HRM practices. For example, questions remain regarding how to address employees' negative emotional experiences in implementing new HRM practices and their resistance to such changes. As the Lewin's (1951) change model suggests, HRM managers need to "unfreeze" employee beliefs first to make employees accept desirable changes. Leaders' impatience with strategic achievement can exaggerate the situations by exerting excessive control over employees and ignoring implementation processes (Conger, 1990). For example, Fust and Cable (2008) found that employee resistance diminished with increased quality of leader-member relations.

Further, the economic tradition has stressed financial performance, and financial performance has been the key dependent variable for SHRM research. Therefore, researchers have neglected factors such as dignity at work, stressors and strains as outcomes of HRM systems. Finally, the critical perspective suggests the need to include possible negative social consequences of adopting HRM practices (e.g., spillover of work stress from work intensification under HPWS to the family environment) and negative social influences of SHRM adaptation (e.g., the impact of differentiated incomes and benefits among employee groups on social inequality in wealth and health) as a relevant agenda in research. While SHRM studies limit their scope to organizational phenomena, management practices have to be understood in terms of the larger social system, including their impact on the societal distribution of wealth. In

addition, a critical approach to SHRM suggests that employee behaviors and attitudes need to be understood in consideration of different socio-political contexts (Watson, 2004).

The four approaches shown in Table 2-1 contribute to the development of the SHRM field; however, each is largely separate from the others, indicating that the field could benefit from an integration of theoretical lenses. Despite the development of SHRM theory, the literature still requires a strong and integrated framework that incorporates SHRM inputs, processes, outputs, and multiple stakeholders (Jackson, et al., 2014; Way & Johnson, 2005). Without an integrated framework, predictions based on specific theories are difficult to provide to practitioners and researchers. In this sense, an approach based on general systems theory offers potential value as it pursues an integrative perspective (i.e., understanding the whole rather than sub-functions).

A SYSTEMS PERSPECTIVE ON HRM

Consistencies in HRM Systems

The term *system* is widely applied in all fields of science, and it commonly appears in the SHRM literature. For example, SHRM researchers have used terms such as *high-performance work systems*, *high-involvement work systems*, and *high-commitment work systems* to describe an advanced set of HRM practices. However, explanations for why SHRM works as a system are largely limited to internal and external consistency. Although SHRM researchers have suggested that HRM needs to be considered as a system, such consideration has been limited to internal and external consistency (Subramony, 2009).

First, researchers point out that HRM systems require internal consistency among HRM practices. They argue that "a group of separate but interconnected human resource (HR) practices [are] designed to enhance employees' skills and effort" (Takeuchi, Lepak, Wang, & Takeuchi, 2007, p. 1069). As such, SHRM systems consist of a set of individual HRM practices, including employment security, selective hiring, extensive training, compensation contingent on performance, reduced status distinctions, and information sharing (Pfeffer, 1998). Further, SHRM systems can contribute to organizational performance better than individual practices because of the synergetic associations among individual practices. Meta-analytic findings support the proposition that the association between SHRM systems and performance is stronger than that between individual HRM practices and performance (Combs, et al., 2006).

Second, researchers also argue that SHRM, as a system, requires external consistency. External consistency suggests that effective HRM must fit with other organizational factors, including business strategies (Schuler & Jackson, 1987). Thus, a firm is required to create optimal HRM practices to meet its strategic choices. Arthur (1992) reported that a specific set of HRM practices matches a specific business strategy. Similarly, Bae and Lawler (2000) found that firms were more likely to have high-involvement HRM under differentiation strategies. Batt (2000) found that service firms are likely to use high involvement systems only for employees serving high value-added customers. All of these studies indicate the strategic design of HRM systems to fit the business strategy of the firm to maximize profitability (Lepak & Snell, 1999).

Although the notions of internal and external consistency have advanced understanding of HRM as a system, using the term "system" in SHRM studies can be merely an academic fashion rather than a true alternative perspective unless a theoretical perspective on SHRM systems is provided. To move beyond internal and external consistency to explain why SHRM

works as a system, it is necessary to rely on the systems literature. In addition, the application of systems theory has the potential to overcome criticism regarding the lack of an integrative perspective on HRM.

Theoretical Contributions of a General Systems Approach to SHRM

Application of general systems theory to SHRM studies can be beneficial in incorporating various theoretical perspectives from different disciplines. According to Katz and Kahn (1966), systems theory attempts to integrate macro sociological approaches and micro psychological approaches to organizations by considering their dependency on larger environmental contexts as well as their micro energic input-throughput-output processes. Thus, applying systems theory to HRM studies integrates disjointed theoretical perspectives into a single framework (see Figure 2-1). In addition, the systemic framework clarifies missing elements in the SHRM literature. Thus, general systems theory (Von Bertalanffy, 1968) can be used to extend current understandings of SHRM systems (see Table 2-2).

Evolution vs. diffusion. The framework proposes an evolutionary perspective (i.e., building practices) as well as a diffusionist approach (i.e., buying practices). Both perspectives are consistent with a general systems theory approach. The evolutionary perspective appears in the repetitive input-throughput-output-feedback cycles of the framework, while diffusionism is depicted by the influences of external environment in Figure 2-1.

According to the diffusionist perspective, HRM practices are spread from one organization to another. Organizations enhance performance by adopting best practices and their attentions should be focused on external markets which provide new practices. In this approach, HRM managers are explorers who are highly motivated to search for alternatives. Diffusionism

has been the dominant framework in SHRM, influenced by the early universal or "best practices" view articulated by Pfeffer (1994) and continued with the ongoing discussion of which practices should be considered as a part of HPWS (Becker & Gerhart, 1996; Combs, et al., 2006). While diffusionism has been the dominant framework in SHRM, it is limited in its ability to explain why and how HRM can create competitive advantage for firms because organizations can easily buy best practices on the market. By comparison, the evolutionist perspective is aligned with the resource based view of the firm as both perspectives stress an organization's unique path toward achieving competitive advantage. Given that most SHRM studies have been based on cross-sectional data, evolutionism has not been much adopted as a relevant perspective for understanding HRM implementation. However, as more studies use longitudinal data, researchers will be better able to make and test predictions about SHRM adoption based on the evolutionist perspective. Thus, once HRM practices are adopted, organizations experience situated implementation of the abstract practices over time.

Macro vs. micro. According to Luhmann (2003), systems theory is different from both macro-oriented and micro-oriented conceptual approaches. Macro-oriented sociological perspectives with the Parsons's theory at their core, stress sociological determinants of organizational structures (e.g., Hsu, Marsh & Mannari, 1983). However, this approach has been commonly criticized for treating organizational environments as overly deterministic (Bakken & Hernes, 2003). By comparison, Weick's (1979; Weick, Sutcliffe, & Obstfeld, 2005) social psychological view of organizations is fundamentally different from the Parsonian perspective and emphasizes the sense-making processes of actors as the micro-level building blocks of organizations. According to Luhmann (2003), in the general systems approach, organizations evolve over time and are self-referenced through recursivity such that contexts shaped by

previous actions influence new actions in the future. Hence, in contrast to environmental determinism, organizational evolution is viewed in systems theory as contingent on interpretation of the organizational context. In contrast to Weickien sense-making which is grounded in the actor's micro psychological experience, systems theory references organizational evolution at organizational level not the actor's level (Bakken & Hernes, 2003). Hence, systems theory argues that organizations evolve as a result of a series of actions and decisions taken by groups of actors positioned within a set of organizational functions and processes, each of whom is responding to events in their differentiated subsets of internal and external environments. Hence, the structures and processes resulting from prior actions and decisions provide key factors in the context influencing future actions and decisions (Bakken & Hernes, 2003). In these ways, systems theory takes an integrative approach combining macro and micro elements as determinants of organizational evolution.

System elements vs. system process. Figure 2-1 contains the key elements of a SHRM system, specifically, the input-throughput-output-feedback loop, the external and internal environments of that process, the people as interpretors and enactors of that process, and the individual and organizational-level outcomes of that process. Importantly, SHRM system elements and processes are not separated, but rather, are depicted as distinct aspects of an integrated system. In system theory, particularly Luhmann's autopoietic theory, process and structure are interlocked: "Structure has elements of process, just as process has elements of structure (Luhmann, 1995,: 340). Moreover, they are both prerequisites for one another. Process leads to structure, just as structure leads to process. The intermeshing is more than mere interaction; process and structure presuppose one another." (Bakken & Hernes, 2003, p. 67). In other words, structures such as formally-defined employee recruitment, selection, training,

evaluation, and compensation practices create a structural context within which the recruitment, selection, training, evaluation, or rewarding of any particular employee or set of employees occurs. Practice implementation is determined by the perceptions and interpretations of the actors involved in the process at any given point in time, resulting in process variation despite structural consistency. Furthermore, informal processes that actors notice as recurring and judge as adding value may become formally codified as changes to the relevant set of structures. Importantly, system elements drive organizational evolution as actors' judgments of the quality of inputs and the efficiency and outcomes of various throughput processes influence process implementation and change.

Key Contents for SHRM Theory Using a General Systems Approach

This paper identifies key contents and processes for SHRM theory based on general systems theory (see Table 2-3). Key contents for SHRM theory include external environment, internal environment, people, employee outcomes, organizational outcomes. Processes for SHRM theory considers implementation of HRM practices as a recursive and whole process of input, throughput, output, and re-input.

Firstly, the general systems approach assumes that the SHRM system is open to the *external environment* (see upper left in Figure 2-1). Consistent with this view, SHRM researchers have long recognized the influence of external environments on SHRM systems and their effectiveness for attaining organizational outcomes. For example, Schuler, Jackson, and Tarique (2010) identified several external stakeholder groups with the potential to influence the SHRM system, including society, investors (shareholders), strategic partners (suppliers, unions alliance partners), and customers. Institutional theory proposes that gaining legitimacy in the

external environment is critical for organizational survival (Meyer & Rowan, 1977), and a number of the practices associated with SHRM are thought to garner legitimacy for the organizations that adopt them (Kalev, Dobbin, & Kelly, 2006; Konrad & Linnehan, 1995). In terms of HRM, social forces on management include pressures to provide minimum wages, equal employment opportunities, workplace education, job security, etc.

Also aligned with the notion that SHRM systems are open to the environment, the contingency perspective argues that HRM practices need to be aligned with institutional context, business strategy, structure, and people in order to support the achievement of organizational goals (Balkin & Gomez-Mejia, 1987; Schuler & Jackson, 1987). Contingency factors determining the structuring of SHRM systems include business life cycles, firm sizes, technological innovation, industry, and so forth (Balkin & Gomez-Mejia, 1987). For example, Datta et al. (2005) reported that the association between HPWS and productivity is stronger under low capital intensity, high industrial growth, and high product differentiation. Although few studies have examined the impact of external environments on SHRM systems, the environmental context is generally perceived as a given. Therefore, the systems perspective's emphasis on studying changes in HRM practices and interactions between these practices and environments has the potential to add value to theorizing in the SHRM field (Wright & McMahan, 1992).

Researchers can advance SHRM theory by adopting the open systems concept, introduced in general systems theory (Katz & Kahn, 1966). Most SHRM studies take a closed systems perspective by limiting their scope to the study of within-organization variables. Similar to the way living organisms require the inflow of energy from their surroundings, organizations require the importation of resources from their environments (Von Bertalanffy, 1968). With

inflows of resources from the environment, organizations can maintain and strengthen their throughput processes to overcome movement toward entropy or disorder (Kast & Rosenzweig, 1972). Furthermore, organizational actors determine the use of resource inflows through a process of feedback interpretation and group or even inter-group decision-making. As such, organizations do not passively respond to environments, but actively interact with and respond to environmental influences to avoid entropy. The implication for research is that general systems theory requires the study of external environments using longitudinal data analyses in order to assess the impact of environmental feedback on structural maintenance and change (Shin & Konrad, in press).

Although organizations need to be open to environments to avoid entropy, organizational researchers have argued that they function as *operationally closed* systems (Luhmann, 2003; Seidl & Becker, 2006). While current SHRM studies assume organizations are relatively automatic systems that mechanically respond to external environments, Luhmann's (1990) autopoietic system, or a system that internally produces and reproduces itself under external influences, suggests a more complex change process that fundamentally happens inside a system. Specifically, the organizational decision-makers responding to resource inflows and other feedback from the environment function within a system that is sheltered from direct environmental influences. Given these complexities, the internal process of responding to external environments to maintain or modify the SHRM system remains to be explored further in future studies (Gondo & Amis, 2013).

Internal environment consists of elements within an organization (see middle left in Figure 2-1) and includes business strategy, organizational structure, and internal human resources. The importance of internal environment reflects one of the most widely adopted

theoretical SHRM frameworks, namely the RBV (Barney, 1991). The RBV shifted the focus of strategy research beyond analyzing external environments (e.g., competitive advantage model; (Porter, 1985)) toward factors internal to the firm to explain competitive success. The SHRM field utilizes the RBV to emphasize the potential of firm human capital and people management systems to create an internal resource that is valuable, scarce, and difficult for competitors to copy (Wright & McMahan, 1992). Reflecting this insight, internal environment in Figure 2-1 indicates that the distinctive combination of organizational human capital, business strategy, and organizational structure as a key element affecting the quality of inputs, the efficiency of throughputs, the competitiveness of outputs, and the resulting feedback from the external environment.

While employees might be perceived as an internal environmental element, the *people* factor is separated from internal environment in our framework (see the bottom left in Figure 2-1) to reflect the distinction between organizational-level inputs and people-level inputs (McMahan & Harris, 2012). At the organizational level, human capital reflects both the level of capabilities held by differentiated sets of employees and the potential for combining the various sets of employee capabilities to create value for the firm. Furthermore, successful leveraging of organizational human capital requires strategic design of staffing and people management structures to generate ongoing processes of interaction that create value. But once launched by top management teams, the success of the combination of organizational human capital and the set of SHRM practices depends on implementation at the level of line managers and employees (Bos-Nehles, Van Riemsdijk, & Kees Looise, 2013; Guest & Bos-Nehles, 2013). For this reason, the people factor is distinct in Figure 2-1 to represent the impact of the SHRM system on

employee ability, motivation, and opportunity (AMO), employee perceptions and interpretations of the SHRM system, and employee impact on system implementation and maintenance.

The change management literature has stressed the importance of employee acceptance and resistance in accepting new initiatives. For example, Lewin's (1951) classic three-phase model of change (unfreezing, changing, and refreezing) provides insights on HRM implementation; management can provide sufficient psychological safety to reduce employee resistance (Baer & Frese, 2003), adopt a learning approach to encourage employees accepting certain sets of desirable behaviors (Edmonson, 1999), and make the changed behaviors normative and routine (Piderit, 2000). Employee acceptance of and resistance to HRM practices have not been much considered in the SHRM literature, but a limited number of studies have differentiated employee-experienced HRM from organizational-level HRM. For example, Liao et al. (2009) found significant differences between managers' intended implementation of HPWS and employees' perceptions of HPWS. Aryee et al. (2012) reported that employee-experienced HPWS partially mediated the relationship between manager-reported HPWS and performance outcomes, and Choi (2014) documented that employee-reported HPWS was a stronger predictor of firm financial performance than manager-reported HPWS. These recent findings show that organizational-level inputs can be successful if they are effectively transferred to the employee level. In addition, according to Gondo and Amis (2013), practice adoption requires both acceptance and implementation by the targeted employees. Thus, employees are likely to respond to HPWS once they perceive the values of HPWS. As recent studies suggest the multi-level nature of HPWS implementation (e.g., Elorza, Harris, Aritzeta, & Balluerka, 2016; Pak & Kim, in press; Shen, in press), people level enactment is separated from organizational level HPWS in the HRM system model (Figure 2-1). While recent HRM studies recognize the role of

employee perception in using HRM practices, future studies should explore how employees implement day-to-day operations of such practices.

While the systems perspective supports the importance of the employee level of analysis for the performance impact of SHRM, some studies have reported contributions of SHRM practices to employee-level outcomes, including attitudes (e.g., job satisfaction, psychological empowerment, and commitment) and behaviors (e.g., individual service performance, organizational citizenship behaviors, and turnover intentions) (Kehoe & Wright, 2013; Liao, et al., 2009; Takeuchi, Chen, & Lepak, 2009) (see *people outcomes* at the bottom right in Figure 2-1). Firstly, if employees are the key mediators that link SHRM to organizational outcomes, more studies of employee-level outcomes are necessary to enhance understanding of the extent and conditions under which employees are attracted to and motivated by SHRM and therefore are willing to implement, maintain, and extend SHRM systems. Secondly, while most studies have reported positive employee-level outcomes, negative outcomes are also expected. For example, a critical perspective on SHRM argues that positive contributions of HRM to organizational outcomes is likely achieved through work intensification and tight control over employee behaviors (Godard & Delaney, 2000). Thirdly, general systems theory suggests that systems may atrophy without ongoing inputs, such as employee effort. Just as organizational outputs serve as feedback affecting inputs to the organization, actor-level outcomes serve as feedback to affect key actor-level inputs, such as work effort and organizational citizenship behaviors critical to system effectiveness. Supporting this view, Sumelius et al. (2014) found that employee perceptions of SHRM systems were affected by their performance appraisals. Future research is needed on the impact of people outcomes on employee engagement in SHRM implementation, development and maintenance.

Performance at multiple levels is also an area to be studied further. If employees are key mechanisms linking HRM to organizational outcomes, employee level outcomes must be related to organizational level outcomes, as depicted in the link from employee outcomes to *organizational outcomes* in Figure 2-1. While HRM researchers have identified the multi-dimensionality of organizational performance (e.g., Combs, et al., 2006; Guest, 1997; Singh, Darwish, Costa, & Anderson, 2012), the multi-level aspect of performance has received relatively limited empirical attention. Some researchers have aggregated individual-level outcomes to the organizational level as a mediator that links HRM practices to organizational outcomes (e.g., Aryee, et al., 2012; Gong, Law, Chang, & Xin, 2009). However, explanations on the process by which individual-level outcomes emerge into the higher system level are still limited. Explanations can be adopted from multi-level theory (Kozlowski & Klein, 2000), which stems from general systems theory. According to general systems theory, characteristics of a higher order system are grounded in interactions among its sub-systems. Individual performance does not automatically produce organizational performance, rather individual outcomes result in organizational outcomes through interactions among individuals. For example, interactions among individuals can strengthen team dynamics, thereby enhancing unit level performance (Evans & Davis, 2005). Thus, general systems theory suggests the importance of social architecture together with human capital in enhancing organizational performance. In addition, multi-level performance implies a performance alignment issue within SHRM. While SHRM researchers have connected internal consistency to HRM practices and external consistency to strategy, performance alignment across levels (e.g., individual, team, business unit, and firm) is another dimension of consistency that HRM studies needs to be investigated further.

SHRM System Processes

SHRM system processes are depicted as repetitive cycles of input, throughput, output, and re-input inside the box in Figure 2-1. In Luhmann's social systems theory, organizations are autopoietic systems which are based on recursive operations, or repeated processes based on their previous states (Seidl & Becker, 2006). Rather than analyzing a system through an input-output linkage, the assumption of *recursivity* emphasizes that organizations exist through their own reproduction. In this view, a practice evolves through repetitive cycles of operations. While researchers have largely neglected the path from output to re-input in SHRM studies, according to general systems theory, organizational outcomes generate inputs into the organization (see the link from output to input in Figure 2-1). Only with sufficient resource inflows can organizations build and sustain their internal throughput processes (Kast & Rosenzweig, 1972) such as by strengthening or expanding the SHRM system (Shin & Konrad, in press). Feedback implies the necessity of slack resources driving further investment as proposed in the behavioral theory of a firm (Cyert & March, 1963). As such, strong organizational performance based on HPWS supports further development of these systems (Shin & Konrad, in press). According to Wright and Snell (1991, p. 211), "in order to engage in strategic human resource management, the HR system must provide outcomes (i.e., performance) which enable the organization to implement its strategy". Therefore, the link from performance to SHRM systems has theoretical importance as well as methodological implications.

The feedback loop within the general systems approach also suggests that SHRM systems are implemented through an adaptive process (Miner, 1994). Organizations incrementally adapt HRM systems as they accumulate knowledge of and gain experience with these practices. Through the ongoing cycle of SHRM implementation, organizations learn how to better adjust

HRM practices to fit their goals and structures. This ongoing process of feedback generating re-input suggests that researchers must understand SHRM implementation as an adaptive process. Such evolutionary (Nelson & Winter, 1982) or organizational learning processes (Levitt & March, 1988; Nonaka & Takeuchi, 1995) have received little attention in SHRM studies. According to the evolutionary perspective, organizational implementation is largely affected by the experiences of an organization. The link from output to input in Figure 2-1 also depicts the importance of day-to-day operations among lower level employees as well as strategic decisions from the top management team. While the SHRM literature focuses on strategic decisions at a certain point made by top management teams (e.g., Arthur, et al., in press), researchers have implicitly assumed top-down decision making at will. Path dependence in the evolutionary perspective suggests that decisions about SHRM are on-going rather than one time top-down propositions.

Considering the evolutionary process, HRM practices are not only affected by top management teams, but are also implemented by line managers and employees who actually perform these practices on a daily basis. Once introduced by upper-level decision makers, HRM practices evolve through a learning-by-doing process at the level of line managers and employees who must enact abstract practices by integrating them into day-to-day operations within local contexts (Gondo & Amis, 2013). The effectiveness of HRM systems is determined not only by the practices themselves, but also by the "day-to-day experiences of employees and the behavior of line managers" (Gratton & Truss, 2003, p. 75). In this sense, the implementation of SHRM systems can be understood as organizational routines that show both long-term consistency and change over time as a result of on-going variation, selection, and retention of HRM practices (Feldman & Pentland, 2003).

Furthermore, HRM systems should be understood as a whole process of input-throughput-output-re-input (see the whole picture rather than parts in Figure 2-1). Each part of this process cannot sufficiently explain the strengths and weaknesses of SHRM systems. SHRM research, having been focused upon demonstrating the potential to create value for the firm, has focused little attention on weaknesses. But, as the theory of constraints argues (Goldratt, 1990), the efficiency of systems depends upon their weaknesses which have the potential to disrupt the whole. To avoid flaws and bottlenecks in a system, awareness of the SHRM system in its entirety is critical.

SHRM SYSTEM PRINCIPLES

General systems theory provides not only a rationale for why HRM works as a system, but also guidance for future studies. It is not possible to draw a complete list of research propositions from general systems theory because of its extensiveness (Kast & Rosenzweig, 1972). However, to provide broad possible applications of this theory for SHRM research, we introduced management system principles that were modified from Kast and Rosenzweig (1972) (see Table 2-4). System principles here refer to foundational assumptions of a systems perspective, or grand propositions, upon which to base more specific research questions. The proposed principles can be used to grasp the knowledge structure of SHRM systems and communicate the underlying assumptions within the SHRM literature.

The first SHRM systems principle is the value of a *holistic* perspective. Researchers have suggested that SHRM practices work as a bundle rather than individually. General systems theory notes the importance of "wholeness" where elements of a system work in total rather than in parts (Von Bertalanffy, 1968). Synergistic interactions among sub-systems produce an

emergence of new properties at the supra-system level, which cannot be reduced to its parts. Such an irreducible feature has several implications for HRM systems.

The first principle concerns the notion that identification of components can lead to a better understanding of possible interactions with and constitutions of a system. Management can initiate changes to a system by carefully selecting components. Additionally, components themselves can be systems that require further investigation of each sub-component. However, manipulation of components must be conducted with an understanding of the whole system; otherwise, management would suffer side effects of component implementation. For example, extensive training in general skills together with low compensation can result in a high turnover rate because trained employees can seek high-paying jobs elsewhere. Second, wholeness delivers the non-summative nature of interdependent components. Summation of individual HRM practices does not fully depict the emergent property at the SHRM systems level, as these systems have distinct characteristics that cannot be explained by an aggregation of individual HRM practices. As such, a holistic perspective has methodological implications and requires examining theoretically-important interactions among sets of HRM practices.

The second systems principle is the *hierarchical* embeddedness of a system. According to general systems theory, every system is fundamentally a multi-level system, or a supra-system consisting of its sub-systems. Boulding (1956) identified hierarchical levels of systems as follows. The first level of a system is the *framework*, which is related to describing static structures such as the anatomy of an animal or the structure of the solar system. The second level is *clockwork*, which examines simple dynamic systems where movement of the parts is predetermined by governing rules similar to the mechanistic motions of levers and pulleys. The third level is the *thermostat*, which considers feedback and control mechanisms or cybernetics.

An example of this level is a heating system of which one adjusts the temperature to avoid becoming "too cold" or "too hot." The fourth level is the *cell*, or self-maintaining systems. This level considers self-reproduction through metabolism of ingestion, digestion, and excretion processes.

Identifying a hierarchy of systems can help researchers build theoretical and empirical knowledge at each level. For the SHRM field, the overall organizational chart and design might be considered the organization's framework, while the set of formalized policies might be considered the clockwork. The SHRM thermostat consists of feedback mechanisms providing information on the attitudes and perceptions of employees as well as productivity or efficiency of the production process. The cells of the SHRM system consist of organizational units such as divisions, units within divisions, and teams within units. Organizational units maintain their functions by obtaining, transforming, and producing resources. The functioning of each level of the system impacts the others as well as the health of the system as a whole. For example, while SHRM studies have implicitly considered employee involvement as a key mechanism, multi-level research design and theory allow researchers to gain a better understanding of this throughput mechanism.

The third principle suggests that HRM systems are *human* systems. This principle delivers the anti-mechanistic nature of HRM systems. General systems theory can be applied to material and non-material systems; however, organizations as social systems are non-materialistic. Human systems suggest that organizations are coalitions of stakeholders working to achieve a set of goals that are difficult to achieve without the division of labor. However, the question arises regarding how to divide labor and resources. According to resource dependency theory (Pfeffer & Salancik, 1978), people cooperate and compete for resources in an

organization; sub-systems collaborate to achieve a larger common goal, but they also compete for resources. Therefore, a critical function of the SHRM sub-system is the ability to demonstrate value added; otherwise, top management teams will allocate resources to other functions whose voices obtain legitimacy (e.g., Arthur, et al., in press). Organizations as systems also imply that organizational success is not automatically determined by the amount of investment in HRM practices, but by people's responses to the practices that need to be considered as well (e.g., Choi, 2014; Liao, et al., 2009).

The fourth principle is *open, but operationally closed* systems. A key characteristic of general systems theory proposed by Von Bertalanffy is the openness of systems to their environment. Similar to living organisms, organizational systems require resources and must avoid toxins from their environments. Organizations can have different degrees of openness to their environments (Kast & Rosenzweig, 1972), however, because organizations as social systems cannot be isolated from their surroundings, the influence of environments on organizations has to be considered (Katz & Kahn, 1966). Although there are some studies that have examined environmental influences on HRM practices (e.g., Datta, et al., 2005), environmental conditions need to be further investigated in explaining SHRM system implementation, development, and maintenance processes as well as system effectiveness.

Researchers have proposed the organismic view or the organic perspective of adopting the open systems concept (e.g., Scott & Davis, 2007). Unfortunately, few studies have adopted the open systems perspective on environments. The open systems perspective does not posit the environment as a steady state; rather, an organization adapts to a changing environment by rearranging its configuration. Indeed, as powerful societal actors, organizations are capable of influencing and changing their environments to better suit their operations. The open systems

perspective suggests the influence of external stakeholders as environmental inputs (Way & Johnson, 2005), and an open systems perspective must attend to relative power and influence among stakeholders to predict organizational effectiveness and survival (Harrison & Bosse, 2013). However, the open systems perspective has neglected the fact that organizational changes are fundamentally internalized processes, consistent with Luhmann's (1990) concept of *autopoietic* systems. Operational closure does not indicate that organizations are closed from environmental contexts, rather, it means that the impact of environmental inputs and feedback on the SHRM system are not direct but mediated by organizational decision-makers. SHRM theory must therefore consider the potential impact of external stakeholders such as governments, unions, communities and advocacy groups on the managerial perceptions of the value of HRM practices as top leaders' support is critical to the health of the SHRM system.

The fifth principle is the *process* approach to systems. General systems theory recognizes processes as well as general structures, and proposes the input-throughput-output-re-input process. Most HRM studies have tested the **input**-output linkage, and some studies have tested the input-**throughput**-output linkage. For example, the resource-based view of the firm (RBV) stresses organizations as combiners of idiosyncratic resources, and the ability-motivation-opportunity (AMO) framework focuses on employee-related mechanisms linking organizational inputs to organizational outcomes. A major difference of the input-throughput-output-re-input model from others is the **re-input** process or feedback (see Table 2-5). Organizations feed slack resources and information back into organizational input and structures. These systems are self-correcting or self-regulating through feedback control, which allows them to better accomplish their purposes. SHRM theory needs to consider the development of feedback mechanisms at multiple levels of the SHRM system, ranging from employee surveys to examine unit (cell) level

functioning to productivity and financial performance numbers examining system-level functioning benchmarked against strategic goals (Way & Johnson, 2005).

The sixth principle concerns the *continuous cycle* of input-throughput-output-re-input. General systems theory suggests a possible interaction between organizational learning theories and SHRM research. Through circularity, organizations adapt to environments by accumulating experience and adjusting their resource allocation. While most HRM studies have relied on cross-sectional research designs, the learning perspective has been largely ignored in the SHRM literature. Systems theory suggests the need for longitudinal data analysis in studying SHRM to observe the evolutionary process of SHRM system development. It is also critical to consider the speed of circularity. For example, as HRM practices are typically reviewed on an annual basis, it is necessary to consider 1- to 2-year time lags between practice implementation and outcomes. However, for organizations that aim to meet quick environmental changes, it is not impossible to shorten or lengthen the timing of circularity by carefully re-designing HRM implementation, employee responses, and feedback.

The seventh principle is *organized complexity*. Complexity increases as the level of hierarchy increases. Dynamic interactions between sub-systems build up the organized complex structure, which works as a basis for new interactions (Nassehi, 2005). In contrast to chaos theory, which generalizes disorders from simplicity, organized complexity proposes complex, but organized patterns (Mathews, White, & Long, 1999). Organized complexity can overcome the second law of thermodynamics or entropy in which order decreases over time. Such "organized" complexity considers organizations as on-going entities that build differentiated structures, which create a variety of capabilities, helping organizations to respond effectively to environmental change and therefore sustain performance. Further, complexity inherent in the

evolutionary process of HRM implementation can create competitive advantages for organizations because it is difficult for competitors to imitate such complexity (Colbert, 2004). As decision-makers develop local solutions to correct inevitable missteps in system implementation, in practice, SHRM systems become increasingly sophisticated and complex, enhancing uniqueness and inimitability and therefore, potential for generating competitive advantage.

The eighth principle is *equifinality*. According to equifinality, there are equally effective management approaches for an organization to reach the same final state from different initial conditions and different paths (Doty, Glick, & Huber, 1993). The equifinality concept has been adopted to the configurational perspective on SHRM (e.g., how the pattern or bundle of individual practices is related to performance) (Delery & Doty, 1996). One implication of equifinality is the evidence-based approach to SHRM. As organizations have multiple ways to achieve the same goal, adopting a new HRM practice needs to be associated enhanced organizational outcomes; otherwise, practitioners are likely to search for another practices.

Another implication of equifinality is that organizations with low previous performance levels can overcome their initial unfavorable conditions. Although low previous performance of the SHRM system is likely to reduce slack resources and top management team support for HRM, such organizations can overcome low performance by pursuing alternative paths. For example, such organizations may choose less costly people management practices that are organization specific. For instance, in the face of strong competition, firms can turn their focus to cost containment, dismantling costly management hierarchies to flatten their structure and empower lower-level employees. Equifinality also suggests identifying alternative SHRM solutions that are equally effective for achieving organizational performance, for instance, cost-

cutting routinization of jobs for producing standardized or investment in employee skills for producing customized products (Arthur, 1992). Equifinality may also occur at the level of individual practices, and practitioners can search for alternatives, rather than sticking to conventional "causal maps" by choosing specific HRM practices to fix specific problems (Wright & Snell, 1991).

The ninth principle considers *stability and change* issues of systems. A system can be in a state of equilibrium or disequilibrium. Under a state of equilibrium, organizations can maintain homeostasis. In other cases, organizational systems are unstable, which leads them into a different state at later time points. Instability can be a desirable outcome when, for example, a small organization builds its SHRM system to build high quality human capital and generate productivity gains, which create slack resources to invest in product development and grow market share, which ultimately, expands the size of the firm. A changing system can evidence positive feedback that offers additional input (resulting in growth in the example) or negative feedback, which reduces the flow of original inputs. An example of positive feedback is a high leader-member exchange relationship: An exchange relationship can be increasingly amplified with a good leader and a good follower stimulating further high quality interactions between them. Filling vacancies is an example of negative feedback: when vacancies are increased, an organization will post more jobs to fill vacancies and if most positions are filled, there will be a reduced number of job postings.

A system with positive feedback is likely to result in a different state at a later point in time because of the deviation-amplifying mechanism of the positive feedback. To continue the example, growth in number of employees is likely to require further development and formalization of the SHRM system, stimulating further increases in human capital quality and

productivity and generating more slack for decision-makers to invest in firm development. Conversely, a system with negative feedback may achieve a state of equilibrium because the negative feedback helps it reduce variation from the original state by going in the opposite direction of the "main effect". For instance, large firms investing in complex SHRM systems may increase productivity but also increase costs, resulting in consistency rather than growth in profitability.

The tenth principle is *goal directedness*. Not all systems have a purpose; however, social organizations have multiple purposes arising from the interests of various stakeholders. The goal directedness of a system offers a control mechanism to close the gap between the goal and the status of an organization. According to Ackoff (1981), organizations have purposes at least three levels; organizations, individuals, and societies. Organizations themselves have their own goals and objectives. However, organizations serve purposes of larger societal systems, which in turn, affect and are affected by purposes and interests at the individual level. Goal directedness implies that the strategic decisions of firms influence HRM practices and that SHRM systems should be aligned with strategic business goals (e.g., Arthur, 1994). Goal directedness exists at multiple levels, which suggests that they are hierarchical in nature. Thus, HRM strategies must serve organizational strategies (Wright & Snell, 1991). Organizations have goals and sub-goals; therefore, SHRM systems can be designed to increase organizational performance, but may serve to achieve broader organizational goals (e.g., organizational survival) as well as individual goals (e.g., employee skill building). Goals can be pre-determined, but they can also arise or change over time. While SHRM researchers have assumed organizational goals as givens, the circularity of SHRM systems implies managerial adjustment of organizational goals.

IMPLICATIONS

Theoretical Implications

This paper uses a general systems approach to develop an integrative foundation for SHRM research and theory that incorporates extant approaches to SHRM based on the psychological, economic, sociological, and critical management traditions. In addition, SHRM implementation is illustrated as a process combining both the diffusion and evolution of system components. While recognizing the best practices view that decision-makers scan the environment and copy apparently successful practices from competitors, SHRM implementation from a systemic perspective considers decision-makers' responses to the input-throughput-output-re-input feedback loop. Consideration of the feedback loop extends prior theoretical models by adding dynamism and the potential for environmental feedback to result in changes to the SHRM system itself.

In addition, future studies can draw research hypotheses based on system principles introduced in this study. Principles explicitly state the assumptions undergirding SHRM systems, and can be tested in future studies. Together with theoretical contributions of general systems theory to the SHRM literature, there are methodological and practical implications as well.

Methodological Implication

A systems perspective can be applied to overcome several methodological issues in the extant SHRM literature. First of all, while most HRM studies have relied on cross-sectional data, general systems theory suggests that research must take into account the evolutionary

processes whereby SHRM systems adapt in response to environmental feedback over time. As such, understandings of HRM implementation processes can be advanced by applying a longitudinal research design. Second, the feedback concept in general systems theory provides a rationale explaining why performance can be an antecedent as well as an outcome of SHRM systems, and researchers need to consider reverse causality in testing the influence of HRM practices on organizational performance. Third, according to general systems theory, a system is fundamentally a multilevel phenomenon. Multilevel research designs are gaining popularity in the SHRM literature, and the systems perspective suggests that such an approach can be beneficial in advancing our understanding of SHRM.

Practical Implications

The systems perspective on SHRM has practical implications as well. First of all, it would be beneficial if HRM practitioners adopt systems thinking. General systems theory suggests that practitioners must understand the SHRM system as a whole as well as understanding its component pieces. Without a clear understanding of the whole system, improvement of its parts can result in unexpected negative consequences. In addition, HRM practitioners can consider system thinking as a core element of employee training. Once employees have a better understanding of the whole picture of their businesses, they are better able to contribute to the business as a whole and to avoid missteps that create short-term gain but generate longer-term losses. Second, the systems perspective suggests that implementation of HRM practices is a long-term phenomenon. HRM practices influence organizational performance not just at one given point in time, but rather, can continuously influence organizational performance over time. As such, short-term costs incurred from investments in

SHRM must be assessed against their longer-term benefits rather than requiring quick cost recovery through immediate gains. Third, the systems perspective suggests that multiple stakeholders are involved in SHRM implementation, requiring attention to the system's internal and external environment.

CONCLUSION

In this paper, an alternative theoretical framework and principles were suggested to consider HRM from a systems perspective. As the term human *resource* management implies, managing people in an organization have considered people as valuable *resources*. SHRM researchers have studied human resource management *systems*, which are *bundles* of HRM practices not individual practices. However, understanding of the human side of management is still limited to internal consistency and external consistency of HRM bundles and a systems perspective has never been fully introduced to the human side of management. To further advance this field, system concepts were applied from general system theory. Further work on the application of the systems perspective on SHRM can move research in this field forward.

REFERENCES

Ackoff, R. L. (1981). *Creating the corporate future: Plan or be planned for*. New York: John Wiley & Sons.

Arthur, J. B. (1992). The link between business strategy and industrial relations systems in American steel minimills. *Industrial and Labor Relations Review, 45*(3), 488-506.

Arthur, J. B. (1994). Effects of human resource systems on manufacturing performance and turnover. *Academy of Management Journal, 37*(3), 670-687.

Arthur, J. B., Herdman, A. O., & Yang, J. (in press). How top management HR beliefs and values affect high-performance work system adoption and implementation effectiveness. *Human Resource Management*.

Aryee, S., Walumbwa, F. O., Seidu, E. Y. M., & Otaye, L. E. (2012). Impact of high-performance work systems on individual- and branch-level performance: Test of a multilevel model of intermediate linkages. *Journal of Applied Psychology, 97*(2), 287-300.

Bae, J., & Lawler, J. J. (2000). Organizational and HRM strategies in Korea: Impact on firm performance in an emerging economy. *Academy of Management Journal, 43*(3), 502-517.

Baer, M., & Frese, M. (2003). Innovation is not enough: Climates for initiative and psychological safety, process innovations, and firm performance. *Journal of Organizational Behavior, 24*(1), 45-68.

Bakken, T., & Hernes, T. (2003). The macro-micro problem in orgnization theory: Luhmann's autopoiesis as a way of handling recursivity. In T. Bakken & T. Hernes (Eds.), *Autopoietic organization theory: Drawing on Niklas Luhmann's social systems perspective* (pp. 53-74). Herndon, VA: Copenhagen Business School Press.

Balkin, D. B., & Gomez-Mejia, L. R. (1987). Toward a contingency theory of compensation strategy. *Strategic Management Journal, 8*(2), 169-182.

Barney, J. B. (1991). Firm resources and sustained competitive advantage. *Journal of Management, 17*(1), 99-120.

Batt, R. (2000). Strategic segmentation in front-line services: Matching customers, employees and human resource systems. *International Journal of Human Resource Management, 11*(3), 540-561.

Becker, B. E., & Gerhart, B. (1996). The impact of human resource management on organizational performance: Progress and prospects. *Academy of Management Journal, 39*(4), 779-801.

Boon, C., Paauwe, J., Boselie, P., & Den Hartog, D. N. (2009). Institutional pressures and HRM: Developing institutional fit. *Personnel Review, 38*(5), 492-508.

Boselie, P., Dietz, G., & Boon, C. (2005). Commonalities and contradictions in HRM and performance research. *Human Resource Management Journal*, 15(3), 67-94.

Bos-Nehles, A. C., Van Riemsdijk, M. J., & Kees Looise, J. (2013). Employee perceptions of line management performance: Applying the AMO theory to explain the effectiveness of line managers' HRM implementation. *Human Resource Management, 52*(6), 861-877.

Boulding, K. E. (1956). General systems theory-the skeleton of science. *Management Science, 2*(3), 197-208.

Bowen, D. E., & Ostroff, C. (2004). Understanding HRM-firm performance linkages: The role of the "strength" of the HRM system. *Academy of Management Review, 29*(2), 203-221.

Choi, J.-H. (2014). Who should be the respondent? Comparing predictive powers between managers' and employees' responses in measuring high-performance work systems practices. *International Journal of Human Resource Management, 25*(19), 2667-2680.

Colbert, B. A. (2004). The complex resource-based view: Implications for theory and practice in strategic human resource management. *Academy of Management Review, 29*(3), 341-358.

Combs, J. G., Liu, Y., Hall, A. T., & Ketchen, D. J. (2006). How much do high-perofmrance work practices matter? A meta-analysis of their effects on organizational performance. *Personnel Psychology, 59*(3), 501-528.

Conger, J. A. (1990). The dark side of leadership. *Organizational Dynamics, 19*(2), 44-55.

Cyert, R. M., & March, J. G. (1963). *A behavioral theory of the firm*. Upper Saddle River, NJ: Prentice Hall.

Datta, D. K., Guthrie, J. P., & Wright, P. M. (2005). Human resource management and labor productivity: Does industry matter? *Academy of Management Journal, 38*(1), 135-145.

Delery, J. E., & Doty, D. H. (1996). Modes of theorizing in strategic human resource management: Tests of universalistic, contingency, and configurational performance predictions. *Academy of Management Journal, 39*(4), 802-835.

Doty, D. H., Glick, W. H., & Huber, G. P. (1993). Fit, equifinality, and organizational effectiveness: A test of two configurational theories. *Academy of Management Journal, 36*(6), 1196-1250.

Edmondson, A. (1999). Psychological safety and learning behavior in work teams. *Administrative Science Quarterly, 44*(2), 350-383.

Elorza, U., Harris, C., Aritzeta, A., & Balluerka, N. (2016). The effect of management and employee perspectives of high-performance work systems on employees' discretionary behaviour. *Personnel Review, 45*(1), 121-141.

Evans, W. R., & Davis, W. D. (2005). High-performance work systems and organizational performance: The mediating role of internal social structure. *Journal of Management*, 31(5), 758-775.

Fleetwood, S., & Hesketh, A. (2006). HRM-performance research: Under-theorized and lacking explanatory power. *International Journal of Human Resource Management, 17*(12), 1977-1993.

Fleetwood, S., & Hesketh, A. (2008). Theorising under-theorisation in research on the HRM-performance link. *Personnel Review, 37*(2), 126-144.

Godard, J. (2004). A critical assessment of the high-performance paradigm. *British Journal of Industrial Relations, 42*(2), 349-378.

Godard, J., & Delaney, J. T. (2000). Reflections on the "high performance" paradigm's implications for industrial relations as a field. *Industrial and Labor Relations Review, 53*(3), 482-502.

Goldratt, E. M. (1990). *Theory of constraints*. Croton-on-Hudson, NY: North River Press.

Gondo, M. B., & Amis, J. M. (2013). Variations in practice adoption: The role of conscious reflection and discourse. *Academy of Management Review, 38*(2), 229-247.

Gong, Y., Law, K. S., Chang, S., & Xin, K. R. (2009). Human resources management and firm performance: The differential role of managerial affective and continuance commitment. *Journal of Applied Psychology, 94*(1), 263-275.

Graham, L. (1995). *On the line at Subaru-Isuzu: The Japanese model and the American worker*. Ithica, NY: Cornell University Press.

Gratton, L., & Truss, C. (2003). The three-dimensional people strategy: Putting human resources policies into action. *Academy of Management Executive, 17*(3), 74-86.

Greenwood, M. (2013). Ethical analyses of HRM: A review and research agenda. *Journal of Business Ethics, 114*(2), 355-366.

Guest, D. E. (1990). Human resource management and the American dream. *Journal of Management Studies, 27*(4), 377-397.

Guest, D. E. (1997). Human resource management and performance: A review and research agenda. *International Journal of Human Resource Management, 8*(3), 263-276.

Guest, D. E., & Bos-Nehles, A. C. (2013). HRM and performance: The role of effective implementation. In J. Paauwe, D. Guest & P. M. Wright (Eds.), *HRM and performance: Achievements and challenges* (pp. 79-96). Chichester, UK: Wiley.

Harrison, J. S., & Bosse, D. A. (2013). How much is too much? The limits to generous treatment of stakeholders. *Business Horizons, 56*(3), 313-322.

Jackson, S. E., & Schuler, R. S. (1995). Understanding human resource management in the context of organizations and their environments. *Annual Review of Psychology, 46*, 237-264.

Jackson, S. E., Schuler, R. S., & Jiang, K. (2014). An aspirational framework for strategic human resource management. *Academy of Management Annals, 8*(1), 1-56.

Janssens, M., & Steyaert, C. (2009). HRM and performance: A plea for reflexivity in HRM studies. *Journal of Management Studies, 46*(1), 143-155.

Jiang, K., Lepak, D. P., Han, K., Hong, Y., Kim, A., & Winkler, A.-L. (2012). Clarifying the construct of human resource systems: Relating human resource management to employee performance. *Human Resource Management Review, 22*(2), 73-85.

Jiang, K., Lepak, D. P., Hu, J., & Baer, J. C. (2012). How does human resource management influence organizational outcomes? A meta-analytic investigation of mediating mechanisms. *Academy of Management Journal, 55*(6), 1264-1294.

Kalev, A., Dobbin, F., & Kelly, E. L. (2006). Best practices or best guesses? Assessing the efficacy of corporate affirmative action and diversity policies. *American Sociological Review, 71*(4), 589-617.

Kast, F. E., & Rosenzweig, J. E. (1972). General systems theory: Applications for organization and management. *Academy of Management Journal, 15*(4), 447-465.

Katz, D., & Kahn, R. L. (1966). *The social psychology of organizations*. Oxford, UK: Wiley.

Kaufman, B. E. (2015). Market competition, HRM, and firm performance: The conventional paradigm critiqued and reformulated. *Human Resource Management Review, 25*(1), 107-125.

Kaufman, B. E. (2010). SHRM Theory in the Post-Huselid Era: Why It Is Fundamentally Misspecified. Industrial Relations: A Journal of Economy and Society, 49(2), 286-313.

Kehoe, R. R., & Wright, P. M. (2013). The impact of high performance human resource practices on employees' attitudes and behaviors. *Journal of Management, 39*(2), 366-391.

Konrad, A. M., & Linnehan, F. (1995). Formalized HRM structures: Coordinating equal employment opportunity or concealing organizational practices? *Academy of Management Journal, 38*(3), 787-820.

Kozlowski, S. W. J., & Klein, K. J. (2000). A multilevel approach to theory and research in organizations: Contextual, temporal, and emergent processes. In K. J. Klein & S. W. J. Kozlowski (Eds.), *Multilevel theory, research and methods in organizations: Foundations, extensions, and new directions* (pp. 3-90). San Francisco, CA: Jossey-Bass.

Lepak, D. P., & Snell, S. A. (1999). The human resource architecture: Toward a theory of human capital allocation and development. *Academy of Management Review, 24*(1), 31-48.

Levitt, B., & March, J. G. (1988). Organizational learning. *Annual Review of Sociology, 14*(1), 319-340.

Lewin, K. (1951). *Field theory in social science*. New York: Harper & Row.

Liao, H., Toya, K., Lepak, D. P., & Hong, Y. (2009). Do they see eye to eye? Management and employee perspectives of high-performance work systems and influence processes on service quality. *Journal of Applied Psychology, 94*(2), 371-391.

Luhmann, N. (1990). *Essays on self-reference*. New York: Columbia University Press.

Luhmann, N. (1995). *Social systems*. Stanford, CA: Stanford University Press.

Luhmann, N. (2003). Organization. In T. Bakken & T. Hernes (Eds.), *Autopoietic organization theory: Drawing on Niklas Luhmann's social systems perspective* (pp. 31-52). Herndon, VA: Copenhagen Business School Press.

Marler, J. H. (2012). Strategic human resource management in context: A historical and global perspective. *Academy of Management Perspectives, 26*(2), 6-11.

Mathews, K. M., White, M. C., & Long, R. G. (1999). Why study the complexity sciences in the social sciences? *Human Relations, 52*(4), 439-462.

McMahan, G. C., & Harris, C. M. (2012). Measuring human capital: A strategic human resource management perspective. In J. Paauwe, D. Guest & P. M. Wright (Eds.), *HRM & performance: Achievements & challenges*. UK: Wiley.

Meyer, J. P., Jackson, T. A., & Maltin, E. R. (Eds.). (2008). *Commitment in the workplace: Past, present and future* (Vol. 1). Thousand Oaks, CA: Sage Publications.

Meyer, J. W., & Rowan, B. (1977). Institutionalized organizations: Formal structure as myth and ceremony. *American Journal of Sociology, 83*(2), 340-363.

Miner, A. S. (1994). Seeking adaptive advantage: Evolutionary theory and managerial action. In J. A. C. Baum & J. V. Singh (Eds.), *Evolutionary dynamics of organizations* (pp. 76-89). New York: Oxford University Press.

Nassehi, A. (2005). Organizations as decision machines: Niklas Luhmann's theory of organized social systems. *Sociological Review, 53*(s1), 178-191.

Nelson, R. R., & Winter, S. G. (1982). *An evolutionary theory of economic change*. Cambridge, MA: Belknap Press of Harvard University Press.

Nonaka, I., & Takeuchi, H. (1995). *The knowledge-creating company: How Japanese companies create the dynamics of innovation*. New York: Oxford University Press.

Oliver, C. (1991). Strategic responses to institutional processes. *Academy of Management Review, 16*(1), 145-179.

Paauwe, J. (2004). *HRM and performance: Achieving long-term viability*. New York: Oxford University Press.

Paauwe, J., & Boselie, P. (2003). Challenging 'strategic HRM' and the relevance of the institutional setting. *Human Resource Management Journal, 13*(3), 56-70.

Pak, J., & Kim, S. (in press). Team manager's implementation, high performance work systems intensity, and performance: A multilevel investigation. *Journal of Management*.

Patel, P. C., Messersmith, J. G., & Lepak, D. P. (2013). Walking the tightrope: An assessment of the relationship between high-performance work systems and organizational ambidexterity. *Academy of Management Journal, 56*(5), 1420-1442.

Pfeffer, J. (1998). Seven practices of successful organizations. *California Management Review, 40*(2), 96-124.

Pfeffer, J., & Salancik, G. R. (1978). *The external control of organizations: A resource dependence perspective*. New York: Harper & Row.

Piderit, S. K. (2000). Rethinking resistance and recognizing ambivalence: A multidimensional view of attitudes toward an organizational change. *Academy of Management Review, 25*(4), 783-794.

Piening, E. P., Baluch, A. M., & Ridder, H.-G. (2014). Mind the intended-implemented gap: Understanding employees' perceptions of HRM. *Human Resource Management, 53*(4), 545-567.

Porter, M. E. (1985). *Competitive advantage: Creating and sustaining competitive performance*. New York: Free Press.

Pudelko, M., & Harzing, A. W. (2007). Country-of-origin, localization, or dominance effect? An empirical investigation of HRM practices in foreign subsidiaries. *Human Resource Management*, 46(4), 535-559.Rabl, T., Jayasinghe, M., Gerhart, B., & Kühlmann, T. M. (2014). A meta-analysis of country differences in the high-performance work system–business performance relationship: The roles of national culture and managerial discretion. *Journal of Applied Psychology, 99*(6), 1011-1041.

Sanders, K., Shipton, H., & Gomes, J. F. S. (2014). Guest editors' introduction: Is the HRM process important? Past, current, and future challenges. *Human Resource Management, 53*(4), 489-503.

Schuler, R. S., & Jackson, S. E. (1987). Linking competitive strategies with human resource management practices. *Academy of Management Executive, 1*(3), 207-219.

Schuler, R. S., Jackson, S. E., & Tarique, I. (2010). Human resource management in context. In B. R. & E. C. (Eds.), *Comparative Labour Law and Industrial Relations in Industrialised Market Economies* (Vol. 10, pp. 97-137). The Hague: Netherland: Kluwer Law International.

Scott, W. R., & Davis, G. F. (2007). *Organizations and organizing: Rational, natural, and open systems perspectives*. Upper Saddle River, NJ: Prentice Hall.

Seidl, D., & Becker, K. H. (2006). Organizations as distinction generating and processing systems: Niklas Luhmann's contribution to organization studies. *Organization, 13*(1), 9-35.

Shen, J. (in press). Principles and applications of multilevel modeling in human resource management research. *Human Resource Management*.

Shin, D., & Konrad, A. M. (in press). Causality between high-performance work systems and organizational performance. *Journal of Management*.

Singh, S., Darwish, T. K., Costa, A. C., & Anderson, N. (2012). Measuring HRM and organisational performance: Concepts, issues, and framework. *Management Decision, 50*(4), 651-667.

Subramony, M. (2009). A meta-analytic investigation of the relationship between HRM bundles and firm performance. *Human Resource Management, 48*(5), 745-768.

Sumelius, J., Björkman, I., Ehrnrooth, M., Mäkelä, K., & Smale, A. (2014). What determines employee perceptions of HRM process features? The case of performance appraisal in MNC subsidiaries. *Human Resource Management, 53*(4), 569-592.

Takeuchi, R., Chen, G., & Lepak, D. P. (2009). Through the looking glass of a social system: Cross-level effects of high-performance work systems on employees' attitudes. *Personnel Psychology, 62*(1), 1-29.

Takeuchi, R., Lepak, D. P., Wang, H., & Takeuchi, K. (2007). An empirical examination of the mechanisms mediating between high-performance work systems and the performance of Japanese organizations. *Journal of Applied Psychology, 92*(4), 1069-1083.

Tannenbaum, S. I., & Dupuree-Bruno, L. M. (1994). The relationship between organizational and environmental factors and the use of innovative human resource practices. *Group & Organization Management, 19*(2), 171-202.

Von Bertalanffy, L. (1968). *General system theory: Foundations, development, applications* (Rev. ed.). New York: George Braziller.

Watson, T. J. (2004). HRM and critical social science analysis. *Journal of Management Studies, 41*(3), 447-467.

Way, S. A., & Johnson, D. E. (2005). Theorizing about the impact of strategic human resource management. *Human Resource Management Review, 15*(1), 1-19.

Weick, K. E. (1979). *The social psychology of organizing* (2nd ed.). Reading, MA: Addison-Wesley.

Weick, K. E., Sutcliffe, K. M., & Obstfeld, D. (2005). Organizing and the process of sensemaking. *Organization Science, 16*(4), 409-421.

Wright, P. M., & Boswell, W. R. (2002). Desegregating HRM: A review and synthesis of micro and macro human resource management research. *Journal of Management, 28*(3), 247-276.

Wright, P. M., Dunford, B. B., & Snell, S. A. (2001). Human resources and the resource based view of the firm. *Journal of Management, 27*(6), 701-721.

Wright, P. M., & Haggerty, J. J. (2005). Missing variables in theories of strategic human resource management: Time, cause, and individuals. *Management Revue, 16*(2), 164-173.

Wright, P. M., & McMahan, G. C. (1992). Theoretical perspectives for strategic human resource management. *Journal of Management, 18*(2), 295-320.

Wright, P. M., Smart, D. L., & McMahan, G. C. (1995). Matches between Human Resources and Strategy among NCAA Basketball Teams. *Academy of Management Journal, 38*(4), 1052-1074.

Wright, P. M., & Snell, S. A. (1991). Toward an integrative view of strategic human resource management. *Human Resource Management Review, 1*(3), 203-225.

Wright, P. M., & Snell, S. A. (1998). Toward a unifying framework for exploring fit and flexibility in strategic human resource management. *Academy of Management Review, 23*(4), 756-772.

Table 2-1 Theoretical Perspectives in SHRM

	Economic	Psychological	Social	Critical
Assumptions	HRM as an investment in firm resources -Investment on human capital (HC theory) -Heterogeneity of resources (RBV)	People as key to the value creation process -Collective performance depends upon employees (AMO)	Institutional influences on the adoption of HRM practices -Satisfying stakeholders (aspirational framework) -Contextual conditions	HRM as work intensification -Conflicts of interest influence HRM development (political economy)
Contributions	Investigation of the impact of HRM on organizational performance	Investigation of the mediating roles of employee attitudes and behaviors	Investigation of external influences on HRM decisions	Investigation of possible exploitation of employees by employers
System process	Internal "inputs"	"throughputs"	External "inputs"	Negative "outputs"

Table 2-2 Theoretical Contributions of a General Systems Approach to SHRM

General Systems Approach	Theoretical Contributions to SHRM
Combining diffusion with evolution	• Search for and adoption of best practices • Situated implementation of abstract practices • Incremental practice development over time
Combining macro with micro elements	• Evolution at organizational level • Contexts shaped by previous actions influence new actions in the future • Evolution contingent on interpretation of organizational contexts
Combining system elements with system process	• Enacted structures by perceptions and interpretations of actors • Structural context changed by informal processes

Table 2-3 Key Contents and Processes for SHRM

Key Contents & Processes	Implications for SHRM research
External environment	• Importance of external stakeholders • Value of legitimacy (institutional perspective) • Consistency with society, industry, and market • Inflows and feedback on firm performance • Operationally closed (environmental impact is mediated through decision-makers' actions)
Internal environment	• Consistency with business strategy, organizational structure, and internal human resources • Tangible/intangible factors at the firm's disposal
People	• Implementation at the level of line managers and employees • Perception and interpretation of HRM systems
Employee outcomes	• Positive/negative attitudes & behaviors
Organizational outcomes	• Performance as a multi-level event • Organizational outcomes due to interactions among individuals
Recursivity	• Evolution of HRM practices through repetitive cycles of input, throughput, output, and re-input • Feedback from outcomes to HPWS • Evolution of HRM practices through a learning-by-doing process at the employee level
Process as a whole	• A whole process of input-throughput-output-re-input rather than its parts • Bottlenecks in HRM systems

Table 2-4 Human Resource Management Systems Principles

Principle	Key system features	Implications for SHRM research
#1. Holism	Emergence, synergy	Internal consistency of bundles of HRM practices • Importance of identifying sub-components • Importance of examining interactive effects among practices
#2. Hierarchy	Supra- and sub-systems	Multilevel approach to SHRM • System design based on identifying sub-systems (decomposition) • Flattening organizational structures
#3. Human system	Cooperation and competition, multiple purposes	Anti-mechanistic social systems • Competition for resources • People's responses to HRM practices
#4. Open but operationally closed system	Environmental influence, boundary, negative entropy	External contingency of HRM practices • Influence of environments on organizations • Internalized response to environments
#5. Process	Input- throughput-output- re-input	Adaptive approach to SHRM • Causal associations between HPWS and organizational performance • Self-correcting through feedback control
#6. Circularity	Adaptive process, routine	Longitudinal perspective • Adaptation to environments over time • Longitudinal data analysis
#7. Complex system	Organized complexity	Complex, but organized patterns in HRM • Complexity as a source of competitive advantage • Unanticipated consequences of managerial decisions due to system complexity
#8. Equifinality	Multiple paths	Demonstration of effectiveness of HRM practices • Evidence-based approach to SHRM • Alternatives to overcome deficiency
#9. Equilibrium vs. non-equilibrium	Homeostasis, growth, instability	Changes in HRM systems • Organizational growth through positive feedback • Maintaining consistency through negative feedback
#10.Goal-directedness	managerial wills, decision making	Alignment of SHRM at multiple levels • Alignment of goals and sub-goals

Table 2-5 Causal Associations

Theory	HPWS → Performance	Performance → HPWS
Resource-based view	*Competitive advantage* Investment in relatively inimitable capabilities based on human capital	
Behavioral theory	*AMO framework* Employee skills, abilities, and motivation	
Slack resources		*Resource availability* Long-term investment based on slack resources
Adaptive perspective		*Adaptation process* Learning-by-doing
General systems theory	*Wholeness* Synergy between individual HRM practices	*Feedback* Performance outputs generate inputs to the system

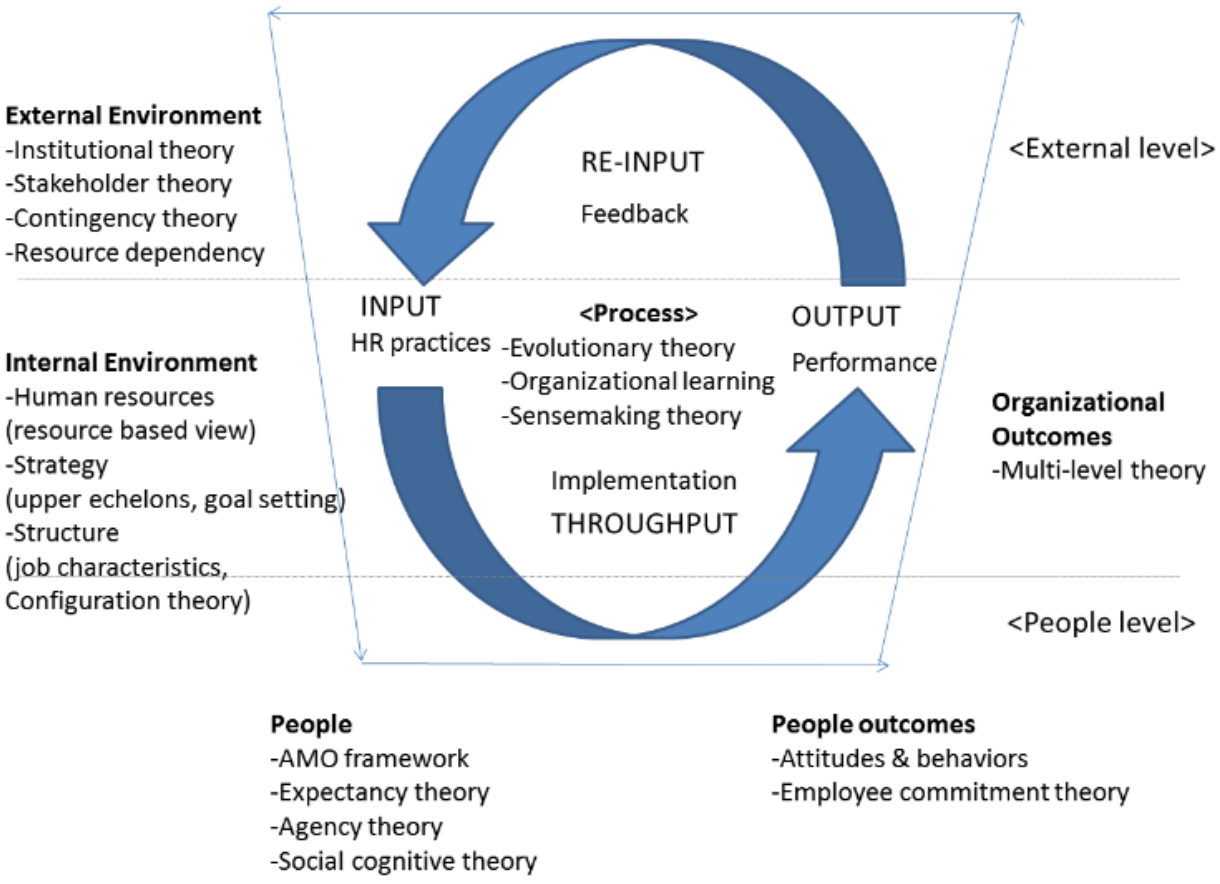


Figure 2-1 Typology of Human Resource Management System Theories

CHAPTER 3. CAUSALITY BETWEEN HIGH-PERFORMANCE WORK SYSTEMS AND ORGANIZATIONAL PERFORMANCE[1]

INTRODUCTION

Scholars argue that advanced human resource management (HR) practices, known as high performance work systems (HPWS), high-involvement work practices, or high-commitment HR practices, help organizations achieve better outcomes. Even with research efforts to demonstrate the positive effects of HPWS on performance (Becker & Huselid, 2006; Messersmith, Patel, & Lepak, 2011), organizations vary substantially in implementation of HPWS (Kaufman, 2010; Pil & MacDuffie, 1999). One explanation for the gap between academic findings and practical implementation is the possibility that practitioners adaptively implement HPWS based on previous performance outcomes. HPWS implementation takes time, effort and the development of management accounts (Gondo & Amis, 2013). Evidence of success during the early stages of adoption and implementation creates support and generates the slack resources needed to ensure further investment in HR practices. Because performance outcomes generate feedback determine whether HPWS is continued, expanded, or reconsidered, the possibility of reverse causality has to be taken seriously not only to generate a realistic estimate of the size of the HPWS effect on performance (Becker & Huselid, 2006; Gerhart, Wright, Mc Mahan, & Snell,

[1] This manuscript is co-authored with Alison M. Konrad and published Online First in Journal of Management. Shin, D. & Konrad A. M. (in press). Causality between high-performance work systems and organizational performance. *Journal of* Management.

2000; Wright, Gardner, Moynihan, & Allen, 2005), but also to explain why the diffusion of HPWS is still limited despite academic assertions of effectiveness.

Although the strategic human resource management perspective suggests that HR needs to be considered as a system, such consideration has been limited to synergistic interactions between HR practices (Subramony, 2009). In our approach based on general systems theory (Von Bertalanffy, 1968), firm performance results in feedback from the internal operation and the external environment. This feedback loop affects the flow of resources into the organization. Only with sufficient resource inflows can the organization build and sustain its internal throughput processes by strengthening or expanding HPWS (Kast & Rosenzweig, 1972).

In addition to building understanding of the antecedents of HPWS, the general systems approach also addresses concerns that prior theorizing has treated HPWS as something that can be implemented at will. This assumption neglects the costs associated with HPWS and the capabilities required to implement these complex systems. A high level of previous firm financial performance creates the slack resources needed to facilitate organizational implementation of new or complex practices (Cyert & March, 1963; Pfeffer & Salancik, 1978). The feedback loop in the general systems approach also suggests that HPWS is implemented through an adaptive process (Miner, 1994). Organizations incrementally adapt HPWS as they accumulate knowledge of and experience with these practices. Therefore, strong organizational performance based on HPWS supports further development of these systems.

Serious conceptual and empirical consideration of the possibility that performance causes HPWS as well as the reverse is important for both theory and practice. The possibility of reverse causality suggests that prior effect size estimates are inflated (Wright, et al., 2005). If a

substantial proportion of the .28 (Combs, Liu, Hall, & Ketchen, 2006) to .43 (Subramony, 2009) meta-analytic effect sizes reported for the impact of HPWS on performance is due to reverse causality, then the performance case for HPWS may have been oversold to practitioners. Also, understanding the impact of performance on adoption of HPWS helps to explain why some firms do not implement these systems, despite data suggesting that doing so will drive improved performance. Finally, findings of reverse causality potentially support the proposition that HPWS can generate competitive advantage for firms. If a substantial number of firms that would benefit from HPWS fail to do so because of insufficient resources or motivation, then competitors face difficulties in trying to imitate these systems. Processes that are difficult for competitors to imitate create longer-run competitive advantage to HPWS adopters (Barney, 1991). As such, the adaptation perspective of general systems theory extends explanations of how HPWS creates competitive advantage for firms.

The aim of this study is to test the direction of causality between HPWS and performance using a large longitudinal dataset. To our knowledge, this study is the first to examine the effect of HPWS on performance as well as the effect of performance on HPWS with data from three time points.

BACKGROUND AND HYPOTHESES

Scholars have pointed out that the accumulated evidence of the positive association between HPWS and firm performance needs to be supplemented by a causal explanation of this relationship (e.g., Guest, 2011). Theories linking HPWS to performance have included the resource-based view of the firm and the behavioral perspective. We add arguments for reverse

causation whereby performance leads to implementation of HPWS based on the availability of slack resources and the adaptive implementation of HR practices. We apply general systems theory as a framework that integrates both causal directions into a larger conceptual perspective. The theoretical foundations of these causal arguments are summarized in Table 3-1.

General Systems Theory and Causality

Influential theories in strategic human resource management (SHRM) such as the behavioral (ability, motivation, and opportunity or AMO) perspective and the resource-based view (RBV) have typically portrayed HR practices as closed systems, focusing research on the linear processes linking HPWS as an input to performance as an output (Wright & McMahan, 1992). General systems theory stresses that outputs generate the inputs that are required to maintain the system (Katz & Kahn, 1966). The theory implies that in order to understand the relationship between HPWS and performance, it is necessary to consider the feedback loop from performance to HPWS as well as the impact of HPWS as an input affecting performance outcomes.

While the RBV and AMO perspectives explain the unidirectional relationship between HPWS and firm performance, general systems theory has the potential to add an explanation of the reverse causal effect of firm performance on the implementation of HPWS. General systems theory stresses "wholeness" where systems work in totality rather than in parts (Von Bertalanffy, 1968). In this view, sub-systems are synergistic in producing desirable outcomes. Thus, systems theory provides a theoretical rationale explaining why individual HR practices work as a bundle. Another key feature of systems theory is the input-throughput-output model (Kast & Rosenzweig, 1972). As such, investment in HPWS (input) transforms employee behaviors

(throughput), resulting in desirable outcomes (output) (Wright & McMahan, 1992; Wright & Snell, 1998). Furthermore, organizational outputs generate responses from the environment which affect future inputs. Within this framework, performance is a critical determinant of future resource flows into the firm. With a strong input of resources, the firm is able to build and strengthen its throughput processes, and one method of doing so is to build or extend its HPWS.

General systems theory posits that feedback can be either positive or negative (Kast & Rosenzweig, 1972; Von Bertalanffy, 1968). Under negative feedback where increased outputs lead to a decrease in inputs, organizations may not reap long-term benefits from their activities because the effects of the throughput process plateau or diminish over time (Ashmos & Huber, 1987; Katz & Kahn, 1966). Negative feedback is also consistent with criticisms that HPWS is exploitative in nature. In this view, increases in performance will diminish over time because stresses on employees make HPWS unsustainable (Godard, 2004).

By comparison, positive feedback indicates that outcomes amplify the impact of inputs (Kast & Rosenzweig, 1972; Von Bertalanffy, 1968). Under positive feedback where inputs produce more outputs which in turn produce more inputs, HPWS and performance are mutually enhancing, and the HPWS-performance linkage becomes a "virtuous cycle." A positive feedback loop implies that the effect of HPWS on performance is sustainable because performance growth from HPWS is reinforced through ongoing employee participation, satisfaction and commitment (Allen & Wright, 2007; Gollan, 2005; Pfeffer, 1995).

The presence of feedback loops constitutes a distinctive feature of general systems theory, which is the assumption of negative entropy (Kast & Rosenzweig, 1972). Unlike closed systems where there is a tendency toward resource depletion, in open systems, strong previous

performance drives the accumulation of resource inputs. These inputs provide organizations with the ability to build and maintain their internal throughput systems, including investment in HR. One possible concern for HPWS is that its benefits might deteriorate over time as implementation efforts lapse, costs grow or competitors mimic the system. General systems theory implies, however, that such entropy is overcome through the regenerative process as organizations reinvest some of the resources generated by strong performance. Thus, from a general systems perspective, HPWS and organizational performance are likely to be mutually enhancing. By comparison, with low previous performance, discretionary resources are reduced, limiting the ability to invest in HPWS.

In addition, general systems theory posits the equifinality of means for achieving organizational goals. Pfeffer (1981) argues that departments and functions within an organization compete for limited resources. As such, when decision makers perceive performance shortfalls after implementing HPWS, they might prioritize other means to achieve profitability (Cyert & March, 1963; Salge, 2011). If the positive linkage from HPWS to organizational performance is not established, decision makers may reduce their future investment in HPWS. In summary, strong financial performance provides organizations with the slack resources, the information and the managerial motivation needed to make longer-term investments in practices like HPWS.

Impact of HPWS on Firm Performance

Organizations use HPWS to develop employee knowledge, skills, and abilities and enhance employee motivation by providing training, empowerment, and contingent rewards. Empirical studies have linked each of the components of HPWS to performance outcomes. For

instance, investment in employee training is positively related to performance (e.g., Delaney & Huselid, 1996; Kalleberg & Moody, 1994). Employee involvement programs are designed to motivate employees to voluntarily contribute to the development of the organization. Evidence suggests that empowerment is associated with positive outcomes such as positive employee attitudes (Tesluk, Vance, & Mathieu, 1999) and organizational innovation (Yang & Konrad, 2011). Relatively high compensation with merit-based incentives is also a key feature of HPWS. Way (2002) argues that the advantage of performance-based payment is that it promotes employee skill development and motivation to produce superior outcomes. In a study by Kalleberg and Moody (1994), high reward was positively related to performance, and Lazear (1996) found a positive relationship between merit-based payment and productivity.

Theoretical foundations. Moving beyond empirical evidence linking specific HR practices to performance, explanations of the effect of HPWS on performance have largely relied on two theoretical traditions: the RBV and the behavioral perspective (Jiang, Lepak, Hu, & Baer, 2012). The RBV posits that HR is a potential source of competitive advantage that can create value for firms (Barney, 1991). In this perspective, HPWS is a reasonable investment in the people who constitute the organization-specific human capital driving firm performance (Wright, Dunford, & Snell, 2001). The behavioral perspective suggests that HR practices encourage employees to engage in productive behaviors. Specifically, expectancy theory (Lawler, 1986) posits that HPWS creates a high level of expectancy (strengthening the effort-performance link) and instrumentality (strengthening the performance-reward link) among employees, which enhances motivation and productivity (Guest, 1997; MacDuffie, 1995). Under these perspectives, employee ability, motivation, and opportunity (AMO) have been suggested as key

linking mechanisms that promote high performance as a result of HPWS (Appelbaum, Bailey, Berg, & Kalleberg, 2000; Lepak, Liao, Chung, & Harden, 2006).

In addition, systems perspectives stress that complex organizational systems are valuable for managing turbulent environments (Burns & Stalker, 1961; Scott, 2008). Organizations with complex systems can outperform their counterparts because structural complexity allows them to absorb environmental instability with a greater variety of managerial responses to change (Boisot & Child, 1999). Empirical evidence supports the notion that organizational complexity enhances performance (e.g., Ashmos, Duchon, & McDaniel Jr, 2000; Walters & Bhuian, 2004). HPWS is a complex system, not a single individual practice, and its effects result from integration among the separate practices rather than the additive effects of practices in isolation (Subramony, 2009). HPWS helps organizations respond to dynamic environments by motivating employees to identify and respond to problems and opportunities arising from environmental changes. Because employees have enhanced knowledge and skill, they are more able to respond effectively to changes. Because employees are empowered and incentivized, they are more motivated to proactively respond to changes rather than wait for instruction from management (Jiang, et al., 2012).

Productivity as a performance outcome. Productivity is a commonly used measure of firm performance in the SHRM field (Combs, et al., 2006). Economists argue for the importance of productivity measures for assessing the performance of both firms (Dhawan, 2001) and the economy as a whole (Zhu, 2012). Productivity measures reflect the efficiency of the processes used to transform inputs into outputs and the effective use of resources for value creation (Tangen, 2005).

HPWS generates productivity increases by providing employees with knowledge, skills, empowerment and incentives (Lawler, 1986). Both the RBV and the AMO (behavioral) perspectives provide theoretical bases for predicting a positive effect of HPWS on firm productivity. Consistent with the RBV, skill and knowledge-building investments help employees identify ways to make their work processes more efficient (Wright, McMahan, & McWilliams, 1994). Knowledgeable and skilled employees are more capable of generating valuable ideas to enhance productivity. Consistent with the AMO perspective, the ability to add value increases motivation to suggest improvements by strengthening the effort – performance link. Empowerment motivates employees to identify improvements by giving them the authority to act on new ideas. Such authority strengthens the effort – performance link for employees by reducing potential barriers to idea implementation. Incentives motivate employees to engage in the discretionary effort required to identify and act upon inefficiencies by strengthening the link between performance and rewards (Lawler, 1986). Also, critics of HPWS argue that a primary effect of these systems is to increase productivity by pressuring employees to work harder under increased surveillance and control (Godard, 2004). In summary, multiple conceptual arguments support the prediction that HPWS increases productivity.

Empirical testing. Theoretical perspectives suggesting a positive association between HPWS and organizational performance have been supported by empirical findings in both service and manufacturing settings. Overall, Combs et al. (2006) estimated the size of the relationship (ρ) between HPWS and firm performance at .20. Subramony's (2009) meta-analysis of the effects of HR on performance outcomes showed small to moderate effect sizes of .26 for empowerment-enhancing HR practices, .24 for motivation-enhancing practices, and .17 for skill-enhancing practices. Jiang and colleagues' (2012) meta-analysis of the effects of HR on

financial performance showed small to moderate effect sizes of .20 for opportunity-enhancing HR practices, .27 for motivation-enhancing practices, .26 for skill-enhancing practices.

However, studies of HPWS have typically relied on cross-sectional data, and the positive effect of HPWS on performance may be inflated in cross-sectional studies due to heterogeneity bias and measurement error (Huselid & Becker, 1996). To date, the most comprehensive test of the direction of the causal relationship between HPWS and performance has been that conducted by Wright and his colleagues (2005). They analyzed correlations between HR practices and past, concurrent, and subsequent performance in a sample of 45 business units. Even though the number of employee participants was 13,005, limited sample size at the business unit level and the short time lag (3 to 15 months) limited the ability of the study to determine the direction of the causal association (Wright, et al., 2005). Three to fifteen months may not be a long enough time frame to observe the effects of HPWS on performance. Huselid and Becker (1996) identified "implementation-to-benefits lags" whereby the effects of HR systems on performance were stronger one and two years later compared to the contemporaneous association. This result suggests that the benefits of introducing or changing HR practices take one to two years to be realized. Hence, an appropriate test of the causal association between HPWS and performance should utilize a one to two-year time lag between measures in order to model the causal effect properly.

Beyond appropriate time lags, it is also important to control for prior performance when examining the association between HPWS and later performance. A limited number of studies has done so, and some of these studies have shown no significant association between past HPWS and current performance when past performance levels are controlled (e.g., Guest, Michie, Conway, & Sheehan, 2003; Wright, et al., 2005). These null findings may be due to lack

of statistical power to detect a small effect after controlling for past performance. Hence, by testing the association between earlier HPWS and later performance when earlier performance is controlled in a large national dataset, the current study adds an important test of the causal links between HPWS and performance. However, we will not be able to assess the mechanisms responsible for the observed effects.

Hypothesis 2.1: HPWS at an earlier time point is positively associated with later productivity when productivity at the earlier time point is controlled.

Impact of Performance on Implementation of HPWS

One of the factors that may be extant in the complex causal chain linking HPWS and performance is the impact of past performance on future investments in HR. Prior authors have argued that HR investments are strongly affected by firm financial performance: "Firms facing difficulties reduce their variable pay, merit increases, and training budgets (Wright, et al., 2005, p. 419)." This intuition is empirically supported by studies examining the component practices of HPWS (Boselie, Paauwe, & Jansen, 2001).

A few studies have tested the possibility of reverse causality where performance leads to HPWS (e.g., Huselid, 1994; Shih, Chiang, & Hsu, 2006; Wright, et al., 2005), but conceptually, the main purpose of those studies was to demonstrate the causal effects of HPWS on performance. As such, they treated reverse causality as a possible methodological limitation that should be overcome or controlled. Guest (2011) concludes in his recent review that there is considerably more evidence for an association between HR practices and performance than for a causal relation between these two constructs. He further demonstrates that past performance

strongly predicts current performance, more so than HR practices. Taking the effects of past performance seriously, we develop conceptual arguments for why organizations with strong former performance are more likely to adopt HPWS.

Theory suggests several mechanisms linking past performance to future adoption of HR practices. For instance, resource dependency theory emphasizes the importance of the availability of resources to enable organizational action (Pfeffer & Salancik, 1978). While low performing organizations tend to pursue control-based HR practices in order to contain costs, high performing organizations can adopt more advanced HR practices to recruit and retain talent (Boselie, Dietz, & Boon, 2005). High performing organizations have greater ability to develop HPWS due to the availability of slack resources generated by strong financial outcomes. Furthermore, implementation of HPWS is a process that occurs over time (Guest & Bos-Nehles, 2013). Feedback regarding performance effects at earlier stages of adoption affects management's ability and motivation to support continued HPWS implementation.

Slack resources. Organizational performance is an indicator of organizational slack because slack typically grows as organizational performance increases (Cyert & March, 1963; Singh, 1986). Previous financial performance determines the level of slack resources that an organization can invest in social domains such as employees, community, and environment (Waddock & Graves, 1997). While slack resources can remain unabsorbed as retained earnings, they can also be absorbed by increasing investments (Singh, 1986; Tan & Peng, 2003). Thus, slack resources enable organizations to invest in HPWS.

Although HPWS is intended to enhance performance, it "also carries a cost since HR must itself be internally produced (e.g., by an HR department) or bought in external markets (e.g., HR

consultants or vendors)" (Kaufman & Miller, 2011, p. 536). Because establishing HPWS can be costly, firms may not adopt HPWS even though they would benefit from doing so (Godard, 2004; Godard & Delaney, 2000). The beneficial effects of HPWS rely on human capital, which is generally a long-term investment aimed at contributing to a firm's future profitability (Lepak & Snell, 1999). Firms with slack resources based on strong financial performance can seek long-term investments, whereas firms having financial performance difficulties have little discretion to make long-term investments, including investments in people (Waddock & Graves, 1997).

Rather than investing in people and HR systems, organizations that experience declining performance may focus on reducing labor costs. Organizations adopting cost-cutting strategies are less likely to invest in long-term training and development practices (Cascio, 1993). Reducing expenses by controlling HR costs may result in short-term profits, and companies experiencing deficits may cut HR investments in order to demonstrate the profitability of their businesses to investors. In addition, companies face the principal-agent problem. Because executives are often compensated based on short-term profits, their decisions are likely to favor short-term profits over longer-term investments (Bebchuk, Cohen, & Spamann, 2010). Executives may be particularly incentivized to forgo longer-term investments when financial performance is poor because doing so maximizes retained earnings, and hence, executive bonuses.

In comparison to the situation faced by decision-makers in low performing organizations, decision-makers in high performing organizations are more likely to find that HPWS is suitable for their needs. High performing organizations are able to provide competitive compensation and innovative practices in order to sustain their profitability. They require HR systems that support talented employees who will drive future performance. Thus, resource-rich

organizations tend to adopt sophisticated HR practices to recruit and retain talent (Boselie, et al., 2005).

Adaptation perspective on HPWS implementation. Relatively little research has examined the nature of HPWS implementation. Consistent with the general systems approach, we consider the adaptation perspective on the development of managerial practices. In this view, managerial practices develop through ongoing environmental scanning, strategic response formulation, and structural adjustment processes whereby organizations achieve "adaptive advantage" by adopting new practices, recombining existing practices, and achieving interactions among practices (Miner, 1994). As such, organizations experience structural inertia or path dependence, such that consistency of HPWS over time is expected (Bowen & Ostroff, 2004). Therefore, structural changes are more often incremental than radical (Salge & Vera, 2013). Little is known about the extent to which HPWS implementation is incremental or radical, however, Pil and MacDuffie (1999) argue that organizations implement HPWS incrementally through an adaptive process because its costs are absorbed in the short term whereas its benefits take time to accumulate.

Providing a conceptual foundation for future work in this area, Guest and Bos-Nehles (2013) outline four components of the implementation process, arguing that the components are not always separate or sequential. In their view, implementation begins with a decision by HR managers and senior leaders to introduce an HR practice. HR managers then develop the practice at a particular level of quality, from superficial compliance with institutional requirements (Edelman, 1992) to purposeful customization to fit organizational needs (Gondo & Amis, 2013). Once the practice is introduced and developed by HR, the next phase involves

implementation by line managers. The final component of the implementation process is the quality of line management implementation, which can vary widely (Kulik & Bainbridge, 2006).

This multi-faceted view implies that the process of HPWS implementation takes substantial time and management effort with significant potential for implementation difficulties. As such, the model implies that there are no guarantees of success, which is consistent with Barney's (2001) view that capacity to implement new practices varies between organizations and can constitute a competitive advantage.

The four components of implementation focus attention on several potential problems. First, HR must introduce the concept of HPWS to senior managers and persuade them to invest in making the organizational changes needed for HPWS adoption (Guest & Bos-Nehles, 2013). Next, HR must customize HPWS to make it fit the local context, which requires substantial effort as well as stakeholder consultation. Gondo and Amis (2013) argue that practices are essentially reconstituted each time they are implemented, "practices that diffuse widely are characterized by situated actors who continuously work at establishing deep connections between specific situational and the more abstract ideational aspects of a practice" (p. 231). Determining how the abstract idea of HPWS can work in a specific establishment requires organizational members to identify and develop new sets of skills, beliefs, and collaborative routines (Edmondson, Bohmer, & Pisano, 2001). As HR works with stakeholders to develop HPWS practices, the organization develops its own HPWS version, which line managers are then expected to implement. Implementation by line managers is known to be a problem for HR practices in general (Khilji & Wang, 2006). The quality of implementation may vary across organizational units because line managers either do not know how to or do not want to implement HPWS practices (Zbaracki, 1998). The impact of HPWS varies due to

implementation quality, which can range from thorough, to superficial, to active rejection (Wright & Nishii, 2013).

Consistent with the notion of positive feedback loops in general systems theory, (Von Bertalanffy, 1968), evidence of the early and ongoing success of HPWS is likely to be quite valuable for ensuring implementation effectiveness. As the four-component model of HR implementation implies, even in cases where senior leaders support the introduction of HPWS, ongoing support is not guaranteed, "Senior executives may be unwilling to continue to invest in HR practices they perceive as providing no identifiable benefit and line managers are unlikely to persist in devoting their time to implementing practices they perceive to have no impact" (Guest & Bos-Nehles, 2013, p. 84). Guest and King (2004) documented that senior managers often hold negative views of HR practices as transient and unnecessary bureaucratic fads. As such, for HPWS implementation to be successful, HR managers must build ongoing arguments for the continued provision of managerial resources and support (Gondo & Amis, 2013). Productivity improvements are likely to be a particularly persuasive form of evidence of the value of HPWS because they imply that efficiency has improved. Productivity improvements reflect gains in the efficiency of the processes used to transform inputs into outputs and the effective use of resources for value creation (Tangen, 2005). Hence, productivity increases constitute a core source of the organizational slack needed to sustain complex organizational changes like the implementation of HPWS.

Evidence that productivity improvements lead to ongoing HPWS enhancements, which in turn generate productivity gains would indicate the existence of a positive feedback loop between HPWS and productivity. The positive feedback loop posited by general systems theory suggests that HPWS implementation takes place through an adaptive process. Rather than seeing

HR practices as a top-down resource allocation decision at a single point in time, organizations develop HPWS through a learning-by-doing approach to translate the abstract concept of HPWS into a concrete set of practices that fit the local context (Gondo & Amis, 2013). As such, organizational adaptation of HPWS is likely to be accomplished incrementally as managers accumulate knowledge and experience in its operation. This logic suggests that previous performance is a predictor of increases in HPWS implementation because organizations adopt more HPWS based on previous successes.

Hypothesis 2.2: Productivity at an earlier time point is positively associated with the level of HPWS at a later time point when earlier HPWS is controlled.

METHOD

Sample

The Workplace and Employee Survey (WES) administered by Statistics Canada to a stratified sample of Canadian businesses provided the data for hypothesis testing (Statistics Canada, 2009). The dataset is longitudinal and national in scope with more than 6,000 employers taking part. The 2001, 2003, and 2005 WES provided time 1, 2, and 3 data on performance and HPWS. The response rates to the 2001, 2003 and 2005 surveys were 83.1 percent, 77.7 percent, and 85.1 percent, respectively. Measures for this study were taken from the workplace survey, with the respondent being a senior manager at each establishment.

We used data from employers who responded to the WES at all three time points to test longitudinal effects. Considering that small organizations are likely to be operated without

advanced HR systems, companies with fewer than 20 employees were excluded from the analysis. Respondents with missing data were excluded for a final sample of 2,228. The sample was weighted to reflect population estimates, as required by Statistics Canada. Means, standard deviations, and correlations are shown in Table 3-2.

Measures

HPWS. Measures of HPWS have typically included training, incentive compensation, employee involvement or empowerment, and participative work design (Combs, et al., 2006; Huselid, 1995). The WES contains a set of HR practices that allows researchers to study HR practices as a system (e.g., Mohr & Zoghi, 2008; Zatzick & Iverson, 2006). Using the WES data, HPWS is measured with five sets of practices in the areas of training, employee empowerment, compensation, benefits, and work design (see Appendix A). We followed previous studies in using additive indices of HR practices (MacDuffie, 1995; Wright, et al., 2005; Youndt, Snell, Dean Jr, & Lepak, 1996). Each specific practice in these five areas is coded as a dichotomous variable (1=yes, 0=no). Adoption of practices in each area is obtained by calculating the mean across the specific practices. In all cases, the Kuder-Richardson formula for calculating internal consistency reliability (α) is used for indices combining dichotomous variables. While we have little information to test the validity of these measure, we did find that the correlation between the training measure and separately reported costs of training per capita indicated a medium-sized association (r=.32 at T1, r=.39 at T2, r=.41 at T3).

The *training* measure consists of survey questions regarding 13 types of classroom training and 13 types of on-the-job training (T1 α =.87, T2 α =.86, T3 α =.86). Items include new employee orientation, professional training, managerial/supervisory training, apprenticeship

training, sales and marketing training, computer hardware training, computer software training, other office and non-office equipment training, group decision-making or problem-solving training, team-building/leadership/communication training, occupational health and safety or environmental protection training, literacy or numeracy training, and other training.

Empowerment is measured as employee participation in 12 types of decisions: daily planning of individual work, weekly planning of individual work, follow-up of results, customer relations, quality control, purchase of necessary supplies, maintenance of machinery and equipment, setting staffing levels, filling vacancies, training, choice of production technology, and product/service development. Survey respondents indicated who in the organization normally makes decisions in each of these areas. If the respondent said that "non-managerial employees" or "the work group" normally makes a decision, the item was coded as yes (1), otherwise no (0) (T1 α =.81, T2 α =.81, T3 α =.84).

The *compensation* measure consists of 5 items. Senior managers reported whether the compensation system at their establishment includes each of the following incentives (1=yes, 0=no): individual incentive systems, group incentive systems, profit-sharing plan, merit pay and skill-based pay, and employee stock plans. Reliability estimates for this measure were relatively low (T1 α =.60, T2 α =.64, T3 α =.54), which is consistent with compensation systems as formative constructs where practices potentially substitute for one another. We retained the measure because of the importance of financial incentives for the motivational aspect of HPWS.

The measure of *benefits* includes 11 items funded solely by employers or by employers and employees together (1=yes, 0=no): pension plan, life and/or disability insurance, supplemental medical, dental care, group RRSP (a Canadian form of defined contribution

retirement savings plan), stock purchase or other savings plan, supplements to employment insurance benefits, worker's compensation, severance allowances, flexible benefits plan, and other (T1 α =.78, T2 α =.76, T3 α =.76).

Six practices are included in the *work design* portion of the HPWS measure. Managers reported whether each of the following practices existed at their establishment (1=yes, 0=no): an employee suggestion program, information sharing with employees, joint labor-management committees, self-directed work groups, flexible job design, and problem-solving teams (T1 α =.67, T2 α =.73, T3 α =.73).

Productivity. We used the widely studied measure of productivity as a measure of financial performance. Consistent with prior research (e.g., Datta, Guthrie, & Wright, 2005; Huselid, 1995; Konrad & Mangel, 2000), productivity was calculated as the logarithm of the gross operating revenue divided by the number of employees.

Controls. Firm size, based on the logarithm of number of employees, was controlled because large firms are more likely to establish HR practices due to economies of scale (Datta, et al., 2005; Huselid, 1995; Konrad & Linnehan, 1995). In addition, industry category (manufacturing and service) was controlled because industries experience different growth and performance patterns (Datta, et al., 2005). Unionization has been studied as a variable that affects both HPWS and performance (Liu, Guthrie, Flood, & MacCurtain, 2009). To control for unionization, an establishment was considered to be unionized (coded 1) if one or more employees were covered by a collective bargaining agreement (otherwise, coded 0).

Analysis

To test causality between HPWS and performance, we tested a cross-lagged panel model, with structural equation modeling (using AMOS), which has been suggested as the most suitable method for analyzing cross-lagged designs (Finkel, 1995; Little, Preacher, Selig, & Card, 2007) Our cross-lagged model was designed to meet the three principles of causality provided by Gollob and Reichardt (1991): considering the ordering of causes and outcomes, controlling autoregressive influences, and setting an appropriate time lag length. Auto-correlated errors were accommodated in testing the longitudinal panel model (Little, 2013), reflecting systematic measurement error over time (Gerhart, et al., 2000). HPWS at an earlier time point predicted performance at a later time point when performance at the earlier time point was controlled, and performance at an earlier time point predicted HPWS at a later time point when HPWS at the earlier time point was controlled. The two-year time lag was based on the "implication-to-benefits lags" suggested by Huselid and Becker (1996). Following standard guidelines in designing structural equation modeling with longitudinal data (MacCallum & Austin, 2000), we include the cross-sectional correlation between HPWS and performance along with the hypothesized lagged effects. The three control variables of industry, firm size, and unionization were modeled as predictors of T1 HPWS and performance (see Figure 3-1). This model fit the data better than other possible models did.

RESULTS

To examine the validity of our measurement across different time periods, we conducted three measurement invariance tests: metric invariance, invariant uniqueness, and invariant factor variance (see Table 3-3). Although the chi-square difference test is widely used in testing measurement invariance, this test is likely to reject measurement invariance because of its

sensitivity to a large sample size (Vandenberg & Lance, 2000). A practical alternative for testing measurement invariance with large sample sizes is to check the Δ CFI, and because Δ CFI was less than or equal to .01, measurement invariance for the HPWS measure was supported (Byrne & Stewart, 2006; Cheung & Rensvold, 2002; Shek & Ma, 2010).

We present results for nested model tests in Table 3-4. Four competing models were considered to evaluate causality between HPWS and performance. We compared a stability model without cross-lagged effects, a standard causal model with paths from earlier HPWS to later performance, a reverse causal model with paths from earlier performance to later HPWS, and a reciprocal causal model with paths from earlier HPWS to later performance and from earlier performance to later HPWS. Chi-square difference tests support the reciprocal model because adding reciprocal causation significantly improved model fit.

The overall model fit testing the relationship between productivity and HPWS is satisfactory (cmin/df=12.77, p=.000, CFI=.92, GFI =.92, RMSEA=.07, TLI=.90, RMR=.01). Supporting H1, the paths from T1 HPWS to T2 productivity ($p < .01$) and from T2 HPWS to T3 productivity ($p<.001$) are both positive and significant (see Figure 3-1). Supporting H2, the paths from T1 productivity to T2 HPWS and from T2 productivity to T3 HPWS are also significant and positive ($p<.01$).

Additional Analyses

Comparison of cross-lagged to cross-sectional models. Following prior research (Huselid & Becker, 1996), we tested the cross-sectional models to compare the size of the path coefficients to those generated by the cross-lagged model. Findings indicated that the effect of

HPWS on productivity in the cross-sectional model (without controlling for previous performance) was .35 at T1, .38 at T2, .39 at T3 ($p<.001$), compared with the effect size of .03 between T1 and T2 and .07 between T2 and T3 in the cross-lagged model ($p<.01$). These comparisons show that effect size estimates are exaggerated in cross-sectional studies (Gollob & Reichardt, 1991; MacCallum & Austin, 2000). In addition, a lagged model without controlling previous performance produced effect sizes of .36 between T1 HPWS and T2 productivity, and .38 between T2 HPWS and T3 productivity, which is similar to the cross-sectional model. These results indicate the importance of controlling for previous performance when estimating the performance effect of HPWS.

Individual practice level. Some researchers have pointed out that the association between HPWS and performance may differ across each sub-dimension of HPWS (Combs, et al., 2006; Jiang, et al., 2012; Lepak, et al., 2006). We found that all components of HPWS positively predicted later performance either between T1 and T2 or between T2 and T3 or both (See Appendix B). Training positively predicted productivity from T2 to T3 but not from T1 to T2. Compensation and benefits positively predicted later productivity both from T1 to T2, and from T2 to T3. Work design showed a non-significant tendency ($p < .10$) in the prediction of productivity from T1 to T2 and no significant relationship to productivity from T2 to T3. The influence of T1 empowerment on T2 productivity was negative, but the influence of T2 empowerment on T3 productivity was positive. In sum, most of the HPWS components positively predicted productivity, but different practices showed different specific effects.

Productivity positively predicted later empowerment and benefits both from T1 to T2, and from T2 to T3. Productivity predicted training from T1 to T2 but not from T2 to T3. Productivity predicted compensation from T2 to T3 but not from T1 to T2. T1 productivity

positively predicted T2 work design, but T2 productivity negatively predicted T3 work design. In sum, productivity positively predicted most of the HPWS components, but different practices showed different specific effects. These findings suggest that in HPWS, individual practices are organized as a whole and their combined effects produce a general pattern of reciprocal causation between HPWS and performance.

Feedback analysis. We examined the feedback effect from productivity to HPWS by analysing T2 productivity as a mediator linking T1 HPWS and T3 HPWS (Cole & Maxwell, 2003; Little, et al., 2007; Preacher & Hayes, 2008). Before testing the mediation effect, we checked whether HPWS can be considered a time-dependent process. A Sobel test showed that T2 HPWS significantly mediated the association between T1 HPWS and T3 HPWS ($p<.001$). In addition, the correlations between the HPWS measures are higher among adjacent time points than among distant points. Specifically, the associations of T1 HPWS with T2 HPWS ($r=.71$) and T2 HPWS with T3 HPWS ($r=.68$) are stronger than the association of T1 HPWS with T3 HPWS ($r= .57$).

The main effect, the effect of T1 HPWS on T2 productivity and T2 HPWS on T3 productivity, was supported. The existence of feedback was tested by examining the effect of T2 productivity on T3 HPWS, which was supported ($p<.01$). In addition, a Sobel test confirmed that productivity at T2 mediated the effect of T1 HPWS on T3 HPWS ($p<.05$).

DISCUSSION

Previous theorizing has focused on the potential of HPWS to have positive effects on performance and treated the possibility of reverse causality between these two constructs

primarily as a methodological problem. This paper developed theory explaining how performance can be a causal factor leading to implementation of HPWS. A general systems theory perspective (Von Bertalanffy, 1968) suggests that the causal relationship between HPWS and performance is reciprocal and that high performance subsequent to the implementation of HPWS generates the information and slack resources needed for firms to continue strengthening their HR systems. SHRM theory has long considered HPWS as a system which when effective, evidences vertical linkage to firm strategy and horizontal linkages between its component parts (Delery & Doty, 1996). This paper contributes to theory by emphasizing the importance of feedback from the environment and the impact of the feedback loop where firm outputs affect the flow of information and resources as inputs into the organizational system. Our findings indicate positive feedback between HPWS and productivity whereby an increase in one results in a subsequent increase in the other, generating a virtuous performance cycle. The positive feedback loop contributes to logic explaining why the beneficial effects of HPWS may be difficult for competitors to imitate. As such, this model adds to understanding of how HPWS creates competitive advantage for firms (Barney, 2001).

The framework of general systems theory (Kast & Rosenzweig, 1972; Von Bertalanffy, 1968) suggests that performance outputs generate responses from the organizational environment that determine the future inflow of resources to the organization. When performance is strong, inputs in the form of continued resources and support allow the organization to build and maintain strong throughput processes, such as HPWS. This model suggests that HPWS implementation is an adaptive process based on learning-by-doing. Decision makers test HPWS and extend the application of the system based on successful experiences (Miner, 1994). Specific establishments develop their HPWS over time to improve its functioning and fit to the

needs of the local context (Gondo & Amis, 2013). Positive productivity results create the information needed to persuade decision-makers of the value of the HPWS as well as the slack resources required to make further investments in the system. Hence, the positive productivity effects of HPWS increase the firm's implementation capabilities. Firm differences in implementation capabilities mean that HPWS has the potential to create sustainable competitive advantage (Barney, 2001).

Prior research showing the association between performance and HPWS has largely relied on cross-sectional or post-predictive studies where researchers measure the relationship between current HPWS and past performance (Wright, et al., 2005). Although some scholars have raised methodological questions about the causality issue in HR studies, empirical research addressing this issue has been limited. We tried to overcome prior methodological problems by testing the associations between HPWS and performance using longitudinal data with three points in time, a two-year lag and a large sample size. In alignment with previous studies (Huselid & Becker, 1996), the cross-lagged model produced smaller coefficients for the effect of earlier HPWS on later performance than were observed in the cross-sectional model.

However, the smaller effect size does not mean that the contribution of HPWS on organizational performance is trivial. From the general systems perspective, the mutual causation observed between HPWS and productivity implies the existence of a positive feedback loop between these two components of the organizational input-throughput-output system (Von Bertalanffy, 1968). The positive feedback loop detected in these data indicates that the performance effects of HPWS are amplified over time. When HPWS generates productivity improvements, firms gain slack resources, which they can invest to further develop and strengthen the HPWS throughput system. Strengthening an existing HPWS may involve adding

components such as more training, expanding the system to cover more employees, and/or improving implementation to increase consistency across organizational units. Through a systemic adaptation process, firms customize their HR systems by continuously adjusting them to fit a specific, changing context, making imitation of HPWS increasingly difficult over time (Gondo & Amis, 2013). The positive feedback loop generated between HPWS and productivity helps to maintain performance gains over time by preventing implementation lapses and making the system more difficult for competitors to copy (Barney, 1991). The positive performance spiral between HPWS and performance leads to substantial differences between organizations as the positive feedback accentuates the benefits to the firm (Boisot & Child, 1999; Gell-Mann, 1994).

The strong autocorrelation between T1, T2, and T3 HPWS and between T1, T2, and T3 productivity reduced our ability to detect extant effects between HPWS and performance. Yet we detected a significant lagged effect of HPWS on productivity growth despite the strong autocorrelation between the productivity measures at different time points. As such, our findings support prior theoretical claims that HPWS strengthens firm financial performance, although the actual effect may not be as large as suggested by previous cross-sectional studies. We also detected a significant lagged effect of productivity on growth in HPWS. As such, our findings support the claim that the effect of performance on HPWS must be considered when theorizing the causal associations between HPWS and performance, especially when the outcome is productivity. This finding supports the usefulness of applying general systems theory to enhance understanding of performance as both an antecedent and an outcome of HPWS.

Some researchers have suggested the possibility that organizations with poor performance may adopt new HR practices as a means to overcome their performance problems (Pil &

MacDuffie, 1996). However, our findings link high performance rather than low performance to the implementation of HPWS. We do not intend to suggest that firms cannot adopt HPWS to solve their performance problems. Rather, these findings suggest that firms with low productivity must overcome resource constraints in order to begin the process of adopting HPWS. One constraint is lack of knowledge regarding HPWS concepts and implementation. Bringing HR expertise into the firm by creating a senior HR position as part of the executive team provides a source of HPWS knowledge and capability to link HPWS to the business strategy. Including HR experts at the highest organizational levels means the knowledge required for successful strategy implementation through HR processes is available to strategic decision-makers (Buyens & De Vos, 2001). Another constraint is enhanced competition in a globalized economy (Orlitzky & Frenkel, 2005). Firm financial performance can be generated by coercive "low-road" HR models, particularly when the business competes by producing a standardized product at the lowest possible cost (Arthur, 1992). Firms must match their HR architectures to their HR needs in order to achieve financial performance benefits (Lepak & Snell, 2002). This logic suggests that using HPWS to solve financial performance problems requires consideration of strategy, the business environment, and internal HR capabilities.

LIMITATIONS AND FUTURE RESEARCH DIRECTIONS

The findings of this research can be used as a basis for future work examining the causal relationship between HPWS and performance as well as mediators and moderators of that relationship. However, like all research, this study has its limitations.

First, we provided several reasons why firm performance leads to HPWS. We did not treat these explanations as competing hypotheses, and could not differentiate process mechanism linking performance to HPWS. However, the finding that earlier productivity consistently leads to later HPWS suggests that empirical testing of the conceptual mechanisms linking performance to HPWS would be valuable.

Second, data at three time intervals allow us to examine the feedback loop between HPWS and performance in a very limited way. A longitudinal analysis across multiple time periods is necessary to explain the longer-term relationship between performance and HPWS. In addition, we relied on data from three specific time points (2001, 2003 and 2005) to test for causality by examining change during that time interval. Although there seemed to have been no unusual social or economic events in Canada during this time, our results may be due to the specific conditions existing between 2001 and 2005.

Third, contingent factors need to be considered to understand the impact of performance on HPWS. Despite the suggestions of the 'best practice' perspective, all firms do not make the same investments in HR solely based on their performance level (Purcell, 1999). An important principle of SHRM theorizing proposes that the value of firm investments in HR practices depends on business strategy (Arthur, 1992; Youndt, et al., 1996). We tested the interactions of both HPWS and performance as independent variables with several business strategy measures, but did not find any significant moderating effects on either performance or HPWS in our models. Our finding that high productivity leads to an increase in HPWS implementation suggests that performance difficulties create barriers to implementing HR practices. As such, there may be value in future research aimed at identifying the conditions under which firms with performance difficulties are able to overcome the liability of resource constraints. HR expertise

among strategic decision-makers and fit to the business strategy are two factors worthy of consideration, and others may exist. In addition, it would be valuable to consider mediators that explain the relationship between performance and HPWS in order to clarify our understanding of the mechanisms linking the two variables (Beltrán-Martín, Roca-Puig, Escrig-Tena, & Bou-Llusar, 2008).

A full explanation of the link between HPWS and performance requires that the HPWS measure covers the entire breadth of that construct. Our HPWS measure covered most components of HPWS, but some components such as selection and job security were not included in the WES dataset. In fact, researchers have not reached a consensus on what constitutes HPWS (Becker & Gerhart, 1996; Edwards & Wright, 2001; Harley, 2002). For example, some scholars include job security as an important component of HPWS (e.g.,Pfeffer, 1998a, 1998b), while others disagree (e.g.,Edwards & Wright, 2001). Therefore, it is necessary for researchers to agree on the factors constituting both HPWS and organizational performance as constructs for this field.

Another limitation of our measure is the set of dichotomous "yes/no" indicators of the presence of specific HR practices. We have no information on how well the practices are implemented, how consistently they are distributed across organizational units, or what proportion of the firm's employees experience HPWS. As such, our measures imply simply that "more HRM" is better for firms. This argument can be problematic because the "more HRM" approach ignores its costs (Kaufman & Miller, 2011). However, the general systems approach can answer the question of why organizations choose a specific level of HR practices given that a firm's previous performance level creates resources for implementation. As such, the general

systems theory approach takes the cost of HRM into consideration. Future studies can establish the validity of the causal association across multiple HPWS measures (Wright et al., 2001).

Finally, we found that a unidirectional interpretation of causation between HPWS and productivity can be misleading in the North American context. Whether the bidirectional causation between HPWS and performance is generalizable to other cultural contexts is a matter for future research.

CONCLUSIONS

The reciprocal nature of the relationship between HPWS and organizational performance requires HR researchers and practitioners to take a systemic view of the impact of HR practices. While SHRM theory has considered HPWS as a system of horizontally integrated practices linked to the external environment through consistency with the business strategy (Delery & Doty, 1996), previous theorizing has neglected the impact of feedback from the environment on the implementation of HPWS. The reciprocal relationship between HPWS and performance suggests both the vulnerability of preserving HPWS under environmental constraints and the importance of constant investment in HPWS in order to generate competitive advantage (Barney, 2001). High investment in HPWS results in increased productivity, which allows for further investments to extend the HPWS system and refine it to fit the local context (Gondo & Amis, 2013). The reciprocal relationship also suggests the importance of demonstrating the value of HPWS to decision-makers. When HR practitioners show that HPWS creates productivity gains, decision-makers are more likely to further invest in extending or strengthening HPWS. In addition, to reap the full benefits of HPWS, organizations need to be consistent in their HR

practices over time (Bowen & Ostroff, 2004). If decision-makers reduce investment in HR during difficult financial times, our findings suggest that the firm could fall into a downward spiral of decreasing HPWS and performance.

REFERENCES

Allen, M. R., & Wright, P. M. (2007). Strategic management and HRM. In P. F. Boxall, J. Purcell & P. M. Wright (Eds.), *The Oxford handbook of human resource management* (pp. 88-107). Oxford, UK: Oxford University Press.

Appelbaum, E., Bailey, T., Berg, P., & Kalleberg, A. L. (2000). *Manufacturing advantage: Why high-performance work systems pay off*. Ithaca, NY: Cornell University Press.

Arthur, J. B. (1992). The link between business strategy and industrial relations systems in American steel minimills. *Industrial and Labor Relations Review, 45*(3), 488-506.

Ashmos, D. P., Duchon, D., & McDaniel Jr, R. R. (2000). Organizational responses to complexity: The effect on organizational performance. *Journal of Organizational Change Management, 13*(6), 577-595.

Ashmos, D. P., & Huber, G. P. (1987). The systems paradigm in organization theory: Correcting the record and suggesting the future. *Academy of Management Review, 12*(4), 607-621.

Barney, J. B. (1991). Firm resources and sustained competitive advantage. *Journal of Management, 17*(1), 99-120.

Barney, J. B. (2001). Resource-based theories of competitive advantage: A ten-year retrospective on the resource-based view. *Journal of Management, 27*(6), 643-650.

Bebchuk, L. A., Cohen, A., & Spamann, H. (2010). The wages of failure: Executive compensation at Bear Stearns and Lehman 2000-2008. *Yale Journal on Regulation, 27*(2), 257-282.

Becker, B. E., & Gerhart, B. (1996). The impact of human resource management on organizational performance: Progress and prospects. *Academy of Management Journal, 39*(4), 779-801.

Becker, B. E., & Huselid, M. A. (2006). Strategic human resources management: Where do we go from here? *Journal of Management, 32*(6), 898-925.

Beltrán-Martín, I., Roca-Puig, V., Escrig-Tena, A., & Bou-Llusar, J. C. (2008). Human resource flexibility as a mediating variable between high performance work systems and performance. *Journal of Management, 34*(5), 1009-1044.

Boisot, M., & Child, J. (1999). Organizations as adaptive systems in complex environments: The case of China. *Organization Science, 10*(3), 237-252.

Boselie, P., Dietz, G., & Boon, C. (2005). Commonalities and contradictions in HRM and performance research. *Human Resource Management Journal, 15*(3), 67-94.

Boselie, P., Paauwe, J., & Jansen, P. (2001). Human resource management and performance: Lessons from the Netherlands. *International Journal of Human Resource Management, 12*(7), 1107-1125.

Bowen, D. E., & Ostroff, C. (2004). Understanding HRM-firm performance linkages: The role of the "strength" of the HRM system. *Academy of Management Review, 29*(2), 203-221.

Burns, T., & Stalker, G. M. (1961). *The management of innovation*. London, UK: Tavistock.

Buyens, D., & De Vos, A. (2001). Perceptions of the value of the HR function. *Human Resource Management Journal, 11*(3), 70-89.

Byrne, B. M., & Stewart, S. M. (2006). Teacher's corner: The MACS approach to testing for multigroup invariance of a second-order structure: A walk through the process. *Structural Equation Modeling: A Multidisciplinary Journal, 13*(2), 287-321.

Cascio, W. F. (1993). Downsizing: What do we know? What have we learned? *Academy of Management Perspective, 7*(1), 95-104.

Cheung, G. W., & Rensvold, R. B. (2002). Evaluating goodness-of-fit indexes for testing measurement invariance. *Structural Equation Modeling: A Multidisciplinary Journal, 9*(2), 233-255.

Cole, D. A., & Maxwell, S. E. (2003). Testing mediational models with longitudinal data: Questions and tips in the use of structural equation modeling. *Journal of Abnormal Psychology, 112*(4), 558-577.

Combs, J. G., Liu, Y., Hall, A. T., & Ketchen, D. J. (2006). How much do high-perofmrance work practices matter? A meta-analysis of their effects on organizational performance. *Personnel Psychology, 59*(3), 501-528.

Cyert, R. M., & March, J. G. (1963). *A behavioral theory of the firm*. Upper Saddle River, NJ: Prentice Hall.

Datta, D. K., Guthrie, J. P., & Wright, P. M. (2005). Human resource management and labor productivity: Does industry matter? *Academy of Management Journal, 38*(1), 135-145.

Delaney, J. T., & Huselid, M. A. (1996). The impact of human resource management practices on perceptions of organizational performance. *Academy of Management Journal, 39*(4), 949-969.

Delery, J. E., & Doty, D. H. (1996). Modes of theorizing in strategic human resource management: Tests of universalistic, contingency, and configurational performance predictions. *Academy of Management Journal, 39*(4), 802-835.

Dhawan, R. (2001). Firm size and productivity differential: Theory and evidence from a panel of US firms. *Journal of Economic Behavior & Organization, 44*, 269-293.

Edelman, L. B. (1992). Legal ambiguity and symbolic structures: Organizational mediation of civil rights law. *American Journal of Sociology, 97*, 1531-1576.

Edmondson, A., Bohmer, R. M., & Pisano, G. P. (2001). Disrupted routines: Team learning and new technology implementation in hospitals. *Administrative Science Quarterly, 46*(4), 685-716.

Edwards, P., & Wright, P. M. (2001). High-involvement work systems and performance outcomes: the strength of variable, contingent and context-bound relationships. *International Journal of Human Resource Management, 12*(4), 568-585.

Finkel, S. E. (1995). *Causal analysis with panel data*. Thousand Oaks, CA: Sage.

Gell-Mann, M. (1994). *The quark and the jaguar: Adventures in the simple and the complex*. New York: Freeman.

Gerhart, B., Wright, P. M., Mc Mahan, G. C., & Snell, S. A. (2000). Measurement error in research on human resources and firm performance: How much error is there and how does it influence effect size estimates? *Personnel Psychology, 53*(4), 803-834.

Godard, J. (2004). A critical assessment of the high-performance paradigm. *British Journal of Industrial Relations, 42*(2), 349-378.

Godard, J., & Delaney, J. T. (2000). Reflections on the "high performance" paradigm's implications for industrial relations as a field. *Industrial and Labor Relations Review, 53*(3), 482-502.

Gollan, P. J. (2005). High involvement management and human resource sustainability: The challenges and opportunities. *Asia Pacific Journal of Human Resources, 43*(1), 18-33.

Gollob, H. F., & Reichardt, C. S. (1991). Interpreting and estimating indirect effects assuming time lags really matter. In L. M. Collins & J. L. Horn (Eds.), *Best methods for the analysis of change: Recent advances, unanswered questions, furture directions* (pp. 243-259). Washington, DC: American Psychological Association.

Gondo, M. B., & Amis, J. M. (2013). Variations in practice adoption: The role of conscious reflection and discourse. *Academy of Management Review, 38*(2), 229-247.

Guest, D. E. (1997). Human resource management and performance: A review and research agenda. *International Journal of Human Resource Management, 8*(3), 263-276.

Guest, D. E. (2011). Human resource management and performance: Still searching for some answers. *Human Resource Management Journal, 21*(1), 3-13.

Guest, D. E., & Bos-Nehles, A. C. (2013). HRM and performance: The role of effective implementation. In J. Paauwe, D. Guest & P. M. Wright (Eds.), *HRM and performance: Achievements and challenges* (pp. 79-96). Chichester, UK: Wiley.

Guest, D. E., & King, Z. (2004). Power, innovation and problem-solving: The personnel managers' three steps to heaven? *Journal of Management Studies, 41*(3), 401-423.

Guest, D. E., Michie, J., Conway, N., & Sheehan, M. (2003). Human resource management and corporate performance in the UK. *British Journal of Industrial Relations, 41*(2), 291-314.

Harley, B. (2002). Employee responses to high performance work system practices: An analysis of the AWIRS95 data. *Journal of Industrial Relations, 44*(3), 418-434.

Huselid, M. A. (1994). Documenting HR's effect on company performance. *HR Magazine, 39*, 79-79.

Huselid, M. A. (1995). The impact of human resource management practices on turnover, productivity, and corporate financial performance. *Academy of Management Journal, 38*(3), 635-672.

Huselid, M. A., & Becker, B. E. (1996). Methodological issues in cross-sectional and panel estimates of the human resource-firm performance link. *Industrial Relations: A Journal of Economy and Society, 35*(3), 400-422.

Jiang, K., Lepak, D. P., Hu, J., & Baer, J. C. (2012). How does human resource management influence organizational outcomes? A meta-analytic investigation of mediating mechanisms. *Academy of Management Journal, 55*(6), 1264-1294.

Kalleberg, A. L., & Moody, J. W. (1994). Human resource management and organizational performance. *American Behavioral Scientist, 37*(7), 948-962.

Kast, F. E., & Rosenzweig, J. E. (1972). General systems theory: Applications for organization and management. *Academy of Management Journal, 15*(4), 447-465.

Katz, D., & Kahn, R. L. (1966). *The social psychology of organizations*. Oxford, UK: Wiley.

Kaufman, B. E. (2010). SHRM theory in the post-Huselid Era: Why it is fundamentally misspecified. *Industrial Relations: A Journal of Economy and Society, 49*(2), 286-313.

Kaufman, B. E., & Miller, B. I. (2011). The firm's choice of HRM practices: economics meets strategic human resource management. *Industrial and Labor Relations Review, 64*(3), 526-557.

Khilji, S. E., & Wang, X. (2006). 'Intended' and 'implemented' HRM: The missing linchpin in strategic human resource management research. *International Journal of Human Resource Management, 17*(7), 1171-1189.

Konrad, A. M., & Linnehan, F. (1995). Formalized HRM structures: Coordinating equal employment opportunity or concealing organizational practices? *Academy of Management Journal, 38*(3), 787-820.

Konrad, A. M., & Mangel, R. (2000). The impact of work-life programs on firm productivity. *Strategic Management Journal, 21*(12), 1225-1237.

Kulik, C. T., & Bainbridge, H. T. J. (2006). HR and the line: The distribution of HR activities in Australian organisations. *Asia Pacific Journal of Human Resources, 44*(2), 240-256.

Lawler, E. E., III. (1986). *High-involvement managment*. San Francisco, CA: Jossey-Bass.

Lazear, E. P. (1996). Performance pay and productivity *NBER Working paper*: National Bureau of Economic Research.

Lepak, D. P., Liao, H., Chung, Y., & Harden, E. E. (2006). A conceptual review of human resource management systems in strategic human resource management research. In J. J. Martocchio (Ed.), *Research in personnel and human resources management* (Vol. 25, pp. 217-271). Oxford, UK: Elsevier.

Lepak, D. P., & Snell, S. A. (1999). The human resource architecture: Toward a theory of human capital allocation and development. *Academy of Management Review, 24*(1), 31-48.

Lepak, D. P., & Snell, S. A. (2002). Examining the Human Resource Architecture: The Relationships Among Human Capital, Employment, and Human Resource Configurations. *Journal of Management, 28*(4), 517-543.

Little, T. D. (2013). *Longitudinal structural equation modeling*. New York: Guilford Press.

Little, T. D., Preacher, K. J., Selig, J. P., & Card, N. A. (2007). New developments in latent variable panel analyses of longitudinal data. *International Journal of Behavioral Development, 31*(4), 357-365.

Liu, W., Guthrie, J. P., Flood, P. C., & MacCurtain, S. (2009). Unions and the adoption of high performance work systems: Does employment security play a role? *Industrial and Labor Relations Review, 63*(1), 109-127.

MacCallum, R. C., & Austin, J. T. (2000). Applications of structural equation modeling in psychological research. *Annual Review of Psychology, 51*, 201-226.

MacDuffie, J. P. (1995). Human resource bundles and manufacturing performance: Organizational logic and flexible production systems in the world auto industry. *Industrial and Labor Relations Review, 48*(2), 197-221.

Messersmith, J. G., Patel, P. C., & Lepak, D. P. (2011). Unlocking the black box: Exploring the link between high-performance work systems and performance. *Journal of Applied Psychology, 96*(6), 1105-1118.

Miner, A. S. (1994). Seeking adaptive advantage: Evolutionary theory and managerial action. In J. A. C. Baum & J. V. Singh (Eds.), *Evolutionary dynamics of organizations* (pp. 76-89). New York: Oxford University Press.

Mohr, R. D., & Zoghi, C. (2008). High-involvement work desgin and job satisfaction. *Industrial and Labor Relations Review, 61*(3), 275-296.

Orlitzky, M., & Frenkel, S. J. (2005). Alternative pathways to high-performance workplaces. *International Journal of Human Resource Management, 16*(8), 1325-1348.

Pfeffer, J. (1981). *Power in organizations*. Marshfield, MA: Pitman.

Pfeffer, J. (1995). Producing sustainable competitive advantage through the effective management of people. *Academy of Management Executive, 9*(1), 55-69.

Pfeffer, J. (1998a). *The human equation: Building profits by putting people first*. Boston: MA: Harvard Business Press.

Pfeffer, J. (1998b). Seven practices of successful organizations. *California Management Review, 40*(2), 96-124.

Pfeffer, J., & Salancik, G. R. (1978). *The external control of organizations: A resource dependence perspective*. New York: Harper & Row.

Pil, F. K., & MacDuffie, J. P. (1996). The adoption of high-involvement work practices. *Industrial Relations: A Journal of Economy and Society, 35*(3), 423-455.

Pil, F. K., & MacDuffie, J. P. (1999). Organizational and environmental factors influencing the use and diffusion of high-involvement work practices. In P. Cappelli (Ed.), *Employment practices and business strategy*. New York: Oxford University Press.

Preacher, K., & Hayes, A. (2008). Asymptotic and resampling strategies for assessing and comparing indirect effects in multiple mediator models. *Behavior Research Methods, 40*(3), 879-891.

Purcell, J. (1999). Best practice and best fit: chimera or cul-de-sac? *Human Resource Management Journal, 9*(3), 26-41.

Salge, T. O. (2011). A behavioral model of innovative search: Evidence from public hospital services. *Journal of Public Administration Research and Theory, 21*(1), 181-210.

Salge, T. O., & Vera, A. (2013). Small steps that matter: Incremental learning, slack resources and organizational performance. *British Journal of Management, 24*(2), 156-173.

Scott, W. R. (2008). *Institutions and organizations: Ideas, interests, and identities* (4th ed.). Thousand Oaks, CA: Sage.

Shek, D. T. L., & Ma, C. M. S. (2010). The Chinese family assessment instrument (C-FAI). *Research on Social Work Practice, 20*(1), 112-123.

Shih, H. A., Chiang, Y. H., & Hsu, C. C. (2006). Can high performance work systems really lead to better performance? *International Journal of Manpower, 27*(8), 741-763.

Singh, J. V. (1986). Performance, slack, and risk taking in organizational decision making. *Academy of Management Journal, 29*(3), 562-585.

Statistics Canada. (2009). Workplace and employee survey (WES). Retrieved April, 23, 2016 http://www.statcan.gc.ca/cgi-bin/imdb/p2SV.pl?Function=getSurvey&SDDS=2615&lang=en&db=imdb&adm=8&dis=2

Subramony, M. (2009). A meta-analytic investigation of the relationship between HRM bundles and firm performance. *Human Resource Management, 48*(5), 745-768.

Tan, J., & Peng, M. W. (2003). Organizational slack and firm performance during economic transitions: Two studies from an emerging economy. *Strategic Management Journal, 24*(13), 1249-1263.

Tangen, S. (2005). Demystifying productivity and performance. *International Journal of Productivity & Performance Management, 54*(1), 34-46.

Tesluk, P. E., Vance, R. J., & Mathieu, J. E. (1999). Examining employee involvement in the context of participative work environments. *Group & Organization Management, 24*(3), 271-299.

Vandenberg, R. J., & Lance, C. E. (2000). A review and synthesis of the measurement invariance literature: Suggestions, practices, and recommendations for organizational research. *Organizational Research Methods, 3*(1), 4-70.

Von Bertalanffy, L. (1968). *General system theory: Foundations, development, applications* (Rev. ed.). New York: George Braziller.

Waddock, S. A., & Graves, S. B. (1997). The corporate social performance–financial performance link. *Strategic Management Journal, 18*(4), 303-319.

Walters, B. A., & Bhuian, S. N. (2004). Complexity absorption and performance: A structural analysis of acute-care hospitals. *Journal of Management, 30*(1), 97-121.

Way, S. A. (2002). High performance work systems and intermediate indicators of firm performance within the US small business sector. *Journal of Management, 28*(6), 765-785.

Wright, P. M., Dunford, B. B., & Snell, S. A. (2001). Human resources and the resource based view of the firm. *Journal of Management, 27*(6), 701-721.

Wright, P. M., Gardner, T. M., Moynihan, L. M., & Allen, M. R. (2005). The relationship between HR practices and firm performance: Examining causal order. *Personnel Psychology, 58*(2), 409-446.

Wright, P. M., Gardner, T. M., Moynihan, L. M., Park, H. J., Gerhart, B., & Delery, J. E. (2001). Measurement error in research on human resources and firm performance: Additional data and suggestions for future research. *Personnel Psychology, 54*(4), 875-901.

Wright, P. M., & McMahan, G. C. (1992). Theoretical perspectives for strategic human resource management. *Journal of Management, 18*(2), 295-320.

Wright, P. M., McMahan, G. C., & McWilliams, A. (1994). Human resources and sustained competitive advantage: A resource-based perspective. *International Journal of Human Resource Management, 5*(2), 301-326.

Wright, P. M., & Nishii, L. H. (2013). Strategic HRM and organizational behavior: Integrating multiple levels of analysis. In J. Paauwe, D. Guest & P. M. Wright (Eds.), *HRM and performance: Achievements and challenges* (pp. 97-110). Chichester, UK: Wiley.

Wright, P. M., & Snell, S. A. (1998). Toward a unifying framework for exploring fit and flexibility in strategic human resource management. *Academy of Management Review, 23*(4), 756-772.

Yang, Y., & Konrad, A. M. (2011). Diversity and organizational innovation: The role of employee involvement. *Journal of Organizational Behavior, 32*(8), 1062-1083.

Youndt, M. A., Snell, S. A., Dean Jr, J. W., & Lepak, D. P. (1996). Human resource management, manufacturing strategy, and firm performance. *Academy of Management Journal, 39*(4), 836-866.

Zatzick, C. D., & Iverson, R. D. (2006). High-involvement management and workforce reduction: Competitive advantage or disadvantage? *Academy of Management Journal, 49*(5), 999-1015.

Zbaracki, M. J. (1998). The rhetoric and reality of total quality management. *Administrative Science Quarterly, 43*(3), 602-636.

Zhu, X. (2012). Understanding China's growth: Past, present, and future. *Journal of Economic Perspectives, 26*(4), 103-124.

Table 3-1 Theoretical Foundations

Theory	HPWS → Performance	Performance → HPWS
Resource-based view	*Competitive advantage* Investment in relatively inimitable capabilities based on human capital	
Behavioral theory	*AMO framework* Employee skills, abilities, and motivation	
Slack resources		*Resource availability* Long-term investment based on slack resources
Adaptive perspective		*Adaptation process* Learning-by-doing
General systems theory	*Wholeness* Synergy between individual HR practices	*Feedback* Performance outputs generate inputs to the system

Table 3-2 Correlation Matrix

	Mean	SD	1	2	3	4	5	6	7	8	9
1. Productivity01[a]	11.67	.99	-								
2. Productivity03[a]	11.71	.92	.90**	-							
3. Productivity05[a]	11.77	.93	.86**	.93**	-						
4. HPWS01	.25	.15	.27**	.27**	.30**	-					
5. HPWS03	.24	.15	.26**	.27**	.30**	.71**	-				
6. HPWS05	.26	.15	.21**	.24**	.25**	.57**	.68**	-			
7. Size[a]	3.58	.82	.10**	.10**	.16**	.38**	.36**	.28**	-		
8. Industry	.41	.49	.36**	.39**	.36**	.04*	.04*	.03	.08**	-	
9. Unionization	.27	.45	.15**	.14**	.16**	.19**	.23**	.17**	.26**	.07**	-

Notes: * p<.05, ** p<.01, *** p<.001, N = 2,228, alog transformed, Industry coded as (0 = service, 1 = manufacturing), Unionization coded as (0 = no, 1 = yes).

Table 3-3 Tests of Measurement Invariance

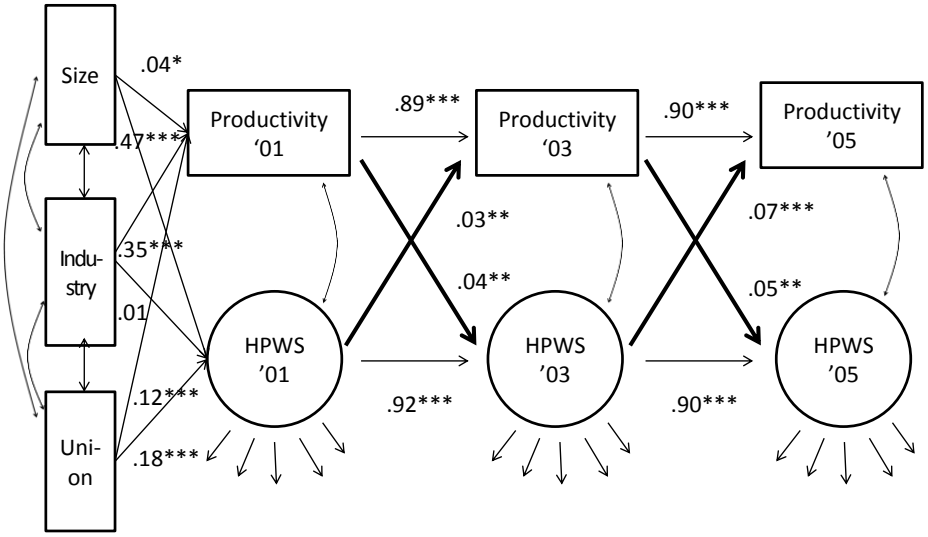
	x^2	df	Δx^2	CFI	ΔCFI	RMSEA	TLI
Initial	1014.7	72		.945		.070	.919
Metric Invariance	1152.1	80	137.4***	.937	.008	.071	.917
Equal error variance	1258.9	90	106.8***	.931	.006	.070	.920
Invariant factor variance	1266.6	92	7.7*	.931	.000	.069	.921

Notes. *** p<.001, ** p<.01, * p<.05.

Table 3-4 Fit Statistics for Nested Causal Models

Models	x^2	df	CFI	GFI	RMS-EA	TLI	Comp-arison	Δx^2	Prefe-rence
Productivity									
P1. Stability	2132.6	164	.92	.92	.07	.90			
P2. Standard	2064.7	162	.92	.92	.07	.90	P1-P2	67.9***	P2
P3. Reverse	2109.6	162	.92	.92	.07	.90	P1-P3	22.9***	P3
P4. Reciprocal	2043.4	160	.92	.92	.07	.90	P2-P4	89.2***	P4
							P1-P4	21.3***	P4
							P3-P4	66.2***	P4

Note: CFI = comparative fit index; GFI = goodness-of-fit index; RMSEA = root mean square error of approximation; TLI = Tucker-Lewis index. ***p < .001



Chi-square ratio= 12.77, p=.000 CFI= .92, GFI= .92, RMSEA = .07, TLI = .90, RMR= .01

Figure 3-1 Cross-lagged SEM Results Testing the Causal Relationships between HPWS and Productivity

Notes. Standardized path coefficients, N = 2,228, *** p<.001, ** p<.01, * p<.05.

CHAPTER 4. HUMAN RESOURCE MANAGEMENT AS AN ADAPTIVE SYSTEM: LONGITUDINAL RELATIONSHIPS BETWEEN HIGH-PERFORMANCE WORK SYSTEMS AND PERFORMANCE

INTRODUCTION

Strategic human resource management (SHRM) researchers have proposed that human resource management (HRM) practices work as systems or bundles rather than individually, due to synergistic interactions among individual HRM practices (MacDuffie, 1995). SHRM researchers have also identified sets of practices providing employees with a combination of authority, information, capabilities, and rewards for performance as particularly effective for enhancing employee capability and engagement, and thereby creating value for the firm (Lawler, 1986). Such HRM systems are known as high-performance work systems (HPWS), high commitment human resource (HR) systems, or high-involvement work practices. SHRM theory argues that HPWS positively affects organizational outcomes, and subsequent empirical tests have been accumulated (Combs, Liu, Hall, & Ketchen, 2006; Jiang, Lepak, Hu, & Baer, 2012). Some researchers also suggested a contingency perspective that the effectiveness of HPWS can be dependent on organizational strategies (e.g., Delery & Doty, 1996).

The resource based view (RBV) has provided one of the most widely used theoretical frames for explaining the effectiveness of HPWS on organizational outcomes (Lepak, Liao, Chung, & Harden, 2006). A pivotal assumption for applying the RBV to the SHRM literature is that HPWS provide sustained competitive advantage because investments on

human capital create values that are difficult for competitors to copy (Wright, Dunford, & Snell, 2001). Despite this assumption, few studies have examined the organizational performance growth due to HPWS. For example, neither the impact of HPWS over the long term nor the longitudinal process of HRM implementation are well understood either theoretically or empirically. Consequently, a question remains whether HPWS have to continuously modified to provide temporal competitive advantages for an organization or they can provide "sustained" competitive advantages without tiring.

Recognizing the limitations of the current literature, some SHRM researchers have pointed out that SHRM theory can be advanced by considering the HRM implementation processes from a longitudinal perspective (e.g., Bowen & Ostroff, 2004; Guest, 2011). This paper attempts to respond to this call by conceptualizing the implementation of HPWS as an adaptive process. In this view, HPWS is a product of adaptation processes that change organizational routines over time, rather than being determined by an organizational design developed a priori (Hutchins, 1991). Researchers have argued that it takes time to reap the full benefits of HPWS (e.g., Huselid & Becker, 1996); however, surprisingly, few studies consider the long-term dynamic associations between the process of HPWS implementation and firm performance. Although theoretical understanding of the HPWS implementation process has been limited by cross-sectional research designs, practitioners are likely to implement HPWS based on their previous experience and must integrate any changes into their existing structures (Nelson & Winter, 1982). Furthermore, successful implementation of HPWS takes time and continuous effort (Gondo & Amis, 2013). Thus, investigation of HPWS implementation requires a longitudinal approach.

While most SHRM studies have focused on inter-organizational differences in HRM practices, an adaptation perspective has the potential to explain how inter-organizational

differences in HRM practices can be traced to intra-organizational changes over time (Levinthal, 1997). According to general systems theory, an organization gains competitive advantage through its continuous cycles of input- throughput- output- and re-input (Von Bertalanffy, 1968). Furthermore, successful HPWS adoption within an organization is dependent upon the continuous engagement of people (Gondo & Amis, 2013). As such, organizational competitive advantages can be grounded in the adaptive evolutionary process (i.e., customizing "best" HRM practices to fit the specific context of the firm) combined with the ongoing search for solutions (i.e., adopting "best" HRM practices used by competitors).

HRM researchers have also proposed a contingency perspective which predicts that the relationship between HPWS and organizational performance is dependent on environmental characteristics (Balkin & Gomez-Mejia, 1987; Datta, Guthrie, & Wright, 2005). This study expands the contingency perspective by positing that the causal direction between HPWS and organizational performance might be dependent on stage of the organizational life cycle, as reflected by firm size and age. Specifically, while most SHRM research has concentrated on large and well-established organizations, for young and small organizations, establishing advanced HRM systems such as HPWS may be even more critical to survival and revenue growth (Nicholls-Nixon, 2005). Because employees in small and young organizations can initiate changes more proactively and have more opportunities for discretion (Chen & Hambrick, 1995; Ranger-Moore, 1997; Wright & Snell, 1998), strategic decisions about implementing HPWS might have particularly strong positive effects on performance in such organizations. In addition, employees in small organizations might more easily perceive their employers' efforts to establish employee-supportive work systems, and reciprocate these efforts with desirable behaviors (Drummond & Stone, 2007). By comparison, large and mature organizations are more likely to experience uneven implementation of practices (Kulik & Bainbridge, 2006) such that the empowering message

of HPWS becomes diluted and ambiguous for employees.

Large, mature organizations are also more likely than small new firms to have sufficient slack resources for survival during difficult phases of the business cycle. Such organizations also attain greater economies of scale from allocating their slack resources to the task of strengthening and elaborating pre-established management practices (Sharfman, Wolf, Chase, & Tansik, 1988). Thus, while large and mature organizations are more likely to re-invest organizational outcomes in HPWS, small and young firms experience resource scarcity and are less able to use productivity gains for further HPWS investments.

This study is able to test the direction of the longitudinal relationship between HPWS and firm financial performance due to a set of methodological advantages associated with the chosen dataset. The Workplace and Employee Survey (WES, Statistics Canada, 2008) provides a national longitudinal sample of over 3000 establishments. The WES measures of HPWS have been examined in several high-impact studies (e.g., Zatzick & Iverson, 2006) and shown to be useful for testing theory in the HRM and strategy fields. By matching data on HPWS and performance provided by senior HRM managers in multiple years (1999, 2001, 2003, and 2005), this study is able to create rigorous tests of the association between level and growth of HPWS and performance for a set of Canadian firms varying substantially along the key dimensions of age and size.

In sum, this study has several implications for SHRM. First, I examined whether HPWS can provide "sustained" competitive advantages for an organization. While researchers have argued that HPWS can provide long-term benefits, most studies using cross-sectional research designs have not sufficiently provided reasons and answers to this question. Second, this study adopts a process-based approach to the HPWS-performance relationship as a response to a call for studies on HRM processes (e.g., Polyhart, Iddekinge,

& Mackenzie, 2011). Specifically, I test the dynamic causal relationship between HPWS and organizational performance over time. Third, I extend the contingency perspective on HPWS by considering that the causal association can be further dependent on the organizational life cycle.

THEORETICAL FOUNDATION

HPWS consists of progressive HRM practices, including extensive training which increases employee capabilities, empowerment which gives employees autonomy in decision making, pay-per-performance practices to motive employees, and flexible organizational structures which provide employees with opportunity to use their skills (Jiang et al., 2012; Lepak et al., 2006; Zatzick & Iverson, 2006). SHRM researchers have reported that HPWS positively contributes to organizational outcomes, such as reduced employee turnover, increased productivity, and improved employee safety (e.g., Huselid, 1995; Zacharatos, Barling, & Iverson, 2005).

In explaining the path from HPWS to organizational performance, prevailing theories in the SHRM literature have typically focused on idiosyncratic mixtures of resources (i.e., *inputs* in general systems theory) and mediation processes linking the resources to organizational outcomes (i.e., *throughputs* in general systems theory). For example, the RBV stresses the role of organizations as combiners of inputs. Firm resources generate and sustain competitive advantage for a firm as long as competitors do not have and cannot copy such resources (Barney, 1991). While the RBV stresses idiosyncratic combinations of resource inputs to achieve competitive advantage, the behavioral perspective (e.g., AMO), focuses on the mediating role of employees in the relationship between HPWS and organizational performance. The AMO framework focuses on employees as creating and impacting key

throughputs linking inputs to outputs. Some researchers have applied multi-level research designs to link firm level HPWS to employee level attitudes and behaviors (e.g. Snape & Redman, 2010; Wu & Chaturvedi, 2009). In addition, some recent studies begin to differentiate employee-experienced HPWS from formal HPWS, stressing employees' psychological experience of HPWS (e.g., Aryee, Walumbwa, Seidu, & Otaye, 2012; Choi, 2014; Liao, Toya, Lepak, & Hong, 2009).

While the RBV and the AMO elaborate inputs and throughputs in HRM practice implementation respectively, these two dominant theories in SHRM lack a longitudinal perspective. General systems theory is an alternative theoretical framework that has the potential to advance SHRM theory by considering the whole longitudinal process through which organizational structures enhance firm performance. According to general systems theory, organizations sustain themselves through on-going cycles of resource input- throughput- output- and re-input (Von Bertalanffy, 1968). In this view, idiosyncratic resource inputs and processes constituting throughputs cannot fully explain how an organization achieves its desirable outcomes over time, and a broader, longitudinal theoretical perspective on the HPWS-performance linkage is required. For example, while most studies have assumed a causal direction from HPWS to organizational outcomes, Wright et al.'s (2005) insight that the research designs of most studies were post-predictive (i.e., past performance correlated with current HPWS), reveals the possibility of reverse causality or the *re-input* process. Incorporating reverse causality as an important linkage between HPWS and performance, Shin and Konrad (in press) proposed and found that HPWS contributes to organizational performance as well as the reverse.

The on-going cycles of input- throughput- output- and re-input suggested by general systems theory indicate that over time, the implementation of HPWS can be considered an

adaptive process (see Figure 4-1). Understanding HPWS as an adaptive system incorporates and extends both the RBV and AMO perspectives on SHRM. The adaptive perspective advances the RBV by pointing out resource constraints and resource modification beyond allocation of idiosyncratic resources. While slack resources generated by successful systems make further investment in HPWS affordable, resource constraints burden organizations which have poor prior performance and limit their capacity in further developing HPWS (Shin & Konrad, in press). In addition, the adaptive process indicates that HPWS can foster employee commitment to continuously engage in the process of making ongoing productivity improvements. Such continuous improvement will render sustained competitive advantages for an organization because they add complexity and customization to abstract notions of HPWS (Gondo & Amis, 2013).

The adaptation perspective on HPWS also extends the AMO framework as employees are the key players in the adaptive process of HRM implementation. The continuous cycle of system performance and development posited by general systems theory implies that employees are not only subjects of an organization's strategic choices, but core actors who affect organizational choices. For example, employee resistance to and/or acceptance of management practices may create different developmental paths for organizations (Gondo & Amis, 2013; Iverson, 1996). A well-designed HPWS has the potential to gain employee acceptance by offering skill development opportunities, enhanced intrinsic enjoyment of work through greater autonomy (Ryan & Deci, 2000), and performance-linked rewards and thereby tying their interests to those of the firm. As such, the adaptation perspective extends the AMO framework by focusing on employee ability, willingness and opportunity to strengthen the HPWS system itself. The longitudinal adaptive system process also suggests the importance of demonstrating the effectiveness of HPWS to managerial decision makers as part of the implementation process (Arthur, Herdman, & Yang, in press). Although

managerial will and aspirations are critical for initiating HPWS, once launched, HR managers need to demonstrate the effectiveness of HPWS for enhancing organizational outcomes in order to maintain the support of senior managers for the system. While most SHRM researchers have stressed the benefits of adopting HPWS, costs are also associated with HPWS, limiting HPWS investment (Kaufman, 2015; Kaufman & Miller, 2011). Positive feedback from outputs to re-inputs in an adaptive system provides evidence of successful HPWS adoption in an early stage and thereby generates support from senior management for further development of HPWS.

Another possible, but not desirable, relationship between HPWS and organizational performance is a co-evolutionary process. According to the co-evolutionary perspective (Lewin & Volberda, 1999), management practices influence and are influenced by their environments. The co-evolutionary perspective posits a complex causal relationship between HPWS and organizational performance. In complex systems, two variables are interconnected and have non-linear relationships (Lewin & Volberda, 1999). Because of the complex causality inherent in the co-evolutionary process, changes in one variable are simultaneously and endogenously related to changes in the other, generating causal ambiguity as the nature of the relationship between the two variable. While an organization can benefit from HPWS in the co-evolutionary process, there are concerns regarding the costs associated with HPWS implementation (e.g., Kaufman, 2015; Kaufman & Miller, 2011). Organizations may experience the "Icarus paradox" (success can lead to failure because of overconfidence and overspecialization of "tried and true" recipes) (Miller, 1992) or "competency trap" whereby their success leads to the excessive expending of valuable resources on strengthening pre-established management practices (Levitt & March, 1988). If an organization needs to continuously expend more resources on HPWS in order to maintain performance growth, the limitations on investments in other functions such as R&D and

marketing may render the organization's competitive advantage unsustainable. Thus, the co-evolutionary process represents a costly adaptation scenario that may be inconsistent with sustained competitive advantage.

In sum, this paper takes a general systems theory approach suggesting that HPWS implementation results from a dynamic adaptive process rather than a static top-down initiative. Theory suggests three plausible causal directions between HPWS and organizational performance: the path from HPWS to organizational performance (AMO and RBV), the reverse direction of causality (slack resources and feedback), and the co-evolutionary process (see Table 4-1). This study uses latent growth modeling to test these three theoretical possibilities by examining the effect of HPWS on changes in organizational performance, the effect of organizational performance on changes in HPWS, and the relationship between changes in HPWS and changes in organizational performance (Figure 4-2) (Van Iddekinge et al., 2009).

RESEARCH HYPOTHESES

Effect of the HPWS Levels on the Growth of Productivity

The initial levels of HPWS is likely to be positively associated with growth in organizational performance. Researchers have proposed that organizations can achieve competitive advantage by developing advantageous routines (Aime, Johnson, Ridge, & Hill, 2010; Levitt & March, 1988). Similarly, SHRM studies have reported a significant association between HPWS and organizational outcomes (e.g., Jiang et al., 2012). However, because most studies have relied on cross-sectional data, questions remain regarding whether HPWS increases organizational performance over time. A study on changes in the

productivity trajectory due to prior HPWS level would provide stronger support for the causal impact of HRM. In addition, HPWS may have long-term positive effects on productivity, which can be captured by investigating the productivity trajectory.

SHRM theory suggests that the effectiveness of HPWS is long-term in nature. In particular, the beneficial effects of the advanced HRM practices associated with HPWS are likely to be long-term. For instance, empowerment practices create employee involvement in decision-making, which allows for the development of ongoing quality and productivity improvements (Fernandez & Moldogziev, 2013). Compensation that is tied to performance motivates employees to contribute to ongoing quality and productivity increases (Blinder, 1990). Participative practices that loosen job descriptions and require teamwork build social capital which provides ongoing gains to firms from improved information flow and knowledge exchange (Jiang & Liu, 2015).

Furthermore, the mediating processes resulting in the positive outcomes of HPWS take time to develop, for instance, psychological empowerment (Aryee et al., 2012; Spreitzer, 1995; Spreitzer, Kizilos, & Nason, 1997), a supportive organizational climate (Takeuchi, Lepak, Wang, & Takeuchi, 2007), and the development of social capital (Jiang & Liu, 2015). As the mediating factors strengthen over time, they create increasingly positive impacts on organizational performance, resulting in a positive performance trajectory. As time passes, employees accumulate tacit knowledge in using HPWS, enhancing their ability to improve productivity (Nelson & Winter, 1982; Nonaka & Takeuchi, 1995). Thus, initial level of HPWS can positively affect the slope of productivity over time.

Hypothesis 1a: The initial levels (i.e., intercept) of HPWS positively affects the growth (i.e., slope) of productivity.

Effect of the Productivity Levels on the Growth of HPWS

While most studies have treated reverse causality between HPWS and firm performance (i.e., performance predicts the development of HPWS) as a methodological issue (Becker & Huselid, 2006; Wright et al., 2005), the possibility of reverse causality has theoretical importance. General systems theory emphasizes the importance of feedback to organizational development (Kast & Rosenzweig, 1972; Von Bertalanffy, 1968). Feedback from organizational outcomes to organizational inputs can be positive (i.e., good organizational outcomes generate further inputs) or negative (i.e., organizations with difficulties search for alternative HRM systems).

A positive feedback loop works in the same direction of the main effect (the path from HPWS to performance). A positive feedback loop implies that organizations re-input positive outcomes to strengthen their internal throughput systems. Positive performance following HRM implementation helps decision-makers perceive the benefits of HPWS, increasing the extent to which they value the contribution of HPWS to the firm (Arthur et al., in press). Hence, positive performance effects of HPWS can lead to strengthened and extended HPWS implementation. Furthermore, positive performance generates the resources needed to invest in HPWS by, for instance, expanding the HPWS to cover more organizational units (Kulik & Bainbridge, 2006), providing additional training on team processes for self-managing teams (Guzzo & Dickson, 1996) or implementing a 360 degree feedback system to make leaders accountable for creating a climate of empowerment (London & Smither, 1999). Investing in HRM practices involves costs (Kaufman & Miller, 2011), and positive financial performance creates the organizational slack needed to strengthen and extend such investments. With a positive feedback loop, if organizational performance is low, organizational slack decreases when organizational performance declines

(Cyert & March, 1963). As such, negative performance results following the implementation of HPWS may lead decision-makers to seek other ways to generate firm performance, including downsizing the human capital base and/or discontinuing HRM practices (Zatzick & Iverson, 2006).

On the other hand, a negative feedback loop works in the opposite direction of the main effect (the path from HPWS to performance), causing decision-makers to realize the value of HPWS after experiencing financial difficulties. Compared to a positive feedback, which amplifies the association between HPWS and performance, a negative feedback stabilizes the relationship between the two variables. Thus, investing in HRM systems increases with low prior performance levels. Also, with a negative feedback loop, positive performance leads decision makers to have over-confidence in their HRM systems and may believe they can spend resources elsewhere, thereby reducing investment in HRM systems.

In summary, path dependence in the evolutionary process means that an organization's own experience restricts its future decisions. Success leads an organization to further specialize in existing ways of doing business (Miller, 1992). Consequently, successful management practices are likely to be retained while failure leads organizations to search for alternatives (Weick, 1979). When organizational outcomes are good, organizations are likely to maintain and enhance current practices, up until the point of diminishing returns. Thus, the initial levels of productivity can positively affect the growth of HPWS.

Hypothesis 1b: The initial levels (i.e., intercept) of productivity positively affects the growth (i.e., slope) of HPWS.

The Slope of HPWS on the Slope of Productivity

In co-evolutionary systems, a change in one object is triggered by a change in another related object (Lewin & Volberda, 1999). According to this logic, organizations are ever-evolving in an ever-changing environment. A scene from the Alice in Wonderland story provides a metaphor for this dynamic: As the Red Queen told Alice, Alice has to run (or evolve) in order to stay in the same place (Van Valen, 1973). Thus, a change in one variable is related to a change in the other variable. Organizational researchers have proposed a complex causal relationship under the co-evolutionary process: compared to lagged causal relationship, which suggests a time lag between cause and effect, cause and effect are not separable but simultaneous and complex in the co-evolutionary process (Lewin & Volberda, 1999). If HPWS and performance are co-evolutionary systems, the HPWS-performance linkage is likely to be a complex causal relationship, where cause and effect are complicated and intertwined.

According to the co-evolutionary perspective (Lewin & Volberda, 1999), organizations influence their environments while they are influenced by their environments. Management practices co-evolve with internal environments such as business strategies, structures, resources (micro co-evolution) as well as external environments such as industry, institutional conditions, and technological changes (macro co-evolution) (McKelvey, 1997). In this view, organizational practices and organizational performance co-evolve, such that a change in one object changes the environment of the other, which leads to change in that object, and so on. This view implies that the incremental adoption of organizational practices and performance increase can co-evolve simultaneously.

In such a system, the contributions of HPWS to organizational performance involve incurring substantial costs. An organization needs to continuously expend more resources on HRM practices to maintain its competitiveness. Such a process would be consistent with the

concerns of some researchers that a number of organizational practices consist of transitory fads and fashions copied from other organizations, escalating operation costs (e.g., Abrahamson, 1991, 1996). This "Red Queen effect" is a costly adaptation process where organizations must continuously increase their expenses on HRM practices in order to maintain growth in productivity. This possibility was tested by examining the covariance between the slope of HPWS and the slope of productivity.

Research Question A: Is the slope (i.e., growth) of HPWS positively related to the slope (i.e., growth) of productivity?

Organizational Life Cycle Contingencies on the Associations between HPWS and Productivity

The contingency perspective on SHRM posits that the impact of HPWS on organizational performance is dependent on environmental factors (Balkin & Gomez-Mejia, 1987; Datta et al., 2005). General systems theory has the potential to extend the contingency perspective with arguments that the causal direction between HPWS and organizational performance might depend upon factors in the organizational environment. While most HRM researchers have posited unidirectional causality from HPWS to organizational performance, in the general systems theory perspective, the direction of the causal association between HPWS and organizational performance may depend upon organizational characteristics such as organizational size and organizational age (see Figure 4-3).

The factors of size and age reflect the organizational life cycle (Phelps, Adams, & Bessant, 2007) and as such, are consistent with an adaptive systems model (Aldrich, 1999). Most business organizations begin as small, entrepreneurial firms which rely upon a set of informal and organic working relationships among a small number of key employees for their success (Buller & Napier, 1993). As small firms achieve success and grow their sales, they

add employees and eventually experience the inadequacy of their informal structure for meeting the needs of a larger, more complex organization. For this reason, with growth over time, firms formalize their systems and processes, including their HRM systems (Aldrich & Langton, 1997). Most research on the performance impact of HRM practices is conducted in large, formalized organizations, and little is known about the impact of HPWS in small, growing firms. Research has shown that smaller and larger firms have similar HRM concerns and seek to develop similar sets of practices (Golhar & Deshpande, 1997). As such, it is reasonable to assume that some small to mid-size firms may choose to adopt HPWS practices fairly early in the life cycle, and whether HPWS enhances performance for small, young firms is an interesting empirical question. If relatively high HPWS levels lead to faster productivity growth in smaller, younger firms, this finding would provide rather strong evidence of the positive impact of HPWS on firm financial performance because of the critical importance of revenue growth for the survival of small, entrepreneurial firms (Nicholls-Nixon, 2005).

Organizational size may influence the causal association between HPWS and organizational performance. Organizational size has been known as one of the critical contingency variable in the relationship between strategic choice and organizational performance (Chen & Hambrick, 1995; Smith, Guthrie, & Chen, 1989). Strategic HRM choices may have stronger effects on organizational performance among small organizations because smaller organizations can initiate changes more proactively and be faster in executing actions than larger organizations (Chen & Hambrick, 1995). In addition, small organizations often have less formalized structures and potentially benefit from adding formalized HRM practices such as HPWS which are designed to support employees in the workplace. As employees in smaller organizations tend to have more opportunities for discretion (Wright & Snell, 1998), smaller organizations may be more likely to benefit from

providing a participative workplace environment under HPWS.

As organizational size increases, organizations have more managerial routines and formalized decision making processes (Nelson & Winter, 1982). Greater formalization limits discretionary opportunities for both managers and employees (Ranger-Moore, 1997). Sunk costs increase as organizational size increases, encouraging organizations to build on existing managerial rules and practices rather than discarding them (Hannan & Freeman, 1984). Largeness is often associated with bureaucratic decision-making combined with slack resources which together strengthen pre-established managerial practices (Camisón-Zornoza, Lapiedra-Alcamí, Segarra-Ciprés, & Boronat-Navarro, 2004; Chen & Hambrick, 1995; Gooding & Wagner III, 1985). For large organizations, responding to environmental changes is more quickly accomplished by allocating their slack resources to further investment in existing management practices rather than creating new systems and processes. Furthermore, larger organizations can differentiate themselves from smaller competitors facing resource constraints by building stronger, more customized and complex management processes (Chen & Hambrick, 1995). In addition, larger organizations enjoy greater economies of scale in expanding HPWS (i.e., relatively low HPWS costs per employee) (Sels et al., 2006; Way, 2002). Thus, large organizations with sufficient levels of slack resources or high levels of organizational performance are more likely to re-invest in HPWS whereas small organizations are less likely to do so.

Hypothesis 2a: The initial levels (i.e., intercept) of HPWS positively affects the growth (i.e., slope) of productivity among small sized organizations while the initial levels (i.e., intercept) of productivity positively affects the growth (i.e., slope) of HPWS among large sized organizations.

Organizations have different levels of formal structures depending on environmental

characteristics (Lawrence & Lorsch, 1967). Organizations start with less formalized structures and become more formalized as time passes and the organization interacts with different aspects of its environment (Nelson & Winter, 1982). Due to the need to adapt to greater environmental complexity over time, organizational age might influence the causal association between HPWS and productivity.

Young organizations tend to suffer from a lack of stable resource inflows from the environment (Sharfman et al., 1988). By adopting a set of advanced HRM practices, small firms can demonstrate managerial sophistication and professionalism (Messersmith & Wales, 2011). In addition, young organizations often experience a lack of trust (Nelson & Winter, 1982), and HPWS, which is known as an employee-supportive work system, can help small firms to overcome trust issues and attract employees (Macky & Boxall, 2007; Meyer, Jackson, & Maltin, 2008). Therefore, adopting HPWS potentially increases inflows of essential resources to small firms, such as capital and quality employees. General systems theory argues that steady resource inflows are needed to maintain ongoing organizational operations and development. Organizational development strengthens and maintains the throughput processes essential for growing the firm in order to meet increases in demand and grow revenues over time.

Mature organizations are more institutionalized (Walsh & Dewar, 1987), and for this reason, they are more likely to re-invest organizational resources into routinized processes such as HPWS (Nelson & Winter, 1982). The accumulation of sunk costs leads organizations to repeatedly use and further strengthen existing managerial practices rather than adopting novel approaches wholesale (Hannan & Freeman, 1984). In addition, organizational members accrue memories and experiences regarding how to implement management practices (Gondo & Amis, 2013). Consequently, as time passes, organizations lock

themselves into specific ways of operating businesses and further specialize their management practices (Ranger-Moore, 1997). General systems theory suggests that the development over time of increasingly customized and complex management processes creates the potential for sustained competitive advantage (Barney, 1991). In this view, organizational inertia leads mature organizations to enhance pre-established management practices, which build and maintain important capabilities over time, especially when they experience organizational success. Thus, among mature organizations, high levels of productivity are likely to be related to the growth in existing HPWS.

Hypothesis 2b: The initial levels (i.e., intercept) of HPWS positively affects the growth (i.e., slope) of productivity among young organizations while the initial levels (i.e., intercept) of productivity positively affects the growth (i.e., slope) of HPWS among mature organizations.

RESEARCH METHOD

Sample

The Workplace and Employee Survey (WES) data collected by Statistics Canada were used to test research hypotheses. There are several advantages to using the WES data. First, investigating changes in HPWS and organizational performance requires longitudinal data. Second, the WES dataset permits us to investigate HPWS across a large national sample of establishments. Third, Statistics Canada provides weights to represent the overall population of Canada.

Sample sizes were 6,322 for the year 1999, 6,207 for the year 2001, 6,565 for the year 2003, and 6,693 for the year 2005. The average response rate for the WES is 85.5%, ranging from 77.7% to 95.2% over the 1999 to 2005 time period. After excluding respondents with

missing data at any point in time, 3,560 establishments were included in the final sample[2]. The sample was weighted to represent the whole population, as required by Statistics Canada. HRM practices were assessed by senior HRM managers who responded to survey questions asking whether their firm utilizes various HRM practices.

Measures

Training. Training reflects organizational investment in developing employee skills and abilities. WES items measuring training consist of 13 types of classroom training and 13 types of on-the-job (OJT) training. Items include "professional training," "managerial/supervisory training," "sales/marketing training," "group decision-making or problem-solving training," "team-building/leadership/communication training," etc. (Year 1999, α = .91; Year 2001, α = .91; Year 2003, α = .90; Year 2005, α = .90) (see Appendix C).

Empowerment. Empowerment is measured by questions asking who normally makes organizational decisions in 12 areas, such as daily planning of individual work, weekly planning of individual work, purchase of necessary supplies, filling vacancies, training, etc. If decisions are normally made by "non-managerial employees" or "the work group," they were coded as yes (1), otherwise no (0) (Year 1999, α = .84; Year 2001, α = .86; Year 2003, α = .84; Year 2005, α = .85) (see Appendix C).

Compensation and benefits. Respondents reported whether their establishments have the following 12 types of practices (yes: 1; no: 0) funded by employers; merit and skill-based pay, individual incentive systems, group incentive systems, profit-sharing plan, pension plan, life and/or disability insurance, supplemental medical care, dental care, supplements to

[2] As the request of Statistics Canada to ensure confidentiality, the sample size is rounded up to 10 decimals. The difference is less than 0.1% of the total sample.

employment insurance benefits (e.g., for maternity or lay-off), etc (Year 1999, α = .79; Year 2001, α = .80; Year 2003, α =. 79; Year 2005, α = .78) (see Appendix C).

Participative work design. Work design represents an opportunity for employees to participate in organizational decision-making. WES data provides six types of employee participative work design practices; an employee suggestion program, flexible job design, information sharing with employees, problem-solving teams, joint labor-management committees, and self-directed work groups (Year 1999, α = .79; Year 2001, α = .77; Year 2003, α = .77; Year 2005, α = .78) (see Appendix C).

Firm size and organization age. Establishments are classified as small if the number of employees is less than 100 (1=yes, 0=no), following Industry Canada's definition of small business (Industry Canada, 2012). According to Miller and Friesen (1984), an organization is in the nascent stage up to 10 years of operation. Establishments with equal or less than 10 years of operating a business in the same address were considered as young organizations and others were classified as mature establishments (0=young, 1=mature). More than a thousand establishments were included in each sub-group.

Productivity. Productivity has been widely used as a performance measure in SHRM research (Jiang et al., 2012; Subramony, 2009). In alignment with previous studies, productivity was used as an outcome of HPWS. Specifically, the gross operating revenue divided by the total number of employees was used after log transformation to normalize the distribution. Means, standard deviations, and correlations are shown in Table 4-2.

Analysis

Hypotheses were tested with structural equation modeling. Specifically, a latent growth modeling technique was applied to analyze repeated measures over time. Latent

growth modeling has gained popularity in analyzing repeated measures because of its advantages, such as better assessment of growth and changes, the ability to test hierarchical data, greater statistical power, and better treatment of covariant structures (Tomarken & Waller, 2005). The method is "now considered one of the most powerful and informative approaches to the analysis of longitudinal data" (Byrne, 2012, p. 313). By applying latent growth modeling, research questions on changes and stability of time-varying constructs (i.e., HRM practices and productivity) can be analyzed.

Since the analysis is based on repeated measures, measurement invariance tests were conducted to examine the construct validity of the measures at different points in time. The strong invariance confirmatory factor analysis (CFA) model was used to test the measurement structure for factorial invariance over time (Little, 2013). Strong factorial invariance includes configural invariance, metric invariance, and scalar invariance. Strict factorial invariance further includes uniqueness invariance, but Little (2013, p. 143) advises not to enforce strict factorial invariance because of dubious theoretical grounds and mathematical problems associated with the strict factorial invariance. Since the chi-square difference test is known to be sensitive to a large sample size (Vandenberg & Lance, 2000), comparative fit index difference (ΔCFI) was used for invariance testing (Byrne & Stewart, 2006; Cheung & Rensvold, 2002). Measurement invariance was supported by strong factorial invariance (ΔCFI <.01) (see Table 4-3).

The HPWS measure consists of four sub-systems (training, empowerment, compensation & benefits, and participative work design). Each index consisted of a sum of the dummy-coded items listed in the Appendix C. CFA for the HPWS measure (shown in Figure 4-4) produces satisfactory model fit indices; HPWS in year 1999 (Chi square= 1.64,

df= 2, p= .44, CFI = 1.00, TLI = 1.00, RMSEA= .00, SRMR = .01), HPWS in year 2001 (Chi square= 1.65, df= 2, p= .44, CFI = 1.00, TLI = 1.00, RMSEA= .00, SRMR = .01), HPWS in year 2003 (Chi square= 1.41, df= 2, p= .50, CFI = 1.00, TLI = 1.00, RMSEA= .00, SRMR = .01), and HPWS in year 2005 (Chi square= 2.44, df= 2, p= .30, CFI = 1.00, TLI = 1.00, RMSEA= .01, SRMR = .01).

FINDINGS

The research model showed satisfactory fit to the data (Chi square= 53.7, df= 22, p-value= .00, CFI= .99, TLI= .98, RMSEA= .02, SRMR= .12) (see Figure 4-5). The significant path between the HPWS intercept and the productivity intercept indicates that the two variables were related to each other initially in 1999 ($p<.01$). The HPWS intercept significantly and positively predicted the productivity slope, supporting hypothesis 1a (unstandardized path coefficient= .13, standardized path coefficient= .14, $p<.05$). Hence, an earlier high level of HPWS predicted stronger growth in productivity over time.

Hypothesis 1b's prediction that the productivity intercept would positively predict the HPWS slope was not supported ($p>.10$). Thus, organizations did not appear to re-input their earnings from high productivity levels to further invest in HPWS over time.

Research question A asked whether HPWS and productivity co-evolve. Findings indicated that the change in HPWS was not a significant predictor of the change in productivity ($p>.10$). Therefore, there was no evidence of a "Red Queen" effect in these data.

Hypothesis 2a and 2b predicted that the relationship between HPWS and productivity can be dependent on organizational size and age, respectively. In small organizations (n= 2530), the intercept of HPWS positively predicted the slope of productivity (unstandardized path coefficient= .14, standardized path coefficient= .14, $p<.05$) and the intercept of

productivity did not predict the slope of HPWS (p>.10). In large sized organizations (n= 1030), the intercept of HPWS did not predict the slope of productivity (p>.10), while the intercept of productivity positively predicted the slope of HPWS (unstandardized path coefficient= .00, standardized path coefficient= .20, p<.01). Thus, hypothesis 2a was supported. In addition, the path from the HPWS intercept to the productivity slope among small organizations is stronger than that among large organizations (t=.31, p<.10), but the path from the productivity intercept to the HPWS slope was not significantly different between small organizations and large organizations (p>.10).

For young organizations (n= 1090), the intercept of HPWS marginally and positively predicted the slope of productivity (unstandardized path coefficient= .30, standardized path coefficient= .18, p<.10) and the intercept of productivity marginally and positively predicted the slope of HPWS (unstandardized path coefficient= .01, standardized path coefficient= .31, p<.10). In mature organizations (n= 2470), the path from the intercept of HPWS to the slope of productivity was marginally and positively significant (unstandardized path coefficient= .23, standardized path coefficient= .12, p<.10), but the path the intercept of productivity to the slope of HPWS was not supported (p>.10). Thus, hypothesis 2b was marginally and partially supported. However, a t-test indicated that the path coefficients from the HPWS intercept to the productivity slope were not significantly different between young and mature organizations (p>.10). Also, the path coefficients from the productivity intercept to the HPWS slope were not significant different between young and mature organizations (p>.10). The relationship between the slope of HPWS and the slope of productivity was not significant in each sub-sample, rejecting the co-evolutionary "Red Queen" process.

DISCUSSION

The findings of this study have important implications for SHRM. First, the intercept of HPWS positively and significantly predicted the slope of productivity. This finding indicates that once firms have a high level of advanced HRM practices in place, this set of practices is associated with both a higher level of productivity and productivity growth over time. Furthermore, because the gains in productivity associated with a high level of HPWS increase over time, this finding supports arguments that the benefits of implementing HPWS are lasting and sustainable, and as such, have the potential to create sustained competitive advantage for firms (Barney, 1991).

Importantly, higher productivity did not predict continuous growth in HPWS, indicating that organizations did not continuously reinvest their increased revenues in HPWS. This finding shows that the link between HPWS and productivity is largely due to the effectiveness of HPWS, rather than reverse causal processes whereby more productive organizations use the generated slack to build their HRM systems (Wright et al., 2005). If organizations need not continuously invest in increasing their HRM practices, they can allocate resources to other functions such as Marketing, R&D, and operations. Therefore, successful establishment of HPWS can benefit the organization as a whole, rather than producing benefits that are limited to the HRM function.

In addition, no Red Queen effect was found. That is, the slope of HPWS was not related to the slope of productivity. Therefore, no co-evolutionary process between HPWS and productivity was observed. This finding suggests that HPWS provides performance growth without requiring continual upgrades involving ongoing costs. As such, this finding reduces concerns raised by Kaufman (2015; Kaufman & Miller, 2011) that the costs of HPWS outweigh its benefits. Also, the positive link between productivity and HPWS does not appear to be an example of the "Icarus paradox" (i.e., successful organizations

increasingly invest in managerial practices that have worked in the past, exacerbating costs over time) (Miller, 1992) where management continuously uses the resource gains from performance improvements to strengthen management practices (Daniel et al., 2004).

While the main findings of the study support the argument that HPWS leads to productivity growth without a simultaneous increase in administrative costs, these beneficial effects are moderated by organizational characteristics associated with the firm life cycle (Nicholls-Nixon, 2005). First, small organizations experience productivity growth subsequent to implementation of a high level of HPWS at an earlier point in time. Also, these firms did not display the positive impact of high productivity on growth in HPWS, indicating there was no added investment in HRM practices in response to organizational success. Because small firms have limited levels of slack resources (Sharfman et al., 1988), they may not be able to invest the resources generated through productivity gains to strengthen HRM. Rather, they may need to allocate their limited resources to other functions such as Marketing, R&D, and operations. Such investments are likely more appropriate for addressing the challenges small firms commonly face when growing their businesses while facing larger competitors who enjoy greater economies of scale (Carpenter & Petersen, 2002).

By comparison, large organizations show a positive link between earlier productivity level and subsequent growth in HPWS. This finding suggests that achieving higher performance levels provides larger firms with sufficient resources to maintain or increase their investments in HPWS. Re-investing to strengthen the HPWS may be more necessary in large organizations which often face uneven implementation of management initiatives (Kulik & Bainbridge, 2006) and can capitalize on economies of scale when adding new HPWS components such as more training or increased support for teams (De Kok, 2002).

Second, the findings of this study showed evidence of both directions of causality among young organizations, indicating that HPWS level leads to productivity growth and productivity level leads to HPWS growth as well. These findings further support the importance of considering the organizational life cycle in SHRM theorizing. A key factor that leads young organizations to distribute their growing resources to strengthen their HRM systems is growth in productivity because it often results from growing sales and requires adding to the employee base. Early HPWS supports a strong operational process resulting in expanding demand for the firm's products or services which generates strong revenue growth. Growing demand requires the addition of new employees who are not members of the founders and original staff. Eventually, the growing organization can no longer be effectively run through a set of informal relationships, but rather, requires the development of formalized practices to generate consistency, legitimacy, and organizational justice (Leventhal, Karuza, & Fry, 1980). By comparison, mature organizations show a positive link between earlier HPWS and subsequent growth in productivity while reinvestment of new revenues into the HPWS is not observed. While young organizations have more room to change, established organizations have great difficulty in changing management practices. This finding suggests that once organizations have an established HPWS in place, the benefits are ongoing and do not require continuous search for and modification of the HRM system.

Implications for Theory

Nelson and Winter (1982) proposed an evolutionary theory of economics, which emphasizes habitual "localness of search" (Gavetti, 2012, p. 268). Because the evolutionary process results in path dependence in organizational development (Nelson & Winter, 2002), organizational search for new managerial practices is likely to be based on existing practices

of the organization. Local search suggests that organizations do not easily copy the resource allocations of successful competitors. Understanding management practices as adaptive systems suggests that organizational adaptation over time creates unique management practices, which are difficult for others to copy (Knott, 2003), creating the conditions for the development of competitive advantage.

In addition, while the strategic management tradition has argued that management practices are malleable, due to top management team decision-making [i.e., strategic fits (Wood, 1999)], the stability of management practices reveals that room for rational choice is likely to be limited. The stickiness of HRM practices resulting from local search, while usually considered a limitation, can also be beneficial for organizations. For example, consistent messages over time lead employees to perceive HRM practices as reliable, resulting in the almost automatic execution of hoped for beneficial behavior (Bowen & Ostroff, 2004). Thus, findings of this study suggest the validity of the evolutionary perspective (i.e., building and integrating best practices into the local context over time) as well as the diffusionist perspective (i.e., adopting the abstract concept of a consistent set of best practices) in understanding HPWS implementation.

Agents in the AMO framework have been regarded as mechanistic, such that their perceptions and emotions are dependent upon managerial actions. However, employees are not merely passive recipients of management practices. Successful implementation of management practices depends upon the actions of targeted employees and how effectively they enact new processes. The behavioral theory of the firm suggests that the responses of employees to management initiatives are likely to be heterogeneous. Employees' cognitive and psychological outcomes are shaped by their behavioral routines, which are based on memory and experience. As shown by studies of the micro-foundations of strategy (Barney

& Felin, 2013; Felin, Foss, Heimeriks, & Madsen, 2012), employees must adapt to new HRM practices by accumulating and developing shared behavioral routines at the organizational level. The tacit knowledge and social processes developed through this adaptive process can create competitive advantage for a firm (Gondo & Amis, 2013).

Understanding HRM practices as adaptive systems invites researchers to investigate HRM practices from a long-term perspective. Weick (1979) proposes that organizational practices go through ongoing adaptive variation-selection-retention cycles. Regarding HRM practices as adaptation processes is rare, but an adaptation perspective can indeed be applicable to HPWS. For example, Pil and MacDuffie (1996, 1999) suggested that HPWS implementation must be seen as an adaptive process because of the long time-periods required to reap its benefits. Our findings suggest that benefits also increase over time. Conceptually, as organizational members accrue memories and experience in working within a HPWS over time, they learn how to better enact and leverage the associated practices to benefit both themselves and their firm (Gondo & Amis, 2013). This study's findings based upon a six-year time frame support the proposition that the benefits of HPWS grow over time.

Only when organizations experience ongoing poor performance do they tend to enlarge their search for more radical solutions to their problems (Cyert & March, 1963). However, even in such circumstances, path dependence restricts the set of actions realistically available to decision-makers such that the nature of practice change might still be best described as an incremental process (Gavetti & Rivkin, 2007). Due to such behavioral aspects of management as organizational inertia, the bounded rationality of the top management team, and employee experience and expectation, dramatic changes in HRM practice are rather unusual compared to incremental adaptation; therefore, consistency of HRM practices is

required (Szulanski, 1996). Bowen and Ostroff (2004) proposed that the consistency of HRM practices over time can positively contribute to organizational outcomes by providing clearer messages to employees. Consistent HRM messages can command and retain employees' attention, and employees are more likely to perform according to the messages when they have a better understanding of the organization's HRM practices.

The findings of this study also indicate that the HPWS-performance linkage is contingent on organizational characteristics such as organizational size and age. Findings extend the contingency perspective on HPWS, suggesting the importance of consideration of the organizational life cycle. For example, while small organizations experience the *throughput* effect of HPWS (i.e., the effect of HPWS on productivity), large organizations experience the *re-input* effect (i.e., the effect of productivity on HPWS development and extension). For young organizations, both the contribution of HPWS to organizational performance and having slack resources to invest in developing HPWS seem to be critical. Mature organizations, on the other hand, seem to benefit from having an established HPWS which precludes the need to continue searching for alternatives and strengthening internal practices. This set of findings implies that organizational life cycle theory should be taken into consideration when theorizing the development and effectiveness of HRM practices (Aldrich & Langton, 1997).

According to Colbert (2004), causal ambiguity in the HPWS-performance linkage can be a source of competitive advantage for an organization because it reduces the likelihood of imitation by competitors. The findings of this study suggest that the HPWS-performance relationship is more complex than the unidirectional causal assumption that has been widely held in the SHRM literature. As such, they support the proposition that the performance effects of HPWS are causally ambiguous and difficult for competitors to copy, further

strengthening the argument that HPWS can generate competitive advantage for firms. Future studies can advance the literature by examining the causality issue and its contingencies further.

PRACTICAL IMPLICATIONS

The findings of this study suggest that HPWS works as a platform on which employees can rely once it is successfully established. Thus, it is recommended that firms establish an internally consistent set of advanced HRM practices that fit the business strategy as early in their life cycle as possible because the benefits of HPWS can be sustained over time. The contribution of a well-designed HPWS to productivity seems to be on-going, enduring over many years without requiring continuous growth in HPWS investments. In addition, the co-evolutionary perspective was rejected, suggesting that practitioners can rely on established HPWS without continuously looking for new managerial practices and policies.

These findings also imply challenges in HPWS implementation and the need for workforce transformation. Path dependency results in long-term internal stability of HRM practices, limiting the ability to make radical changes. Managerial decision-makers can avoid counterproductive combinations of HRM practices if they have a good understanding of their existing structures and how they result in their effects. Decision-makers can also minimize negative behavioral responses of employees by initiating changes with consideration of existing rules and structures. Findings of this study reflect the general tendency of organizations to use HRM practices consistently over time, but this general tendency does not mean that organizations cannot make major and dramatic changes in HRM practices in a relatively short period. With good understanding of historical boundaries and managerial

resolve, organizations can in fact make radical changes — and the findings of this study indicate the potential to benefit from comprehensive HPWS initiatives in particular.

Management practitioners have been subject to managerial fads and fashions from outside markets (Abrahamson, 1991, 1996). While organizations can certainly imitate the innovative practices of other organizations, it is likely that many valuable HRM practices evolve within organizations due to the effects of customized fit and resulting uniqueness. Because strong path dependence curbs organizations from adopting radical changes, new initiatives that ignore the organization's existing rules and procedures may fail. It could be naïve of practitioners to believe that a new set of HRM practices can be easily transplanted into an organization while ignoring the organization's historical boundaries. A good understanding of existing organizational practices is a proper starting point for making innovative changes which depart substantially from the existing mode of operation of particular businesses. Therefore, HRM practitioners need to focus their efforts on both intra-organizational adaptation of HRM practices together with inter-organizational adoption of HPWS.

The causal association between HPWS and organizational performance depends on organizational life cycle contingencies. Findings suggest that practitioners need to consider their organizations' life cycles in implementing HPWS. For example, while HPWS research has typically studied mature and large organizations, findings suggest that practitioners can consider adopting HPWS in entrepreneurial organizations because establishing HPWS can contribute to their productivity growth. Especially, it is beneficial for young organizations to enhance productivity by adopting advanced HRM practices and reinvesting slack resources by expanding and strengthening in HRM practices as they grow their employee base. Furthermore, mature organizations can enjoy productivity growth without continuously

modifying well designed HRM practices. The general systems theory suggests that competitive advantage can be gained and sustained through the ongoing cycles of the adaptation process. Organizational adaptation over time creates a unique combination of HRM practices, and competitors have difficulty imitating such organizational complexity. As young organizations go through modifications of HRM practices over time, they develop complex and stable HRM systems, and the complexity inherent in the system level HRM provides sustained competitive advantages for mature organizations.

LIMITATIONS

Despite its contributions, this study has several limitations. Firstly, while the HPWS measure includes practices covering the important dimensions of training, empowerment, compensation, benefits, and work design, the present HPWS measure does not cover other components such as selection and job security. As researchers still have not reached an agreement on what constitutes HPWS, it is desirable to define the range of components of HPWS more precisely in and for future studies.

Secondly, the HPWS measure is based on dichotomous indicators of the presence of HRM practices. The fact that senior HRM managers report the existence of HPWS practices does not mean that they are implemented effectively (Gondo & Amis, 2013). Thus, the presence of HRM practices cannot sufficiently capture how HRM practices are tailored and enacted by employees. Such performativity aspects of HRM implementation, or the role of individuals' performances in their enactment of practices (Feldman, 2003; Feldman & Pentland, 2003), have to be further explored by means of field studies.

Thirdly, as Kaufman and Miller (2011) pointed out, a research approach that assumes more HRM is better might ignore costs associated with HPWS adoption. This study showed

a positive effect of initial HPWS level on productivity growth without a concurrent positive association between the slope of HPWS and the slope of productivity changes. These findings indicate that the costs of HPWS do not grow with increases in revenue, helping to assuage cost concerns. The finding that initial productivity level did not predict growth in HPWS for the overall sample provides additional evidence reducing cost concerns regarding HRM as a method for enhancing firm performance. But the additive indices of HPWS practices were unable to assess how well or how extensively the practices are implemented in each firm. In-depth qualitative studies can contribute to understanding of the relationship between HPWS and performance by providing finer-grained measures of implementation changes over time.

Finally, the results of this study are potentially linked to specific events in North America between 1999 and 2005. Although there seem to be no special economic and social events occurring during this time, it is necessary to test the relationship in another time period and in different locations to generalize the findings.

CONCLUSIONS

The SHRM literature displays a limited understanding of the longitudinal process of implementing HRM. By applying latent growth modeling to HRM practices, this paper suggests that HPWS can be better understood as an adaptive system. This study found that, once well established, HRM practices create a platform upon which employees can build, thereby continuously increasing organizational performance. While most HRM studies have focused on inter-organizational differences (i.e., diffusion), these findings support an evolutionary perspective where HPWS develops over time within each organization. Furthermore, integrating the life cycle perspective on the firm into SHRM theory, these

findings indicate that, in practice, it is preferable to establish HPWS as completely as possible while the firm is young and still small in order to fully reap the ongoing benefits from HRM investments.

REFERENCES

Abrahamson, E. (1991). Managerial fads and fashions: The diffusion and rejection of innovations. *Academy of Management Review, 16*(3), 586-612.

Abrahamson, E. (1996). Management fashion. *Academy of Management Review, 21*(1), 254-285.

Aime, F., Johnson, S., Ridge, J. W., & Hill, A. D. (2010). The routine may be stable but the advantage is not: Competitive implications of key employee mobility. *Strategic Management Journal, 31*(1), 75-87.

Aldrich, H. (1999). *Organizations evolving*. London: Sage.

Aldrich, H., & Langton, N. (1997). Human resource management practices and organizational life cycles. In P. D. Reynolds, W. D. Bygrave, N. M. Carter, P. D. Davidsson, W. B. Gartner, C. M. Mason & P. P. McDougall (Eds.), *Frontiers of entrepreneurship* (pp. 349-357). Wellesley, MA: Babson College Center for Entrepreneurship.

Appelbaum, E., Bailey, T., Berg, P., & Kalleberg, A. L. (2000). *Manufacturing advantage: Why high-performance work systems pay off*. Ithaca, NY: Cornell University Press.

Arthur, J. B., Herdman, A. O., & Yang, J. (in press). How top management HR beliefs and values affect high-performance work system adoption and implementation effectiveness. *Human Resource Management*.

Aryee, S., Walumbwa, F. O., Seidu, E. Y. M., & Otaye, L. E. (2012). Impact of high-performance work systems on individual- and branch-level performance: Test of a multilevel model of intermediate linkages. *Journal of Applied Psychology, 97*(2), 287-300.

Balkin, D. B., & Gomez-Mejia, L. R. (1987). Toward a contingency theory of compensation strategy. *Strategic Management Journal, 8*(2), 169-182.

Barney, J. B. (1991). Firm resources and sustained competitive advantage. *Journal of Management, 17*(1), 99-120.

Barney, J. B., & Felin, T. (2013). What are microfoundations? *Academy of Management Perspectives, 27*(2), 138-155.

Becker, B. E., & Huselid, M. A. (2006). Strategic human resources management: Where do we go from here? *Journal of Management, 32*(6), 898-925.

Blinder, A. S. (1990). *Paying for productivity: A look at the evidence*. Washington, DC: The Brookings Institution.

Bowen, D. E., & Ostroff, C. (2004). Understanding HRM-firm performance linkages: The role of the "strength" of the HRM system. *Academy of Management Review, 29*(2), 203-221.

Buller, P. F., & Napier, N. K. (1993). Strategy and human resource management integration in fast growth versus other mid-sized firms. *British Journal of Management, 4*(2), 77-90.

Byrne, B. M. (2012). *Structural equation modeling with Mplus: Basic concepts, applications, and programming*. New York: Routledge.

Byrne, B. M., & Stewart, S. M. (2006). Teacher's corner: The MACS approach to testing for multigroup invariance of a second-order structure: A walk through the process. *Structural Equation Modeling: A Multidisciplinary Journal, 13*(2), 287-321.

Camisón-Zornoza, C., Lapiedra-Alcamí, R., Segarra-Ciprés, M., & Boronat-Navarro, M. (2004). A meta-analysis of innovation and organizational size. *Organization Studies, 25*(3), 331-361.

Carpenter, R. E., & Petersen, B. C. (2002). Is the growth of small firms constrained by internal finance? *Review of Economics and Statistics, 84*(2), 298-309.

Chen, M.-J., & Hambrick, D. C. (1995). Speed, stealth, and selective attack: How small firms differ from large firms in competitive behavior. *Academy of Management Journal, 38*(2), 453-482.

Cheung, G. W., & Rensvold, R. B. (2002). Evaluating goodness-of-fit indexes for testing measurement invariance. *Structural Equation Modeling: A Multidisciplinary Journal, 9*(2), 233-255.

Choi, J.-H. (2014). Who should be the respondent? Comparing predictive powers between managers' and employees' responses in measuring high-performance work systems practices. *International Journal of Human Resource Management, 25*(19), 2667-2680.

Combs, J. G., Liu, Y., Hall, A. T., & Ketchen, D. J. (2006). How much do high-perofmrance work practices matter? A meta-analysis of their effects on organizational performance. *Personnel Psychology, 59*(3), 501-528.

Cyert, R. M., & March, J. G. (1963). *A behavioral theory of the firm*. Upper Saddle River, NJ: Prentice Hall.

Daniel, F., Lohrke, F. T., Fornaciari, C. J., & Turner, R. A. (2004). Slack resources and firm performance: A meta-analysis. *Journal of Business Research, 57*(6), 565-574.

Datta, D. K., Guthrie, J. P., & Wright, P. M. (2005). Human resource management and labor productivity: Does industry matter? *Academy of Management Journal, 38*(1), 135-145.

De Kok, J. (2002). The impact of firm-provided training on production testing for firm-size effects. *International Small Business Journal, 20*(3), 271-295.

Drummond, I., & Stone, I. (2007). Exploring the potential of high performance work systems in SMEs. *Employee Relations, 29*(2), 192-207.

Feldman, M. S. (2003). A performative perspective on stability and change in organizational routines. *Industrial and Corporate Change, 12*(4), 727-752.

Feldman, M. S., & Pentland, B. T. (2003). Reconceptualizing organizational routines as a source of flexibility and change. *Administrative Science Quarterly, 48*(1), 94-118.

Felin, T., Foss, N. J., Heimeriks, K. H., & Madsen, T. L. (2012). Microfoundations of routines and capabilities: Individuals, processes, and structure. *Journal of Management Studies, 49*(8), 1351-1374.

Fernandez, S., & Moldogziev, T. (2013). Employee empowerment, employee attitudes, and performance: Testing a causal model. *Public Administration Review, 73*(3), 490-506.

Gavetti, G. (2012). Perspective—Toward a behavioral theory of strategy. *Organization Science, 23*(1), 267-285.

Gavetti, G., & Rivkin, J. W. (2007). On the origin of strategy: Action and cognition over time. *Organization Science, 18*(3), 420-439.

Golhar, D. Y., & Deshpande, S. P. (1997). Human resource management practices of large and small Canadian manufacturing firms. *Journal of Small Business Management, 35*(1), 9-30.

Gondo, M. B., & Amis, J. M. (2013). Variations in practice adoption: The role of conscious reflection and discourse. *Academy of Management Review, 38*(2), 229-247.

Gooding, R. Z., & Wagner III, J. A. (1985). A meta-analytic review of the relationship between size and performance: The productivity and efficiency of organizations and their subunits. *Administrative Science Quarterly, 30*(4), 462-481.

Guest, D. E. (2011). Human resource management and performance: Still searching for some answers. *Human Resource Management Journal, 21*(1), 3-13.

Guzzo, R. A., & Dickson, M. W. (1996). Teams in organizations: Recent research on performance and effectiveness. *Annual Review of Psychology, 47*(1), 307-338.

Hannan, M. T., & Freeman, J. (1984). Structural inertia and organizational change. *American Sociological Review, 29*(2), 149-164.

Huselid, M. A. (1995). The impact of human resource management practices on turnover, productivity, and corporate financial performance. *Academy of Management Journal, 38*(3), 635-672.

Huselid, M. A., & Becker, B. E. (1996). Methodological issues in cross-sectional and panel estimates of the human resource-firm performance link. *Industrial Relations: A Journal of Economy and Society, 35*(3), 400-422.

Industry Canada. (2012). Key small business statistics (July, 2012 ed.). Ottawa: Industry Canada.

Iverson, R. D. (1996). Employee acceptance of organizational change: The role of organizational commitment. *International Journal of Human Resource Management, 7*(1), 122-149.

Jiang, J. Y., & Liu, C.-W. (2015). High performance work systems and organizational effectivenss: The mediating role of social capital. *Human Resource Management Review, 25*(1), 126-137.

Jiang, K., Lepak, D. P., Hu, J., & Baer, J. C. (2012). How does human resource management influence organizational outcomes? A meta-analytic investigation of mediating mechanisms. *Academy of Management Journal, 55*(6), 1264-1294.

Kast, F. E., & Rosenzweig, J. E. (1972). General systems theory: Applications for organization and management. *Academy of Management Journal, 15*(4), 447-465.

Kaufman, B. E. (2015). Market competition, HRM, and firm performance: The conventional paradigm critiqued and reformulated. *Human Resource Management Review, 25*(1), 107-125.

Kaufman, B. E., & Miller, B. I. (2011). The firm's choice of HRM practices: Economics meets strategic human resource management. *Industrial and Labor Relations Review, 64*(3), 526-557.

Knott, A. M. (2003). The organizational routines factor market paradox. *Strategic Management Journal, 24*(10), 929-943.

Lawler, E. E., III. (1986). *High-involvement managment*. San Francisco, CA: Jossey-Bass.

Lawrence, P. R., & Lorsch, J. W. (1967). *Organization and environment: Managing differentiation and integration*. Boston, MA: Harvard University Press.

Lepak, D. P., Liao, H., Chung, Y., & Harden, E. E. (2006). A conceptual review of human resource management systems in strategic human resource management research. In J. J. Martocchio (Ed.), *Research in personnel and human resources management* (Vol. 25, pp. 217-271). Oxford, UK: Elsevier.

Leventhal, G. S., Karuza, J., & Fry, W. R. (1980). Beyond fairness: A theory of allocation preferences. In G. Mikula (Ed.), *Justice and social interaction* (pp. 167-218). New York: Springer-Verlag.

Levinthal, D. A. (1997). Adaptation on rugged landscapes. *Management Science, 43*(7), 934-950.

Levitt, B., & March, J. G. (1988). Organizational learning. *Annual Review of Sociology, 14*(1), 319-340.

Lewin, A. Y., & Volberda, H. W. (1999). Prolegomena on coevolution: A framework for research on strategy and new organizational forms. *Organization Science, 10*(5), 519-534.

Liao, H., Toya, K., Lepak, D. P., & Hong, Y. (2009). Do they see eye to eye? Management and employee perspectives of high-performance work systems and influence processes on service quality. *Journal of Applied Psychology, 94*(2), 371-391.

Little, T. D. (2013). *Longitudinal structural equation modeling*. New York: Guilford Press.

London, M., & Smither, J. W. (1999). Empowered self-development and continuous learning. *Human Resource Management, 38*(1), 3-15.

MacDuffie, J. P. (1995). Human resource bundles and manufacturing performance: Organizational logic and flexible production systems in the world auto industry. *Industrial and Labor Relations Review, 48*(2), 197-221.

Macky, K., & Boxall, P. (2007). The relationship between 'high-performance work practices' and employee attitudes: An investigation of additive and interaction effects. *International Journal of Human Resource Management, 18*(4), 537-567.

McKelvey, B. (1997). Perspective-quasi-natural organization science. *Organization Science, 8*(4), 351-380.

Messersmith, J. G., & Wales, W. J. (2011). Entrepreneurial orientation and performance in young firms: The role of human resource management. *International Small Business Journal, 31*(2), 115-136.

Meyer, J. P., Jackson, T. A., & Maltin, E. R. (Eds.). (2008). *Commitment in the workplace: Past, present and future* (Vol. 1). Thousand Oaks, CA: Sage Publications.

Miller, D. (1992). The Icarus paradox: How exceptional companies bring about their own downfall. *Business Horizons, 35*(1), 24-35.

Miller, D., & Friesen, P. H. (1984). A longitudinal study of the corporate life cycle. *Management Science, 30*(10), 1161-1183.

Nelson, R. R., & Winter, S. G. (1982). *An evolutionary theory of economic change*. Cambridge, MA: Belknap Press of Harvard University Press.

Nelson, R. R., & Winter, S. G. (2002). Evolutionary theorizing in economics. *Journal of Economic Perspectives, 16*(2), 23-46.

Nicholls-Nixon, C. L. (2005). Rapid growth and high performance: The entrepreneur's "impossible dream?". *Academy of Management Executive, 19*(1), 77-89.

Nonaka, I., & Takeuchi, H. (1995). *The knowledge-creating company: How Japanese companies create the dynamics of innovation*. New York: Oxford University Press.

Phelps, R., Adams, R., & Bessant, J. (2007). Life cycles of growing organizations: A review with implications for knowledge and learning. *International Journal of Management Reviews, 9*(1), 1-30.

Pil, F. K., & MacDuffie, J. P. (1996). The adoption of high-involvement work practices. *Industrial Relations: A Journal of Economy and Society, 35*(3), 423-455.

Pil, F. K., & MacDuffie, J. P. (1999). Organizational and environmental factors influencing the use and diffusion of high-involvement work practices. In P. Cappelli (Ed.), *Employment practices and business strategy*. New York: Oxford University Press.

Ployhart, R. E., Van Iddekinge, C. H., & MacKenzie, W. I. (2011). Acquiring and developing human capital in service contexts: The interconnectedness of human capital resources. *Academy of Management Journal*, 54(2), 353-368.

Ranger-Moore, J. (1997). Bigger may be better, but is older wiser? Organizational age and size in the New York life insurance industry. *American Sociological Review, 62*(6), 903-920.

Ryan, R., & Deci, E. (2000). Self-determination theory and the facilitation of intrinsic motivation, social development, and well-being. *American Psychologist, 55*(1), 68-78.

Sels, L., De Winne, S., Maes, J., Delmotte, J., Faems, D., & Forrier, A. (2006). Unravelling the HRM–performance link: Value-creating and cost-increasing effects of small business HRM. *Journal of Management Studies, 43*(2), 319-342.

Sharfman, M. P., Wolf, G., Chase, R. B., & Tansik, D. A. (1988). Antecedents of organizational slack. *Academy of Management Review, 13*(4), 601-614.

Shin, D., & Konrad, A. M. (in press). Causality between high-performance work systems and organizational performance. *Journal of Management*.

Smith, K. G., Guthrie, J. P., & Chen, M.-J. (1989). Strategy, size and performance. *Organization Studies, 10*(1), 63-81.

Snape, E., & Redman, T. (2010). HRM practices, organizational citizenship behaviour, and performance: A multi-level analysis. *Journal of Management Studies, 47*(7), 1219-1247.

Spreitzer, G. M. (1995). Psychological Empowerment in the Workplace: Dimensions, Measurement, and Validation. *The Academy of Management Journal, 38*(5), 1442-1465.

Spreitzer, G. M., Kizilos, M. A., & Nason, S. W. (1997). A dimensional analysis of the relationship between psychological empowerment and effectiveness, satisfaction, and strain. *Journal of Management, 23*(5), 679-704.

Statistics Canada. (2008). Workplace and employee survey compendium. Ottawa: Labour Statistics Division.

Subramony, M. (2009). A meta-analytic investigation of the relationship between HRM bundles and firm performance. *Human Resource Management, 48*(5), 745-768.

Szulanski, G. (1996). Exploring internal stickiness: Impediments to the transfer of best practice within the firm. *Strategic Management Journal, 17*(Winter Special Issue), 27-43.

Takeuchi, R., Lepak, D. P., Wang, H., & Takeuchi, K. (2007). An empirical examination of the mechanisms mediating between high-performance work systems and the performance of Japanese organizations. *Journal of Applied Psychology, 92*(4), 1069-1083.

Tomarken, A. J., & Waller, N. G. (2005). Structural equation modeling: Strengths, limitations, and misconceptions. *Annual Review of Clinical Psychology, 1,* 31-65.

Van Iddekinge, C. H., Ferris, G. R., Perrewé, P. L., Perryman, A. A., Blass, F. R., & Heetderks, T. D. (2009). Effects of selection and training on unit-level performance over time: A latent growth modeling approach. *Journal of Applied Psychology, 94*(4), 829-843.

Van Valen, L. (1973). A new evolutionary law. *Evolutionary Theory, 1,* 1-30.

Vandenberg, R. J., & Lance, C. E. (2000). A review and synthesis of the measurement invariance literature: Suggestions, practices, and recommendations for organizational research. *Organizational Research Methods, 3*(1), 4-70.

Von Bertalanffy, L. (1968). *General system theory: Foundations, development, applications* (Rev. ed.). New York: George Braziller.

Walsh, J. P., & Dewar, R. D. (1987). Formalization and the organizational life cycle. *Journal of Management Studies, 24*(3), 215-231.

Way, S. A. (2002). High performance work systems and intermediate indicators of firm performance within the US small business sector. *Journal of Management, 28*(6), 765-785.

Weick, K. E. (1979). *The social psychology of organizing* (2nd ed.). Reading, MA: Addison-Wesley.

Wood, S. (1999). Human resource management and performance. *International Journal of Management Reviews, 1*(4), 367-413.

Wright, P. M., Dunford, B. B., & Snell, S. A. (2001). Human resources and the resource based view of the firm. *Journal of Management,* 27(6), 701-721.

Wright, P. M., Gardner, T. M., Moynihan, L. M., & Allen, M. R. (2005). The relationship between HR practices and firm performance: Examining causal order. *Personnel Psychology, 58*(2), 409-446.

Wright, P. M., & Snell, S. A. (1998). Toward a unifying framework for exploring fit and flexibility in strategic human resource management. *Academy of Management Review, 23*(4), 756-772.

Wu, P.-C., & Chaturvedi, S. (2009). The role of procedural justice and power distance in the relationship between high-performance work systems and employee attitudes: A multilevel perspective. *Journal of Management, 35*(5), 1228-1247.

Zacharatos, A., Barling, J., & Iverson, R. D. (2005). High-performance work systems and occupational safety. *Journal of Applied Psychology, 90*(1), 77-93.

Zatzick, C. D., & Iverson, R. D. (2006). High-involvement management and workforce reduction: Competitive advantage or disadvantage? *Academy of Management Journal, 49*(5), 999-1015.

Table 4-1 Theoretical Foundations

	HPWS → Performance Growth	HPWS Growth ← Performance	HPWS Growth↔ Performance Growth
Foundations	RBV, AMO	Feedback, Slack Resources	Co-evolutionary process

Table 4-2 Means, Standard Deviations, and Correlations

	Mean	SD	1	2	3	4	5	6	7	8	9
1.HPWS99	.14	.13	-								
2.HPWS01	.13	.12	.55	-							
3.HPWS03	.13	.12	.54	.69	-						
4.HPWS05	.13	.12	.53	.66	.71	-					
5.PROD99[a]	11.52	.88	.11	.17	.19	.17	-				
6.PROD01[a]	11.60	.91	.13	.15	.16	.15	.79	-			
7.PROD03[a]	11.67	.89	.13	.15	.18	.15	.74	.84	-		
8.PROD05[a]	11.71	.88	.16	.18	.20	.18	.66	.77	.86	-	
9.Size	15.51	43.16	.33	.34	.35	.33	.06	.06	.05	.07	-
10.Age	17.02	13.59	.08	.08	.08	.08	.05	-.01	.02	.00	.13

Notes. N = 3,560. HPWS = high-performance work systems. PROD = Productivity. a Log transformed. All correlations that have absolute values higher than .03 are significant ($p<.05$).

Table 4-3 Tests of Measurement Invariance

	x^2	df	Δx^2	CFI	ΔCFI	RMSEA	TLI
Configural invariance	79.8	74		.999		.005	.998
Metric invariance	100.2	83	20.4*	.996	.003	.008	.994
Scalar invariance	134.7	94	34.5***	.990	.006	.011	.987

Note: * p<.05, ** p<.01, *** p<.001

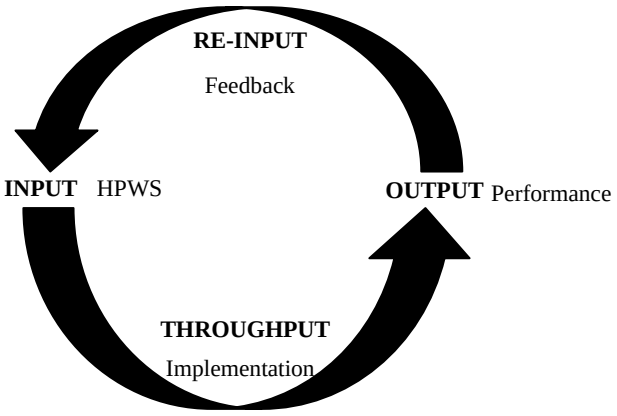


Figure 4-1 HPWS as Adaptive Systems

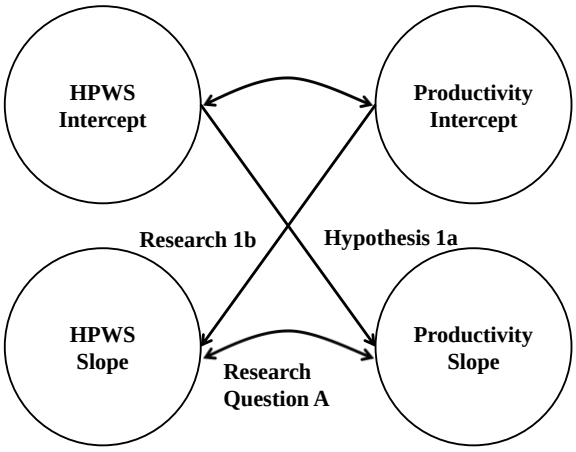


Figure 4-2 Research Model

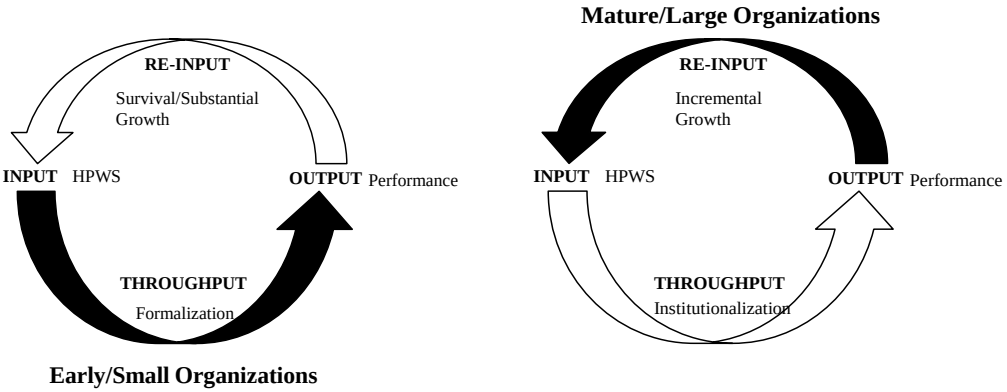


Figure 4-3 Early/Small vs. Mature/Large Organizations

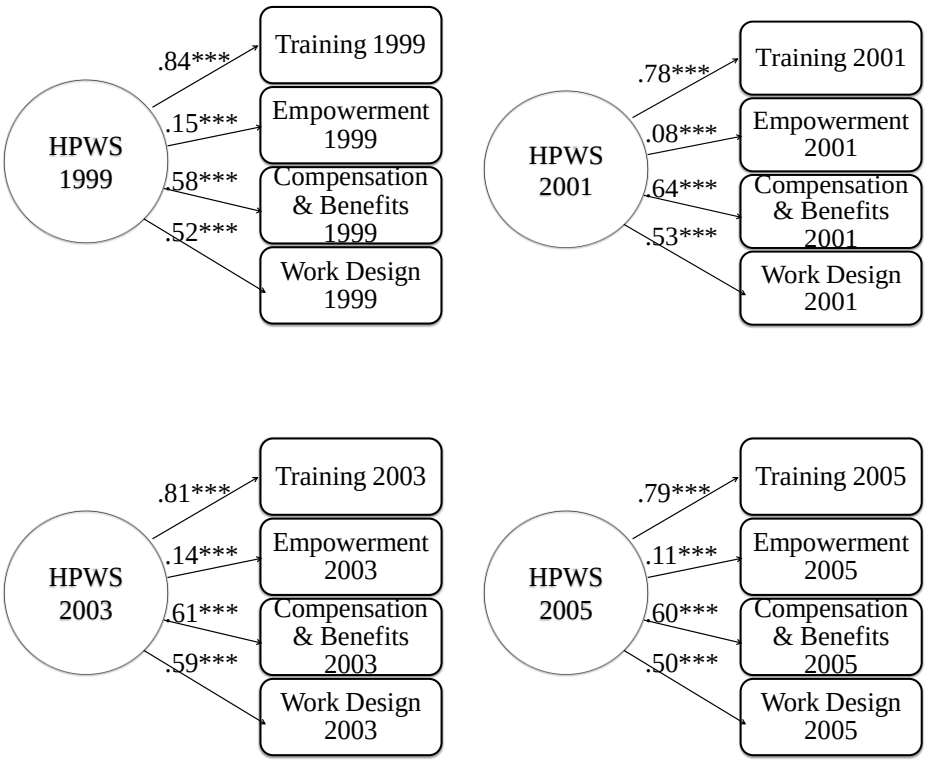


Figure 4-4 Confirmatory Factor Analysis for the HPWS

Note. Standardized coefficients, *** p<.001

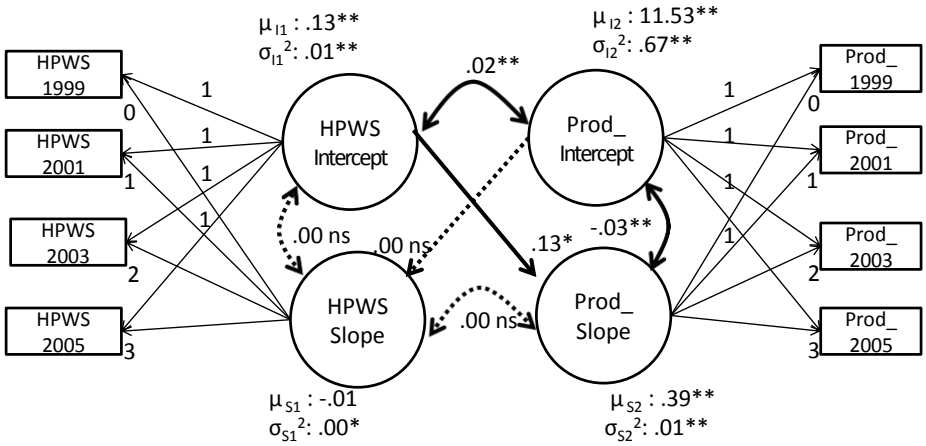


Figure 4-5 Latent Growth Modeling Approach to HRM practices and Productivity

Note. Unstandardized coefficients, * p<.05, ** p<.01, Prod_: productivity

CHAPTER 5. GENERAL DISCUSSION AND CONCLUSION

The goal of this thesis was to consider HRM systems from an alternative theoretical perspective. To this end, I considered integration of different theoretical perspectives in SHRM, using general systems theory as an integrative framework. I also examined the causal association between HPWS and organizational performance using a large longitudinal dataset. In this chapter, I describe the contributions of this thesis, consider limitations, and provide implications for future studies.

CONTRIBUTIONS

SHRM has borrowed from other fields such as economics, psychology, and sociology to explain the effectiveness of HPWS (e.g., Jackson, Schuler, & Jiang, 2014; Wright & McMahan, 1992). Each field of research has uniquely advanced the literature, but the literature still remains largely disconnected (Fleetwood & Hesketh, 2008; Way & Johnson, 2005). This thesis attempts to overcome such criticisms by proposing an alternative theoretical framework. Specifically, the first essay proposes a general systems perspective on SHRM as an effort to provide an integrative framework for the field. The second essay focuses on the causal association between HPWS and organizational outcomes. The third essay further considers implementation of HPWS as an adaptive process, thus examining longitudinal changes in HPWS and organizational performance.

This thesis can advance the literature in several important ways. First, I introduce a broad set of system concepts to the SHRM literature. Current utilization of system concepts has been limited to external consistency of HRM practices with business strategies and internal consistency among individual HRM practices (Wright & Snell, 1998). This thesis

considers HRM system concepts (e.g., equifinality, feedback, and homeostasis) and further provides HRM system principles based on the system concepts. The HRM system concepts and HRM system principles introduced in this thesis can enrich current understanding of HRM as a system.

Second, this thesis provides an alternative theoretical perspective by applying general systems theory. A major issue in the SHRM theorizing resides in the lack of an integrative theoretical perspective, rather than lack of theories (Fleetwood & Hesketh, 2006, 2008). This thesis identifies four different approaches in SHRM studies (economic, psychological, sociological, and critical perspectives) and introduces general systems theory as a meta-theoretical framework that can integrate different approaches to SHRM (Fleetwood & Hesketh, 2006, 2008). While each tradition has contributed different aspects of SHRM effectiveness, the SHRM literature requires a strong integrative framework that can overcome the disconnects in SHRM theorizing.

Third, while most studies in the SHRM literature have focused on contents of HPWS (e.g., components of HPWS), the HRM system process is equally important as well. The HRM system process considers implementation of HRM practices through repetitive cycles of input, throughput, output, and re-input. The general systems theory approach explains how HPWS can provide sustained competitive advantage for organizations. Because organizational evolution is largely path-dependent, an organization cannot simply imitate the organizational resource allocation of successful organizations. Instead, organizational adaptation over time creates unique HRM practices, which are difficult for competitors to copy (Knott, 2003). Thus, general systems theory suggests that competitive advantage can be gained and sustained through the ongoing cycles of the adaptation process. The process of HPWS implementation suggests that organizations incrementally improve productivity based on prior experience with these practices. In other words, organizational productivity

increases over time with well-established HPWS. Future research can further investigate such evolutionary (Nelson & Winter, 1982) or organizational learning processes (Levitt & March, 1988; Nonaka & Takeuchi, 1995) in implementing HPWS.

In addition to its theoretical contributions, this thesis also empirically advances the literature by examining causal associations in depth. Researchers have expressed concerns about the potential for reverse causality in the relationship between HPWS and organizational performance. The findings of this thesis indicate that HPWS positively affects organizational performance at a later time point, while controlling for the possible reverse causal effect. Thus, this thesis provides empirical support for the positive contribution of HPWS on organizational performance, reducing the causality concern. Moreover, this thesis considers organizational performance as an antecedent as well as an outcome of HPWS, proposing to consider the reverse causality from a theoretical point of view. Specifically, while researchers have largely neglected the re-input process in SHRM studies, HPWS can be strengthened with sufficient slack resources and empirical supports of their effectiveness.

While the essay 2 found the re-input process in HPWS investment, the third essay further advanced understandings of the relationship between HPWS and organizational performance. The third essay found that the level of HRM practices positively affects the growth of productivity over time, while continuous increases in HRM investments are not necessary to have the productivity growth. Therefore, while previous performance levels lead to more investment on HPWS as I found in the second essay, organizations are not necessarily need to continuously invest on HPWS. HPWS do not drain on resources requiring continuously increasing investment, but organizations adjust the level of HPWS investment, depending on the previous performance through the feedback mechanism. Together, the two empirical essays suggest that the path from HPWS to organizational performance can be considered as the “main effect”, which provide continuous values for

organizations, where consistency of established HPWS can provide long-term benefits for organizations, and the reverse causality as the feedback adjustment mechanism.

LIMITATIONS AND DIRECTIONS FOR FUTURE RESEARCH

There are several limitations in my research. First, the two empirical studies are based on the WES data. While the WES data collected by Statistics Canada has a large longitudinal sample of organizations in Canada, the findings of these studies need to be generalized in other times and locations by using a different sample. Second, the HPWS measure extensively covered individual HRM practices such as training, empowerment, compensation, and work design, but the WES data did not cover some potentially important HRM practices such as selection and job security. Third, HPWS were measured by a set of dichotomous indicators of the presence of specific HR practices. While this approach has been widely used in the literature, the presence of practices itself cannot provide information on how well the practices are implemented in an organization.

Future research can overcome such limitations to this thesis. For example, longitudinal research design across multiple time periods can be beneficial for establishing the relationship between HPWS and organizational performance. Future studies can test the longitudinal relationship in other geographic locations as well. Also, researchers can conceive different ways to measure HPWS, including the degree of HPWS implementation as well as presence of HRM practices.

Moreover, the literature can be advanced by considering and examining HRM system principles. Researchers can apply the system concepts introduced in this thesis. As introduced in the first essay, research hypotheses can be drawn from system principles introduced in this thesis. This thesis provides HRM system principles or foundational beliefs

in the system perspective on HRM. The proposed principles explicitly stated underlying assumptions of the systems perspective. The benefits of providing HRM system principles can result in theoretical advancements of the literature and follow-up empirical testing of such assumptions.

CONCLUSION

In sum, the three essays introduced in this dissertation consider general systems theory as an alternative theoretical framework for SHRM. Specifically, the general systems perspective provides an integrative framework on SHRM (essay 1), a strong rationale for the causal association in the relationship between HPWS and organizational performance (essay 2), and an alternative approach to considering implementation of HRM as an adaptive process (essay 3). In an effort to advance the SHRM literature, I propose an alternative theoretical perspective based on general systems theory. A full utilization of the systems perspective to HRM can be followed in future studies.

REFERENCES

Fleetwood, S., & Hesketh, A. (2006). HRM-performance research: Under-theorized and lacking explanatory power. *International Journal of Human Resource Management, 17*(12), 1977-1993.

Fleetwood, S., & Hesketh, A. (2008). Theorising under-theorisation in research on the HRM-performance link. *Personnel Review, 37*(2), 126-144.

Jackson, S. E., Schuler, R. S., & Jiang, K. (2014). An aspirational framework for strategic human resource management. *Academy of Management Annals, 8*(1), 1-56.

Knott, A. M. (2003). The organizational routines factor market paradox. *Strategic Management Journal, 24*(10), 929-943.

Levitt, B., & March, J. G. (1988). Organizational learning. *Annual Review of Sociology, 14*(1), 319-340.

Nelson, R. R., & Winter, S. G. (1982). *An evolutionary theory of economic change*. Cambridge, MA: Belknap Press of Harvard University Press.

Nonaka, I., & Takeuchi, H. (1995). *The knowledge-creating company: How Japanese companies create the dynamics of innovation*. New York: NY: Oxford University Press.

Way, S. A., & Johnson, D. E. (2005). Theorizing about the impact of strategic human resource management. *Human Resource Management Review, 15*(1), 1-19.

Wright, P. M., & McMahan, G. C. (1992). Theoretical perspectives for strategic human resource management. *Journal of Management, 18*(2), 295-320.

Wright, P. M., & Snell, S. A. (1998). Toward a unifying framework for exploring fit and flexibility in strategic human resource management. *Academy of Management Review, 23*(4), 756-772.

APPENDICES

Appendix A The HPWS Measure Used in Essay 2

HR practices	Items
Training (26 items)	Did this workplace pay for or provide any of the following types of classroom job-related training[a]? (Y/N) Did this workplace pay for or provide any of the following types of on-the job training? (Y/N) Orientation for new employees, managerial /supervisory training, professional training, apprenticeship training, sales and marketing training, computer /hardware, computer /software, other office and non-office equipment, group decision-making or problem-solving, team-building /leadership /communication, occupational health /safety /environmental protection, literacy or numeracy, other training
Empowerment (12 items)	Who normally makes decisions with respect to the following activities? (coded 1 when decisions made by non-managerial employee or work group, others as 0) Daily planning of individual work, weekly planning of individual work, follow-up of results, customer relations, quality control, purchase of necessary supplies, maintenance of machinery and equipment, setting staffing levels, filling vacancies, training, choice of production technology, product /service development
Compensation (5 items)	Does your compensation system include the following incentives? (Y/N) Individual incentive systems, group incentives systems, profit-sharing plan, merit pay and skill-based pay, employee stock plans
Benefits (11 items)	How are these benefits funded? (coded 1 when benefits are funded by employer only or by employee and employee, otherwise coded 0) Pension plan, life and/or disability insurance, supplemental medical, dental care, group RRSP, stock purchase or other savings plan, supplements to employment insurance (E.I.) benefits (e.g. for maternity or layoff), worker's compensation, severance allowances, flexible benefit plan, other
Work design (6 items)	For non-managerial employees, which of the following practices exist on a formal basis in your workplace? (Y/N) Employee's suggestion program, flexible job design, information sharing with employees, problem-solving teams, joint labour-management committees, self-directed work groups

[a]Classroom training includes all training activities which have a pre-determined format, including a pre-defined objective; specific content; progress that may be monitored and/or evaluated.

Appendix B Cross-Lagged SEM Results for Component HPWS Practices

Components	Time	HR→P	P→HR	Model fit indices
Training	T1→T2	.01	.07***	χ^2 = 348.7, df = 16, p= .000, CFI = .97,
	T2→T3	.02**	-.03	GFI = .97, RMSEA = .10, TLI = .94
Empowerment	T1→T2	-.03**	.12***	χ^2 = 372.8, df = 16, p= .000, CFI = .96,
	T2→T3	.03***	.18***	GFI = .97, RMSEA = .10, TLI = .92
Compensation	T1→T2	.06***	-.01	χ^2 = 306.5, df = 16, p= .000, CFI = .97,
	T2→T3	.06***	.10***	GFI = .97, RMSEA = .09, TLI = .94
Benefits	T1→T2	.03**	.09***	χ^2 = 323.5, df = 16, p= .000, CFI = .98,
	T2→T3	.03***	.09***	GFI = .97, RMSEA = .09, TLI = .94
Work design	T1→T2	.02†	.08***	χ^2 = 279.9, df = 16, p= .000, CFI = .97,
	T2→T3	.01	-.08***	GFI = .97, RMSEA = .09, TLI = .94

Notes. Standardized path coefficients, † p<.10, * p<.05, ** p<.01, *** p<.001, P: Productivity

Appendix C Measures of HRM Practices and Productivity Used in Essay 3

Measures	Types
Training (26)	Training by employer on classroom job-related training and on-the job training of following types: Orientation for new employees, managerial /supervisory training, professional training, apprenticeship training, sales and marketing training, computer /hardware, computer /software, other office and non-office equipment, group decision-making or problem-solving, team-building /leadership /communication, occupational health /safety /environmental protection, literacy or numeracy, other training
Empowerment (12)	Who normally makes decisions with respect to the following activities? (coded as 1 when decisions made by non-managerial employee or workgroup; others as 0) Daily planning of individual work, weekly planning of individual work, follow-up of results, customer relations, quality control, purchase of necessary supplies, maintenance of machinery and equipment, setting staffing levels, filling vacancies, training, choice of production technology, product/service development
Compensation & benefits (12)	Does your compensation system include the following incentives? (yes/no) Profit-sharing plan, merit pay and skill-based pay, individual incentive systems, group incentives systems Benefits funded employer only or by employee and employee in the following categories: Pension plan, life and/or disability insurance, supplemental medical, dental care, group RRSP, stock purchase or other savings plan, supplements to employment insurance benefits (e.g., for maternity or lay-off), other
Participative work design (6)	Employee's suggestion program, flexible job design, information sharing with employees, problem-solving teams, joint labor-management committees, self-directed work groups
Productivity [a]	The gross operating revenue divided by the total number of employees

[a]: Log transformed

Curriculum Vitae

Name:	Duckjung Shin
Post-secondary Education and Degrees:	University of Western Ontario London, Ontario, Canada 2011-2016 Ph.D
	Chung-Ang University Seoul, Korea 2008-2011 Ph.D.
	Chung-Ang University Seoul, Korea 2006-2008 M.S.
	Seoul National University Seoul, Korea 1999-2004 B.B.A.
Honours and Awards:	Brock Scholarship 2011-2015
	Plan for Excellence Doctoral Scholarship 2011-2015
	Best Paper in OB/HRM/OT Award Finalist International Management Division 2015 AOM Annual Meeting
Related Work Experience	Instructor Fanshawe College 2015
	Research Assistant University of Western Ontario 2011-2016

Selected Publications:

Shin, D., Hasse, V. C., & Schotter, A. (in press). Multinational enterprises within cultural space and place: Integrating cultural distance and tightness–looseness. *Academy of Management Journal*.

Shin, D., & Konrad, A. M. (in press). The causality between HPWS and organizational performance. *Journal of Management*.

Konrad, A. M., Radcliffe, V., & Shin, D. (2016). Participation in helping networks as social capital mobilization: Impact on influence for domestic men, domestic women, and international MBA students. *Academy of Management Learning & Education, 15*(1), 60-78.