

**Rethinking the Relationship between  
High-Performance Work Systems and Firm  
Performance: A Meta-Analysis**

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This thesis is presented for the degree of Research Master with Training (Commerce)  
in the School of Business and Governance of Murdoch University

Final Version for Examination: October 2017

Minor Amendments Made: Jan 2018

## **DECLARATION**

I declare that this thesis is my own account of my research and contains as its main content work which has not previously been submitted for a degree at any tertiary education institution.

Xiaoxuan Zhai

## ACKNOWLEDGEMENTS

I wish to acknowledge everyone who has helped, encouraged, mentored and accompanied me through my journey of RMT study in the School of Business and Governance of Murdoch University. Without your support, it would be impossible for me to complete this thesis.

I would like to express my special gratitude to my principal supervisor, Professor Xiaowen Tian, who has given me invaluable guidance and generous support throughout the whole process of my RMT study. Professor Tian offered comments and recommendations regarding the theoretical and methodological directions of my RMT thesis, and inspired my confidence in pursuing a PhD study in this research area in the next few years. Also, I would like to thank my co-supervisor and ex-supervisor, Dr. Frank Zhang and Dr. Xiaohui Zhang, for their challenging ideas based on their expertise in data analysis and econometrical modellings. Their comments and suggestions helped me explore my research topic rigorously and creatively.

I would like to thank my GRDAC Chair, Professor Malcolm Tull, and Postgraduate Research Director, Dr. Megan Paull, for their support throughout my RMT journey. I also extend my thankfulness to the administrative staff of Murdoch University who supported me to get organised in my RMT journey: Ms. Ashleigh Roberts, Ms. Julia McMath, Mr. Dale Banks, Ms. Sandy Clark, and Ms. Ella Xu.

I would like to express my appreciation to very kind scholars Dr. Tanja Rabl, Dr. Joseph A. Schmidt, and Dr. Javier Martiinez-del-Riio, who have provided me with

copies of their unpublished studies. Their generosity helped me build a complete data collection for my study.

Finally, I dedicate my thesis to my beloved husband, Tu Zhang, and my dear son, Xinchu, who have shared my stress and happiness all the time. A big thank you also to my parents, in-laws, brothers and sisters for their constant emotional support when we are away from hometown.

With all your encouragement and inspiration, my passion for the research of strategic human resource management and firm performance never ends.

# **Rethinking the Relationship between High-Performance Work Systems and Firm Performance: A Meta-Analysis**

## **ABSTRACT**

In the highly competitive global marketplace, organisations are paying increasing attention to the formation and sustention of competitive advantages through the enhancement of human capital. High-performance work system (HPWS), a synergised system of human resource management (HRM) practices, has been commonly recognised as a useful tool to improve firm performance (FP) to support the competitiveness of businesses. This study examines the HPWS-FP relationship using the quantitative research technique of meta-analysis. The study analyses 192 primary studies, and contributes to the extant literature in four aspects. Firstly, it confirms a positive relationship between HPWS and FP. Secondly, in response to the recent call for investigating country-level factors that affect the HPWS-FP relationship, the study examines the role of country of origin in moderating the HPWS-FP relationship, and finds that the positive HPWS-FP relationship is stronger in developing countries than in developed countries. Thirdly, the study finds that the HPWS-FP relationship is stronger when operational measures are used as FP indicators than when financial measures are used as FP indicators. Lastly, the study looks into detailed individual components of HPWS, and finds that training and development practice is the most robust component which plays a vital role in influencing the HPWS-FP relationship. The study discusses implications of these

findings for firm managers, including 1) firms need to make great efforts to develop HPWS to stay competitive; 2) firms in developing countries have a latecomer advantage in leveraging HPWS to enhance performance; 3) firms need to focus on the long-term rather than short-term performance impact in developing HPWS; and 4) firms must place a great emphasis on employees training and development practices in developing HPWS, and make significant investments in this area. The study concludes by pointing to limitations of these findings, and highlighting some directions for future research.

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## CHAPTER 1. INTRODUCTION

### 1.1. Research Background

Due to fierce competition in the global market, organisations are paying increasing attention to performance improvement to sustain business success. Scholars and managers believe that many operational elements are critical for business performance, such as financial investment, technology innovation, sales and marketing and machinery upgrades. While enterprises may have similar resources, their business performance can be poles apart.

Following the evolution of modern human resource management (HRM) philosophy in the 1970s, scholars have extensively discussed the role of human resource (HR) on improving firm performance (FP). The unique contribution of HRM to an organisation's core competencies against rivals has been recognised (Ngo, Jiang and Loi 2014). Since then, managers shifted their managerial focus to “people”, hoping to improve operational efficiency through the intelligence, aptitudes and behaviour embedded in human capital to bring strategic resources into the organisation to generate value (Bratton et al. 2010, p. 459). Traditionally, HRM was considered as so-called “personnel management” that only concerned payroll, employment contract management, labour recruitment and other routine responsibilities. Nowadays, organisations start to consider the strategic roles that HRM may shoulder (Zhang 2006). Scholars have examined the impact of a cluster of HR practices on FP, and found a positive relationship between these two variables

(Wright, Dunford and Snell 2001). Such an HR practices combination is defined as high performance work system (HPWS), which typically comprises distinct, but complementary HR practices to create synergised effect on organisation's proficiency (Huselid 1995).

In the extant literature, scholars commonly agree that HPWS improves an organisation's overall efficiency. The positive relationship between HPWS and FP has been repeatedly examined in various research settings, either through empirical studies of primary data, or through statistical reviews of secondary data. Some examples include small and medium-sized enterprises (SMEs) in the United States of America (USA; Patel, Messersmith and Lepak 2013), branches of banking institutions in Ghana (Aryee et al. 2012), manufacturing plants in South Korea (Choi and Lee 2013), and so forth. Besides the analysis of firm-level performance, scholars also have tested the positive HPWS-FP relationship at individual-level of employee performance, and found that HPWS brought mutual gains to organisational performance and employee's job satisfaction simultaneously (Choi 2014b). Some other scholars disagreed, and argued that HPWS could bring harms to workers' well-being, and possibly result in negative outcomes to the organisation (Mariappanadar and Kramar 2014). When a set of HPWS is successful in strengthening individual proficiency, it inevitably increases employees' work intensification and job strain (Ehrnrooth and Björkman 2012). In this scenario, the decline of individuals' job performance may aggregate to reduced FP ultimately.

These controversial findings presented difficulties to understanding the common

pattern of the HPWS-FP relationship. In view of this problem, some scholars have tried to verify the nature of HPWS-FP relationship through combining and integrating the findings of available primary studies, and also validated a significantly positive HPWS-FP relationship across diversified study settings (Rabl et al. 2014, Jiang et al. 2012, Combs et al. 2006). However, given the dynamics of technology and economic environment, firm's operational mode has changed rapidly in recent years. It is necessary to include newly conducted empirical studies to provide an updated baseline for further inquiries of the HPWS-FP relationship.

Although the importance of HPWS for improving organisational performance has been commonly recognised, the mechanism of how and to what degree it functions has yet to be described precisely. This is the famous "black box" problem, which concerns, among other features, the internal interaction and external influence patterns in the HPWS-FP relationship (Becker and Huselid 2006).

Many scholars have analysed the "black box" issues for possible moderating effects caused by internal and contextual factors of the organisations. The existing research outcomes, however, are not sufficient to explain the contingent aptitude of HPWS-FP relationship (Delery and Doty 1996). Vague and divergent views are still obvious, especially in the factors of country difference (Rabl et al. 2014), the choice of dimensions for FP measurement (Combs et al. 2006), strategic activities undertaken by a firm related to HR practices (Chowhan 2016), and many other aspects.

One typical question related to the "black box" issues is how the HPWS-FP

relationship is contingent on firms' external environment (Meuer 2016). Despite accelerated globalisation in recent years, diversification across nations remains significant. It is evident that the same combination of HPWS practices may yield varying results in different societies (Gilman and Raby 2012). Due to the difficulties of cross-border data collection, scholars usually carried out their research in a particular national setting. Cross-country assessment is scarce. To solve this problem, Rabl and colleagues (2014) attempted to examine the variety of HPWS-FP relationships in multiple countries by meta-analytical techniques, and found the moderating effect of national culture on the HPWS-FP relationship. This finding is of great significance to business, and provides invaluable implications to managers in aligning HPWS with national culture. However, cultural should not be the only influencing factor that influences the HPWS-FP relationship at the national level. Other country-level moderators may also be relevant. These unknown factors may influence HPWS implementation and deserve an in-depth investigation (Rabl et al. 2014).

Another "black box" issue is related to whether or not HPWS demonstrates equal capability in promoting various aspects of organisational performance. To answer this question, scholars have assessed HPWS-FP relationship from many perspectives of the organisational performance, and the research findings were also varied. As for financial performance, scholars have proposed that a carefully combined HPWS directly leads to an increase of the firms' return on asset (ROA, Esch, Wei and Chiang 2016), return on equity (ROE, Delery and Doty 1996), sales growth (Collins and

Smith 2006), profitability (Guest et al. 2003), Tobin's Q (Welbourne and Andrews 1996), and so forth. Similarly, HPWS also enhances firms' operational performance, e.g. product quality (Wright et al. 2005), workforce productivity (Michaelis, Wagner and Schweizer 2015), customer satisfaction (Batt and Colvin 2011), employees' positive psychological contract with the organisation (Katou 2015), firm's ambidexterity of competing in the current market while staying agile for future innovations (Patel et al. 2013), etc. To obtain a horizontal comparison, some scholars have tried to examine whether the choice of different FP dimensions would have a substantial impact on the HPWS-FP relationship. Among them, Huselid (1995) found a stronger link of HPWS with the operational performance measured by productivity than financial performance measured by accounting figures of ROA and Tobin's Q. Combs and colleagues' (2006) meta-analysis also reached a similar conclusion based on combined findings of 92 sample studies. Some other scholars, however, disagreed and argued that the HPWS-FP relationship should be invariant with either operational or financial measures of organisational performance (Saridakis, Lai and Cooper 2017). Therefore, further investigation is needed to verify the moderating effect of FP dimensions on the HPWS-FP relationship.

Moreover, how an organisation designs HPWS composition is also an interesting question worthy of investigation. Researchers have discussed the HPWS either as a synergistic whole of interrelated HR activities (Esch et al. 2016) or an additive aggregation by individual best HR practices (Soens, Buyens and Taylor 2012). However, there was a scarcity of discussion on how firms should organise their

composition elements of HPWS. Normally, HR practices implemented by organisations can be categorised into six basic HRM modules, i.e., compensation and reward, employee relations, performance management, training and development, promotion criteria, and recruitment and selection (Rabl et al. 2014). Despite the similar element practices, managers may have various strategies of weighting scheme and combination pattern in HPWS to form competitive strength (Rasool and Nouman 2013). As a result, the HPWS-FP relationship demonstrates varied efficiency due to the influence of HPWS composition. However, such a potential moderating effect has not been discussed in extant research. Therefore, how managers should organise the HPWS composition to support the firm's development needs is still not clear, and the investigation into this topic may bring meaningful implications for businesses.

## **1.2. Aims of the Study**

Leveraging the quantitative research technique of meta-analysis, this study investigates the relationship between HPWS and FP with an in-depth evaluation. By including all the relevant studies as analytical units, the research project is to achieve four objectives. Firstly, it reviews the overall HPWS-FP relationship by aggregating all relevant primary studies. By doing so, it further verifies the general effectiveness of HPWS-FP association under various circumstances. Secondly, responding to the call of Rabl et al. (2014) for investigating country differences and possible impacts to the HPWS-FP association, this study pinpoints a national level factor, i.e., the country of origin, and examines its moderating effects on the HPWS-FP relationship in developed and developing countries. Thirdly, it further verifies how the various FP



dimensions perform differently in moderating the HPWS-FP relationship. Lastly, by decomposing the HPWS composition into elementary HR practices, the study provides a better understanding regarding how and to what degree the variation of HPWS composition influences the HPWS-FP relationship.

### **1.3. Significance of the Study**

The study addresses some research gaps in the HPWS-FP relationship both theoretically and empirically. Firstly, it confirms the positive effect that HPWS influences on FP improvement. Secondly, it finds that the HPWS-FP relationship is stronger in developing countries than in developed countries. With this aspect, the study contributes to the theory of HPWS-FP relationship for highlighting the substantial role of country of origin in moderating the HPWS-FP relationship. Thirdly, by decomposing FP indicators into financial and operational terms, it unveils the moderating role of FP dimensions in the HPWS-FP relationship, and identifies that the HPWS-FP relationship is stronger when FP is measured in operational terms than in financial terms. Lastly, it confirms that training and development practice is the most important HPWS composition influencing the HPWS-FP relationship, which complements the understanding of HPWS-FP relationship above and beyond the existing meta-analyses (e.g., Combs et al. 2006; Jiang et al. 2012; Rabl et al. 2015; Saridakis et al. 2017).

The study also offers some implications for managers. It suggests that firms need to make great efforts to develop HPWS to stay competitive. Meanwhile, firms in developing countries should better use their latecomer advantages in leveraging

HPWS to enhance performance. Also, it reminds firms to focus on long-term rather than short-term performance impact in developing HPWS, and place a high emphasis on employees training and development practices when deploying HPWS, and make significant investments in this area.

#### **1.4. Thesis Outline**

The thesis is organised into seven chapters. The first chapter introduces the background of the research, aims of the research and the outline of the thesis. In chapter two, a literature review is conducted to examine the relevant theories and research frameworks in the current literature to understand the research status quo, and to identify research gaps and opportunities. Chapter three discusses the general meta-analysis framework, and proposes hypotheses. Chapter four describes the meta-analytical methodology applied in this study and further explains the technical terms and reasoning strategies. Chapter five reports the meta-analytical results of empirical tests of hypotheses. In Chapter six, in-depth discussion is presented to interpret the research significance based on the meta-analysis results. Managerial implications and future research directions are also discussed in this chapter. Chapter seven concludes the thesis by summarising the main findings of the research.

## **CHAPTER 2. LITERATURE REVIEW**

### **2.1. Overview**

In this chapter, the primary objective of the literature review is to understand the key terminologies, relevant theories and typologies that commonly used in HPWS research, and to identify possible research gaps and opportunities in this area. Particularly, this chapter focuses on the discussion of the evolution of the HPWS concept, HPWS and FP association, dimensions of FP, compositions of HPWS, and relevant contingent factors which may impose either a positive or a negative impact on the relationship between HPWS and FP.

### **2.2. The Concept of HPWS**

After being discussed for decades, there is still not a commonly agreed definition of HPWS, due to its broad coverage and diversified applications in the strategic HRM area (Boxall and Macky 2009). A typical definition emphasises the role of HPWS on organisational competency. It describes HPWS as a cluster of distinct, but complementary HR practices that offers enterprises competitive advantages to improve productivity and profitability (Huselid 1995, Chow, Teo and Chew 2013). Another proposition suggests to view HPWS from a human capital perspective, and states that HPWS is a bundle of HR practices designed to develop employees' skills, motivation and individual performance which ultimately improves organisational performance (Pfeffer 1998, Datta, Guthrie and Wright 2005). Likewise, there is not a unified understanding of what HPWS should contain. Some scholars believe that an

efficient HPWS packet should cover some basic HR functions. Among which, the five HRM practice menus developed by Schuler and Jackson (1987), as well as the famous seven HR practices operationalised by Pfeffer (1998) are the most popular ones that have been frequently quoted (e.g., Liao et al. 2009, Chow 2005, Esch et al. 2016, etc.). Other scholars propose to include some more complex and innovative HR practices in HPWS bundles from a strategic perspective, such as HR director's involvement in strategic planning (Darwish and Singh 2013), knowledge-oriented activities (Donate and Guadamillas 2015), and network-building practices for top management team (Lin. Y., Zhao and Li 2014), etc. Despite of various opinions, the propositions underlining the HPWS philosophy are similar, which perceive HPWS as a system of people and work management practices that brings positive influence to organisational performance (Boxall and Macky 2009).

To disentangle the complexity, Boxall (2012) described a framework to sort out the essentials of HPWS, and suggested that the ambiguity of HWPS stems from its explicitly interweaved sub-concepts of work practices, systemic effects and performance measures.

### ***2.2.1. Work Practices***

As a kind of intangible resource of an organisation, HR is the aggregation of “human capital resource pool” where employees’ ability, skills and intelligence stored (Wright, McMahan and McWilliams 1994). Although HR is critical, such kind of resource itself cannot add any value to overall competences of the organisation spontaneously. On the contrary, work practices comprised in an HPWS are the key of

conveying HR into competitive advantages for the business (Lado and Wilson 1994). Pfeffer (1995) complemented this proposition and suggested that through the visible way of how to manage work and people, HR management system reflects the invisible ideology and value system that an organisation endorsed, making it a distinguishing element for the firm's development and sustainability.

At the fundamental of work practices, HPWS has a close tie with traditional HR practices concerning the four employment stages, i.e. exploration, establishment, maintenance and disengagement (Super 1957). In the exploration stage, HR practitioners usually use job design (Delaney, Lewin and Ichniowski 1989) and selective hiring practices (Pfeffer 1995) to identify suitable candidates and recruit them into the firm. In the establishment stage, practices such as formal training system (Delery and Doty 1996), performance appraisal, incentive compensation (Delaney et al. 1989) and self-managed teams (Pfeffer 1998) motivate employees to develop vocational skills and deliver performance that meets or exceeds desired standards. Maintenance stage requires managers to remain employees active in the current role, which is achievable by the practices of employment security (Pfeffer 1998), flexible work arrangement (Dyer and Reeves 1995) and participation in decision-making (Sun, Aryee and Law 2007). And in disengagement stage, information sharing (Pfeffer 1998), grievance procedures (Delaney et al. 1989) and knowledge management practices (Donate & Guadamillas 2015) assist managers to ensure a smooth severance process and avoid potential loss of intellectual properties from the firm. In this regard, HR practitioners shall include work practices for

different employment stages, so that to help the organisation to identify, cultivate, recognise and manage the workforce to achieve superior performance (Bratton et al. 2010, p. 457).

Following the thriving of strategic management philosophy, organisations realise that, without appropriately equipped human capital, business strategies may ultimately become a meaningless slogan (Wright and McMahan 1992). Contemporary HRM also has been empowered a strategic role frequently (e.g., Al-Raggad 2014, Chen et al. 2016, Darwish, Singh and Mohamed 2013, Jiang, Takeuchi and Lepak 2013, Loo and Beh 2013, etc.). As a subfield of HRM, Strategic HRM (SHRM) shows its capability of developing qualified human capital through a set of well-planned work practices, and thus to enable the organisation to achieve performance goals (Kaufman 2010). Rhetorical inferences underlining the “strategic” HRM should concern at least two aspects, i.e., operational and planning levels in nature. Among vigorous research, some scholars focus solely on how HR practices should reactively align with corporate strategies and business initiatives from the operational level. For instance, Lee, Lee and Wu (2010) proposed that firms should consider the determinant of strategic orientation when deploying HR practices, and thus to satisfy the strategic needs by matching HRM practices with the organisational strategies. In contrast, some scholars notice that reactive practices may not be adequate to support the organisation to achieve its objectives, since strategic synergy could not be attained by top-down cascading from core leadership team to front-line managers (Jackson, Schuler and Jiang 2014). Therefore, HR practitioners should

balance the needs among various stakeholders to reinforce the mutual gains between workers and corporate performance (Lin and Shih 2008). Meanwhile, HR practitioners also need to proactively participate in the strategic planning process as a business partner to cultivate desired organisational climate through customised HR practices (Trunk Širca, Babnik and Breznik 2013). Chen and colleagues (2016) agreed with this view and pointed out that, with a consistent understanding of the organisational mission, vision and ongoing goals, a competent top management team should adopt proactive HRM practices, such as team-based decision-making and knowledge sharing to prepare the firm for current and future development needs. Only such a work practice system is capable to support the management team to work coherently by mitigating conflicting interests and navigating the workforce toward a united strategic vision.

HPWS concept also has expanded its role to the strategic level. By getting involved in the strategic planning process of both HRM domain and broader management system of the firm, HPWS reinforces the dynamic harmony which brings substantial improvement on the firm's productivity (Wright, McMahan and McCormick 1998, Boxall and Macky 2009). Extant scholars have tested a series of strategic HPWS practices for their influence on firms' synthetic strength. For example, Darwish and Singh (2013) suggested that the degree to which an HR director involved in organisational strategic design could be a proxy to reflect the proactiveness of a HRM system. Line managers' involvement to HR routine jobs (such as recruitment and attendance administration) is also meaningful for the evaluation of HRM

participation at the strategic level, since such a work practice allows HR practitioners to engage more time fulfilling their strategic obligations. Fey and Björkman (2001) also examined the necessity of strategic alignment in a study of foreign-owned subsidiaries in Russia. Despite that only limited evidence was obtained due to the difficulties and complexity of measuring HRM-strategy alignment, they still partially confirmed that the practices of fitting HRM practices with corporate strategy are critical for FP improvement. Likewise, Welbourne and Cyr (1999) found that work practices of involving experienced HR professionals in strategy formation influences organisation's stock price positively, especially for those small and growth-oriented firms in initial public offering (IPO) stage.

### ***2.2.2. Systemic Effects***

While some scholars discuss individual HR practices comprised in HPWS, others propose to view HPWS practices as an internally coherent bundle. They suggest that such a systemic approach should be a distinguishing feature (Chow et al. 2013) and a dominant assumption of HPWS proposition (Boxall and Macky 2009).

There are several competing approaches to grouping methodologies of HPWS practices in the extant literature. Among which, Arthur's (1994) study assumed two HRM systems, namely, control and commitment systems that comprised in the HPWS concept. Both of the methods have a direct effect on firm's performance outcomes while they are in responding to different strategic focuses. Specifically, enterprises shall consider employing control activities in HPWS to manage labour costs, employee behaviour and interaction manners when adopting a low-cost strategy.



Instead, commitment promotion practices may be appropriate to inspire innovation and improvement to support a differentiation strategy of the firm (Arthur 1994). Similarly, Boxall and Macky (2009) proposed to categorise HPWS practices by high-involvement and high-commitment HRM activities. High-involvement work practices concern the empowerment to employees' ability of decision-making and performance enhancing, and high-commitment employment practices seek a motivated attachment to the organisation in the long term.

The systemic effects of HPWS have been endorsed by a considerable number of scholars (e.g., Boxall and Macky 2009, Bryson, Forth and Kirby 2005, Wood and Wall 2007, Jiang et al. 2012, etc.). The main idea underlining systemic effects is that, there is not a perfect combination of practices in HPWS by which an organisation can guarantee outstanding performance (Bryson et al. 2005, Orlitzky and Frenkel 2005). It is the way by which an organisation chooses HR practices to form an HPWS pattern to shape the behaviour and interactions within the workforce makes the firm unique (MacDuffie 1995). It implies that the best performing HPWS bundle varies from one scenario to another, due to the significantly diversified internal and external conditions (Jackson and Schuler 1995). Therefore, individual HR practices need to be both horizontally fit with HR and cross-functional work practices, and vertically consistent with the organisational strategies (Delery and Doty 1996). Also, such an HPWS packet has to be robust to ensure the effectiveness in dealing with both weak contingencies (i.e. the contingency which would influence the effectiveness of HPWS, such as an alternative strategy of the firm) and strong contingencies (i.e. the

contingency which may change the direction of how HPWS affecting the performance, such as contextual and legislative factors of the institutional and social system where the firm operates, Kaufman 2010).

### ***2.2.3. Impacts on Firm Performance***

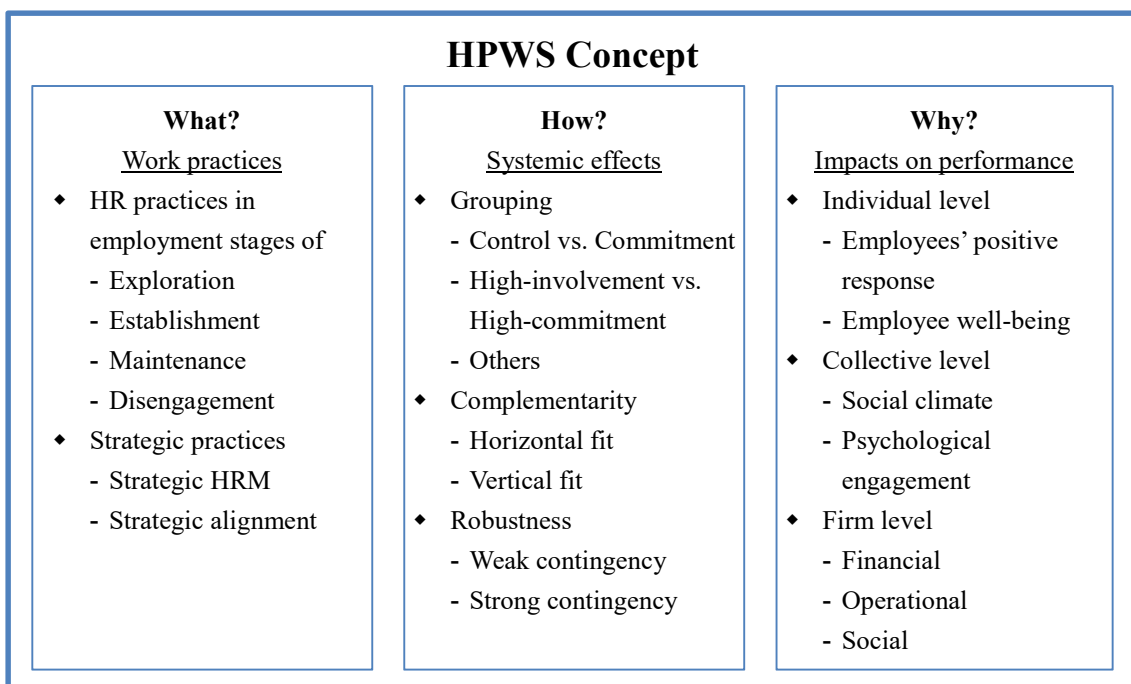
Work practices and systemic effects embedded in HPWS affect organisational performance on multiple levels (Lepak et al. 2006, Boxall and Macky 2009). On the basic level, HPWS depends on the positive responses from employees (Boxall 2012) through the influence on individual employee's ability, motivation and opportunity (AMO model, Appelbaum et al. 2000) to enhance individual performance quality (Boxall and Macky 2009). Therefore, while considering the maintenance of organisational benefits, the firm also needs to pay attention to the employee well-being through minimised job intensification and maximised job satisfaction (Guest 2017), and thus to attract favourable behaviour and emotional feedback from employees. Further, individual behaviour and attitude aggregate to a collective level and formulate a unique social climate, which allows the firm to establish strong ties of information and resource exchange, generalised norms of performance, and shared moral models within the organisation (Evans and Davis 2005). Such positively shaped social climate reciprocates its influences to induce employees' engagement at work and directs employees' efforts to organisation's pre-designed strategic targets (Prieto and Santana 2012). Consequently, individual and collective level outcomes may positively influence the firm's efficiency in both financial and operational means (Santos and Brito 2012), and even extend to a broader performance scope of social

legitimacy and corporate social responsibilities (Boxall 2012).

#### 2.2.4. Summary

In summary, the concept of HPWS is far from clear according to the various statements of scholars. Authors usually add a certain part of definition into the HPWS concept to advance their studies, and thus make the HPWS concept more vague than ever before. Generally speaking, three generic questions need scholars' consideration to justify the necessity and feasibility of HPWS, i.e., HR practices that an effective HPWS composition shall include (the “what” question), functioning mechanism of HPWS in creating maximised systemic synergy with minimised costs (the “how” question), and the reason why HPWS is essential for the improvement of organisational performance to ensure the business success (the “why” question). Figure 1 provides an indicative illustration to the conceptual structure of HPWS in summarising the discussion.

**Figure 1. Conceptual Structure of HPWS**



Such an all-inclusive catalogue of HPWS inevitably brings difficulties for readers to draw an overview of the HPWS concept and its typical impact on organisational performance. Therefore, this study attempts to extract a generalised effect that HPWS influenced on FP, and further decompose HPWS into primary components for a close evaluation respectively. Hence, the study may offer some hints to complement scholars and managers' understanding of the essential characteristics of the HPWS-FP relationship.

### **2.3. Theoretical Foundation**

In principle, theories and theorems typically fulfil the rationality of both prediction outcomes and understanding process (Wright and McMahan 1992). Therefore, scholars should use theories as the foundation for constructing the logical structure and deducing research questions and hypotheses of a study. However, not all academic articles follow this guideline (Boselie, Dietz and Boon 2005). Instead, some scholars only formulate their propositions based on the results of previous research or experience from industry practitioners (for example, Ugheoke, Isa and Noor 2015, Imran, Majeed and Ayub 2015, etc.). Although there is not an inflexible requirement, hypotheses and research questions derived from theories and theorems are deemed to be logical and convincing. In this regard, Delery and Doty (1996) described a theorising framework of three HRM perspectives based on the analysis complexity and perceptions of performance prediction, namely, universalistic perspective, contingency perspective and configurational perspective. Such a theoretical framework becomes the cornerstones of hypothetical models in the HPWS literature.

### *2.3.1. Universalistic perspective*

At the early stage of HPWS evolution in the 1990s, scholars held that there are some particular HRM activities deemed to be the best ones for firms to manage their workforce. These activities are always influential to a firm's operational quality regardless of which industry the firm runs in, or what strategic orientation the firm adopts (for example, Pfeffer 1995, Pfeffer 1998, Huselid 1995, Delery and Doty 1996, Osterman 1994, etc.). In this vein, the universalistic perspective is the tool to detect what HR practices should be included in HPWS.

Some classical works embraced a universalistic perspective and suggested to consider several best practices when designing HPWS bundles. Pfeffer (1995) initially identified sixteen HR best practices of "what effective firms do with people", and proposed that organisations should commonly consider including these practices into their HPWS bundles. A few years later, Pfeffer (1998) further retrenched this list into seven basic HRM dimensions, and suggested these HR practices are pronounced to be essential for all the organisations willing to improve performance. These practices include, employment security, selective hiring, self-managed teams and decentralised decision-making, high compensation, extensive training, reduced status distinctions and barriers and information sharing (Pfeffer 1998). Likewise, based on the HPWS practices suggested by Delaney and colleagues (1989) in the ten areas of selection, performance appraisal, incentive compensation, job design, grievance procedures, information sharing, attitude assessment, and labour-management participation, Huselid (1995) made up a more comprehensive list of HR best practices

by adding three HRM measures, in particular, selection ratio, average training hours, and promotion criteria. The latter HPWS components list of thirteen HRM practices has been widely adopted by many studies in SHRM area. Delery and Doty (1996) also analysed “best practices” from a universalistic perspective, and proposed that the linear relationship between a particular independent variable (i.e., an HRM practice) and a dependent variable (i.e., an FP index) is universally applicable across the population organisations. Moreover, Osterman (1994) asserted that innovative work practices are also crucial. Such practices as self-directed team, job rotation, problem-solving groups, quality circles and total quality management are all likely to support the organisation to improve productivity and employee welfares.

All these classical works provide a general framework of which HRM practices should be the “best” ones from a universalistic perspective. Later researchers frequently extract certain HR practices from these lists for their studies, and found strong support to the universalistic perspective. For example, based on 1,383 feedbacks from 23 large firms in China, Wu and Chaturvedi (2009) suggested that such HPWS practices as selectivity, comprehensive training, internal career opportunities, formal appraisals, empowerment, and performance-related pay universally bring significantly positive influence to the employee attitude, which consequently improves organisational productivity (Choi and Lee 2013). Through the study of a sample of 336 SMEs in the United Kingdom (UK), Sheehan (2014) also found that HR practices in recruitment and selection, performance appraisal, performance-based pay, training and development, employee participation, and

strategic people management significantly improve the profitability innovation, labour turnover of the firm.

Universalistic perspective is the most straightforward approach to analyse the HPWS-FP relationship (Delery and Doty 1996, Martín-Alcázar, Romero-Fernandez and Sánchez-Gardey 2005). It implies that the best practices demonstrate particular strategic values respectively, which are additive to the final organisational outcomes (Lepak and Shaw 2008). These best practices are equally important for a variety of enterprises (Becker and Gerhart 1996). The underlying assumption of universalistic perspective is that there exist some “one size fits all” HR practices which bring all the firms explicit benefits. Therefore, every organisation should adopt these “best” ones for improving performance outcomes (Colbert 2004). For instance, carefully planned recruitment process and precisely defined selection criteria are contributory for the firm to attract capable candidates, since such candidates with desirable competencies and skills are more proficient in helping organisations achieve development goals (Al-Damoe, Hamid and Omar 2015). Likewise, extensive training and development activities should be a necessary prerequisite when a firm aims to consistently improve operational effectiveness (Darwish, Singh and Wood 2016). Also, competitive compensation and reward system is a primary stimulus for workers to take risks and dedicated efforts, which in turn drives organisational innovations (Shahnaei and Long 2015).

On the contrary, some critics argue that the universalistic perspective only focuses on the linear accumulation of individual practices while neglects a vital

feature of HPWS, namely, the synergic interdependence and the integration of practices (Martín-Alcázar et al. 2005). The effectiveness of a particular “best practice” may be not detachable from its historical and contextual environment. For example, an employee grievance procedure may be a high-performance predictor in the USA (Huselid 1995), but it is merely a legislative requirement in some other countries, and therefore not something that differentiates top performers (Boxall 2012). Thus, contingency and configurational perspectives may provide a more thorough insight into the HPWS-FP mechanism.

### ***2.3.2. Contingency Perspective***

Contingency perspective introduces a more sophisticated viewpoint than universalistic perspective to the HPWS research. It focuses on the impact of internal and external situations of an organisation, such as cultural and institutional influence of the local context, managerial approach and operational strategies that a firm adopts. Contingency perspective posits that the relationship between HPWS and FP is not merely linear, many elements may influence performance outcomes at different levels, since organisations operate in various contextual settings with its specific characteristics (Delery and Doty 1996).

In extant literature, contingency perspective has been commonly applied to identify and detect the mediating and moderating effects in the HPWS-FP relationships. On the one hand, Bratton and colleagues (2010, p. 86) suggested that the contingency theory bridges workforce competencies and organisation's resource status through the alignment with historical, circumstantial or other contextual factors



within an organisation. It implies that there is not a particular practice or resource could be universally the best one for all organisations. Instead, the same method may yield significantly different outcomes in various circumstances (Kaufman 2010). Therefore, individual HPWS practices have to be consistent with the organisation's actual situation. Meanwhile, managers also need to evaluate both the horizontal affiliation among HR practices, and the vertical adaptation between HR system and organisational strategies, resources and abilities when introducing HR programmes into a relatively confined environment of the organisation (Delery and Doty 1996, Garaus et al. 2016). On the other hand, some scholars extend the contingency theory with a further inference to explain the contingent attributes of HPWS to a broader environment where the organisation is operating. Specifically, national cultural difference (Rabl et al. 2014), industrial environment (Chi and Lin 2011), and institutional influence (Lin 2012) have all been examined in previous studies. In this regard, the first interpretation concerns the internal consistency within an organisation from a micro perspective, whereas the second argument cares more about the external alignment between the organisation and its surroundings from societal and geographical aspects at a macro altitude (Kaufman 2010).

In studies leveraging a contingency perspective, strategic orientation is one of the typical contingencies that has been widely analysed. Scholars repeatedly emphasise that greater congruence between a firm's HPWS practices and its strategies offers the business better performance outcomes (Bird and Beechler 1995, Delery and Doty 1996). In this vein, organisations should employ HR practices with various focuses to

cope with their distinctive strategic orientations. For instance, differentiation strategy relies on the innovation of new products and technologies. Thus managers have to invest more in the HR practices for improving employees' work-related competency, discretionary efforts and commitment to take self-initiated behaviour for innovation (Chadwick et al. 2013, Guthrie, Spell and Nyamori 2002). As for firms pursuing a cost-leadership strategy, mass production to achieve the scale of economy is the central tendency of their operation. As such, HR practices related to the control of labour cost and behaviour are beneficial, such as the job design practices to define the work position with a relatively narrow scope of responsibilities and skills that are directly available from external labour market (Heffernan et al. 2016).

Industrial context is another contingency that attracts substantial research attention. For example, Chi and Lin (2011) analysed the influence of industrial settings from an external environment point of view, and found that market dynamics, competition intensity and technological transformation are all possible moderators in the HPWS-FP relationship. In a meta-analysis based on 92 primary studies, Combs and colleagues (2006) examined the potential moderating effect of industrial context from the viewpoint of enterprise itself, and found that HPWS works better in manufacturing than in service sector. Their research found that manufacturing operation is likely to be more complicated and technically skill-based compared with its service counterpart, which relies on prompt adaptation to technological changes (Evans and Davis 2005). This operational aptitude in manufacturing firms usually requires organisation-specific competencies which are not readily acquirable from the

market (Combs et al. 2006). As for service firms, it is essential for the managers to motivate service staff to interact with customers dedicatedly. As such, a certain degree of discretion delegated to the service workers is necessary so they may have some flexibility to satisfy customers' differing needs (Bowen and Ford 2002). Theoretically, these distinctions are achievable through the aid of differentiated HPWS, while managers in manufacturing and service firms may choose distinctive practices for different improvement focus. In this vein, the contingency effect of industrial context is not negligible.

Moreover, according to the degree to which a contingency factor moderates the HPWS-FP association, the contingent power can be either weak or strong (Kaufman 2010). A weak contingency means that some best HPWS practices may have universally the same influence on firm outcomes, while the power of such an individual best practice is conditional to some contextual factors (Meuer 2016). In other words, the coefficient of the HPWS-FP relationship remains the same direction, but the magnitude may be varied under differentiating environment. In contrast, a strong contingency holds an "it all depends" proposition (Kaufman 2010). It means that HPWS may influence FP positively in some circumstance, but it is also possible that the strength of such a relationship can be zero or even negative in some other cases, due to the substantial moderating effects rooted in the environment (Boxall and Purcell 2008, Kaufman 2010).

Furthermore, a contingency factor can be either internal or external to an organisation (Schmidt et al. 2016, Meuer 2016). Internal contingencies usually are

manageable by the managers, or at least the control of such contingencies could have an impact on the organisation performance. Some internal contingencies include, for instance, capital intensity (Chadwick et al. 2013), firm-level social climate (Chang 2015), creativity climate (Esch et al. 2016), and employees' psychological contract with the organisation (Katou 2015), and so forth. In contrast, external contingencies are mostly beyond the scope of firms' control, such as industry dynamism and industry growth (Chadwick et al. 2013), local industry-specific unemployment rate (Schmidt et al. 2016), and national culture of the host country (Rabl et al. 2014). Therefore, firms have to carefully diagnose and adapt HPWS deployment to possible contingency features, so as to realise favourable interactions with these factors for desired organisational performance.

### ***2.3.3. Configurational Perspective***

The configurational perspective combines the two approaches of universalistic and contingency perspectives into a higher order of HPWS patterns that allow firms to yield better performance (Akhtar, Ding and Ge 2008, Sheehan 2014). Unlike universalistic and contingency perspectives, configurational theorists usually adopt a holistic principle of inquiry based on ideal types of configuration and explicitly follow the systems assumption of "equifinality" (Delery and Doty 1996).

Generally speaking, contingency and configurational perspectives are akin to each other for their predominant emphasis on the internal fit among Work practices, and the external alignment between HR activities and organisational strategies (Sheppeck and Militello 2000) and other contextual factors (Chadwick et al. 2013).

Despite these superficial resemblances, contingency theory holds that HPWS practices are usually sensitive to both macro and micro contextual factors, which in turn affects the effectiveness of HPWS-FP relationship. In contrast, the configurational perspective focuses on the interactions within an HPWS bundle to create an amplified synergy which is higher than the additive effects of individual HR practices (Chadwick 2010).

Configurational perspective highlights the internal pattern or bundling approaches of how HPWS practices integrate to a synergised whole rather than evaluating each HPWS practice in isolation (Lepak and Shaw 2008, Zhang and Morris 2014). Contrasting to the universalistic perspectives that proposing a “best practice” approach, the configurational perspective entails a “best fit” methodology. Configurational perspective lends a systemic viewpoint to project HPWS composition (Kaufman 2010) and claims that the positive performance evolves from a set of interrelated HR practices (Meuer 2016) which together form an internally consistent whole (Colbert 2004).

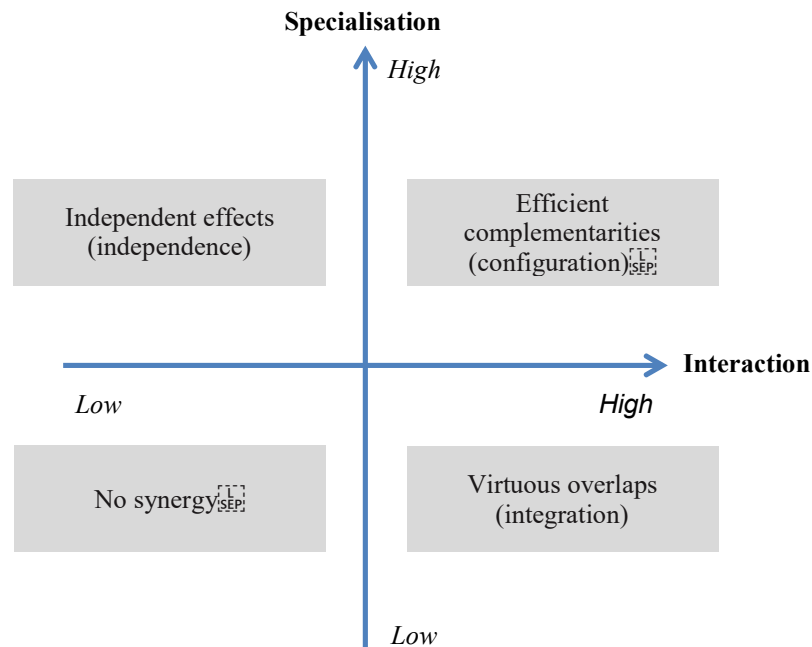
The fundamental proposition of configurational perspective is that patterns of how multiple practices are arranged exhibit different features and lead to various outcomes (Fiss 2007). Thereby, the collaborating effects of HPWS on FP as an integrated whole may be more or less than the sum of its parts (Colbert 2004). Notably, two dimensions of integrating approaches are essential, namely, the specialisation and interaction of HR practices within an HPWS composition. By evaluating the degree to which individual HR practices interact in these two

dimensions, three modes are noteworthy to create synergy within an HPWS bundles, in particular, efficient complementarities, virtuous overlaps, and independent effects (Chadwick 2010). Figure 2 describes these possible approaches briefly.

Independent effects assume that HR practices are highly specialised to each other, while the interaction among them is limited (as shown in the upper left quadrant in Figure 2). If such an integrating configuration is selected, HR practitioners shall ensure that each of the HR practices serves a particular aspect of the performance goal, and these practices seamlessly connect to each other to support the total organisational performance (Snell 1992). Virtuous overlaps (in the lower right quadrant in Figure 2) highlight a high degree of interactions among jointly implemented HR practices to create mutual reinforcement. In this scenario, each HR practice does not have to play a specific role or for a particular group of the workforce, while the reciprocal interdependence among these HR practices is the key to produce synergies for achieving the organisational goals (Snell 1992). Efficient complementarities (located in the upper right quadrant in Figure 2) rely on the balance between specialisation and interaction within an HR system. When adopting such an approach for creating synergy, it requires HR professionals to carefully consider the targeted HR practices to serve each unique function, while taking into account their potential relevance towards a holistic view of the organisational objectives (Chadwick 2010). As shown in the lower left quadrant of Figure 2, neither specifications nor interactions could be observed in the HPWS package, and thus no desirable synergy will be generated. Therefore, it is a wise choice to avoid deploying HPWS composition under such

patterns of configuration (Chadwick 2010).

**Figure 2. Theoretical Approaches to Synergy <sup>1</sup>**



Among the three meaningful types of configurational approaches, an organisation should determine a suitable pattern to construct its HRM architecture according to the firm's status quo and prospective visions. Meanwhile, managers also need to pay attention to the performance criterion (Chadwick 2010), resource availability (Kroon, Van De Voorde and Timmers 2013, Wu et al. 2015) and strategic orientation of the organisation (Michie and Sheehan 2005).

Not all the individual HR practices are equally important, and thus an organisation should match its configurational approach with appropriate HR practices (Meuer 2016). Some HR practices deem to be "core" and indispensable to the HPWS configuration, since such practices are highly interdependent with all the other HPWS components and will impose profound influence to firm's future performance. Any

<sup>1</sup> Adapted from Chadwick (2010)

changes or missing to these core practices necessitates a significant adjustment on most of the HPWS components to maintain its effectiveness (Siggelkow 2002). In contrast, some other HR practices are “peripheral” and expendable to the whole HPWS (Siggelkow 2002). The change or elimination to these peripheral HR practices will not impose significant influence to the overall effectiveness of HPWS (Meuer 2016). Therefore, these peripheral practices can be altered or abandoned if their presence affects the overall efficiency of the HPWS cores. Besides, there are also some HR practices that are inappropriate for fitting into an HPWS. Such kind of non-essential practices should be excluded from the HPWS to avoid any unnecessary waste of resources (Meuer 2016).

Through a configurational perspective, FP improvement is achieved through the synergy of HPWS bundle in enhancing employees’ ability, motivation and opportunity to perform (AMO framework, Appelbaum et al. 2000). Consistent with the theoretical logic of configurational perspective, the three elements of AMO framework are highly interrelated and acquirable through a set of congruent HR practices (Meuer 2016). With the accrued benefit from closely interrelated HPWS practices, an organisation will establish valuable, rare, inimitable, and non-substitutable (VRIN) resources via a resource-based view (RBV) to strengthen the firm’s competitive position (Barney 1991, Meuer 2016).

#### *AMO Framework*

AMO theorists suggest that organisations’ overall outcomes (i.e., FP) originate from the synergy of HPWS that strives to ensure three fundamental dimensions of



employees' ability, motivation and opportunity. In particular, a firm needs to make sure that employees can do the job with sufficient skills and abilities (A), will do the job with high commitment and motivation (M), and have appropriate opportunities (O) for doing so (Meuer 2016, Choi 2014b). An HPWS can improve FP only when it contains the HR practices to enhance these three elements of AMO framework simultaneously (Huselid 1995, Marathe and Pathak 2013). Consequently, enhanced employee performance aggregates to favourable organisational productivity. Therefore, regardless the performance is concerned at either organisational level (Bello-Pintado 2015, Chang 2015, Fu et al. 2013) or individual employee level (Jiang et al. 2012, Choi 2014b, Heffernan and Dundon 2016), it all can be achievable if the firm endeavours to improve the workforce competency through the three aspects of skills, motivation and opportunities (Boselie 2010). A characteristic equation of such a function can be described as below <sup>2</sup>:

$$\text{Performance} = f(A, M, O) \quad (1)$$

AMO theory emerges and becomes a preliminary trend in HPWS research in the recent decades (Boselie et al. 2005). For example, Jiang and colleagues (2012) decomposed HPWS practices and suggested that despite the high variety, an effective HPWS usually concerns the three primary categories of AMO framework. Specifically, skill-enhancing HR practices, such as selective hiring and extensive training, focus on developing employees' knowledge, skills and abilities (KSAs, Fu et al. 2013). Motivation-enhancing HR practices, such as competitive compensation, performance appraisal and career planning, enable employees to perform their work

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<sup>2</sup> Adapted from Boselie et al. (2005)

with conscientiousness and passion. And opportunity-enhancing HR practices, such as employee participation in decision-making, decentralised team and information sharing, empower workers to leverage their abilities and motivations to better serve the organisational goals (Jiang et al. 2012). Among these three subgroups, ability- and motivation-enhancing practices entail the development on the individual level (Gerhart 2007). And the opportunity-enhancing practices emphasise on the institutional process at the organisational level, which entitle employees with needed flexibility and autonomy to demonstrate enhanced ability and discretionary efforts (Boxall and Purcell 2008). An HPWS bundle, however, does not necessarily have to deploy practices from all the three subgroups (Kroon et al. 2013). Instead, firms shall customise the HPWS composition according to their financial capabilities, strategic focuses, and development priorities to avoid potential mismatches between HR practices (Toh, Morgeson and Campion 2008). Therefore, the desired synergy generated by the HPWS portfolio will be able to support the formation of valuable and inimitable resources (Barney 1991) to create competitive advantages for the organisation (Chadwick 2010).

#### *RBV theory*

AMO theory points out the objectives of what an HPWS shall aim to enhance. With a different theoretical viewpoint, the resource-based view (RBV, Barney 1991) concerns the causal pathway of HPWS-FP relationship through the analysis on the interim products that transform individual employees' intelligence and behaviour into firm level performance (Kaufman 2010).

RBV theory (Barney 1991) suggests that a firm's competitive advantage comes from the valuable, rare, inimitable, and non-substitutable (VRIN) resources that the firm acquired and controlled. In a later work, Barney (1995) refined the original VRIN model with a fifth element, i.e. the organisation (O), as a platform to manage these resources by the reporting structure, control system and compensation policies embedded in the organisation. So sometimes the VRIN model is also interpreted as VRIO/ VRINO model.

RBV theorists argue that organisations are an integration of various resources. A variety of resources owned by an organisation remains stable over a certain period of time, which determines how the organisation differs from its competitors (Barney 1991). The competitive advantages can only occur when the resources that a business holds is heterogeneous from the competitors, and not transferable or not obtainable for the competitors (Wright and McMahan 1992). These highly differentiated resources usually stem from the exceptional configuration of the HR and working practices through complex organisational mechanisms and social environment over time (Boxall 2012). Specifically, the causal ambiguity makes the creation and exploitation of these firm-specific resources not readily identifiable. The complicated social climate where these resources developed is imperfectly replicable. And the time compression diseconomies of the system effectiveness are undesirable for the competitors (Wright et al. 2001). Compared with those traditional resources such as financial strength, advanced technologies and differentiated innovations, HR is arguably the only one kind of rare and inimitable resource of competitive advantages.

It is because that KSAs, behaviour and attitude embedded in employees, as well as the managerial systems and operational routines of the firm, are the products of interactions shaped by causal ambiguity, social complexity and unique historical conditions (Wright et al. 1994). Such kind of HR is valuable for the organisation, and difficult for the competitors to understand and replicate (Colbert 2004), which can be the sources of sustained competitive advantages (Barney 1991). Therefore, organisations should develop customised HPWS to cater their characteristics for developing unique internal resources, so as to differentiate from its competitors and to secure a favourable market standing.

Albeit the extensive applications of RBV theory in SHRM disciplines, critiques are widespread in the past years. Kaufman (2015) argued that, due to the ambiguous definitions of “valuable resources” and “value creation”, as well as the subjective characteristics of the “resource” itself, organisations may have different approaches to evaluate the value of resources. Sometimes the resources themselves are not of significant value, but they enable the firm to perform activities that produce advantages in a specific market environment, making their presence crucial to the business (Porter 1991). RBV theory, however, offers no explicit instruction about what resources should be valuable for a particular organisation, except a circular repetition of “choosing valuable resources” (Kaufman 2015), which makes it a meaningless tautology (Priem and Butler 2001). Another critique on RBV theory states that it is crucial to identify who has greater bargaining power over the control of those valuable and non-substitutable resources (Coff 1999). Most of the scholars

assume that organisations should have the disposal rights, but sometimes it is not the case. If it is the employee who has the dominant power to control the resources and requires the organisation to exchange at a higher cost, some unexpected consequences might happen and become constraints for the organisational development (Steigenberger 2013). Last but not least, RBV theory only stresses the inherent traits of the resources, while overlooks the external influence. The value of a certain kind of resource is not simply determined by the organisation. Instead, it also depends on the perceived value by a customer, total value that a customer would like to pay, and exchange value the customer has actually paid (Bowman and Ambrosini 2000). Further, it is the market selection criterion which determines if the firm can stay in the game, the resources that a firm obtained does not play a decisive role in the firm's survival in the marketplace (Kraaijenbrink, Spender and Groen 2010).

In spite of the critiques, extant researchers are still keen to use RBV theory to delineate their theoretical frameworks for HPWS-FP analysis. For instance, Agwu and Ogiriki (2014) proposed a human resource development (HRD) model based on RBV theory. They stated that HRD activities increase inimitability of HR, and thus improve the organisational performance ultimately. Wu and colleagues (2015) supported this point of view and proposed that, by incorporating a series of carefully configured HR practices, HPWS converts potential VRIN resources into sustainable competitiveness for the organisation. Moreover, the RBV perspective is pivotal for firms with limitations of resource acquisition, such as SMEs or enterprises operating in the under-developed area (Sheehan 2014). In such scenario, firms have to maximise the

VRIN characteristics of these limited resources in an efficient approach to improve the business outcomes (Sheehan 2014).

Scholars also tried to combine other theories with RBV to construct theoretical structures for their studies. Leveraging the RBV theory and configurational perspective, Razouk (2011) found that HPWS is an excellent predictor to forecast firm's current and future performances. The internally complementary practices within an HPWS can create a synergised force to enrich employees' commitment and involvement, which in turn formulate valuable resources that distinguish firm's business strengths from its rivals. Likewise, through the lens of RBV and AMO theories, Fu and colleagues (2013) argued that an effectively implemented HPWS provides multiple ways for improving employees' ability to perform their job, motivation of putting efforts in their jobs, and opportunity to contribute. These intangible assets embedded in the workforce are valuable and rare for the firm, and inimitable and non-substitutable to their rivals. These traits of HR are especially important for knowledge-intensive businesses, as their performance heavily relies on the input of expert knowledge and the output of professional service and innovation. Meanwhile, they are also applicable in other industrial settings, such as accounting firms (Fu et al. 2015a, Fu et al. 2016), service and hospitality industries (Hong et al. 2016), food stores (Lin and Liu 2016), high-tech companies (Patel et al. 2013), and so forth.

#### *General Systems Theory*

AMO and RBV theorists view HPWS as a one-way system, which uses HPWS

as the input and FP as the output to form a single unidirectional loop. In contrast, general systems theorists concern resources, HPWS, FP and their causal relations as an open-loop mechanism. They propose that besides the forward-going effect from HPWS to FP, the FP outputs also respond to the diversified environment and transmit a modified impact to the future inputs of resource allocation to HPWS (Shin and Konrad 2014, Gong et al. 2005). It regards the organisation as a complex compilation of interrelated and interdependent subsystems that share fundamental coordination principles irrespective of their purposes (von Bertalanffy 1968). The organisational success relies on the double-looped interaction among its subsystems at their interface while maintaining internal boundaries that are essential for the survival of the organisation (Katz and Kahn 1978). In addition to the enhanced effects from HPWS organisms to FP, the increased FP also delivers positive or negative feedback to the management team to further adjust the investment in HPWS (Shin and Konrad 2014). Specifically, when the feedback is positive, which means HPWS and FP are mutually reinforcing, the leadership is more confident in the ongoing investment in HR practices (Shin and Konrad 2014). In this circumstance, the firm may establish a dynamic capability through the consistent efforts in integrating, building, and reconfiguring its internal competencies and external resources (Fu et al. 2015b). As such, both the forward and reverse causalities between HPWS and FP form a “virtuous cycle” to continuously improve the business performance (Shin and Konrad 2014). On the contrary, the feedback of FP also could be negative, demonstrating an undesirable effect of HPWS on FP. In this scenario, HPWS amplifies the work

intensification that in turn causes employees' stress (Guest 2017). It means that such an HPWS composition is not suitable for the development needs of the organisation, and its boosting effect on FP will be impaired over time (Shin and Konrad 2014).

Therefore, through carefully designed management practices combination, work structure and operational process, an organisation should wisely plan its HPWS composition to maximise employees' ability, motivation and opportunity (AMO). By doing so, the organisation can develop unique competitive advantages, which could not be easily imitated or surpassed by the current and potential competitors. Meanwhile, organisations also need to be cautious to the critical point between a positive and negative feedback in the HPWS-FP association, so as to avoid unfavourable interactions among HPWS subsystems which may be destructive to the sustainable competitive advantages of the organisation (Mkamwa 2010).

#### ***2.3.4. Other Theories***

Aside of the above theories concerning the HPWS-FP relationship, some other theories are also presented in the current HPWS studies.

*Agency theory* suggests that the agency dilemma occurs when the agent (i.e., the employees) is motivated to act in his/ her own best interests while against the principal's (i.e. the organisation's) interests (Eisenhardt 1989). Hence, HPWS practices aimed at aligning personal interests with organisational goals is indispensable (Chi and Lin 2011, Darwish et al. 2016, Hong et al. 2016), since the aggregation of individual contribution is influential to the firm's overall performance (Choi 2014a).



Further, Heffernan and Dundon (2016) quoted *signalling theory* to explain the method of how HR practices are communicated and implemented will deliver a signal to workers about the expected behaviour and managerial intentions. Employees, according to *social exchange theory* (Eisenberger et al. 1986), may perceive the purpose of these practices based on their interests and benefits (Choi 2014b). When they regard these actions as recognition, investment (Van De Voorde and Beijer 2015), support and commitment (Choi 2014b) from the organisation, a strengthened obligation may arise among the entire workforce. Consequently, the employees are likely to feedback the organisation with expected behaviour at a higher standard, and eventually lead to superior business outcomes (Imran et al. 2015). From this point of view, managers should not merely rely on their perceptions when designing and communicating HPWS practices with the workers. Instead, managers have to be attentive to the workers' needs and expectations, and thus to guide the employees to establish a psychological contract with the company. Consequently, the engagement and commitment will be promoted within the team (Guest 2004). Moreover, due to the proposition of *social cognition theory* and *attribution theory*, managers' social status in the firm is different from the employees. As such, managers' understanding and perception of HPWS practices are usually different from the workers (Bou-Llusar et al. 2016, Choi 2014a, Van De Voorde and Beijer 2015). In this regard, it is crucial for the managers to make sure that the employees' perception is in the same direction of the firm's intention.

In addition, *alignment theory* offers a similar assumption as contingency

perspective. It suggests that HPWS practices shall be internally complementary with each other, while compliant externally with the firm's strategic orientations and social settings, so that to reinforce the positive influence to the FP (Ngo et al. 2014). Likewise, *institutional theory* suggests that HPWS practices should comply with the local context (Demirbag et al. 2014). To some degree, the traditional value conception and ideology system rooted in local institutions may influence the employees' behaviour considerably (Lin 2012). Therefore, organisations have to conform HPWS practices to the domestic market status quo to motivate desired on-the-job efforts and to achieve maximised performance (Demirbag, Tatoglu and Wilkinson 2016).

### **2.3.5. Summary**

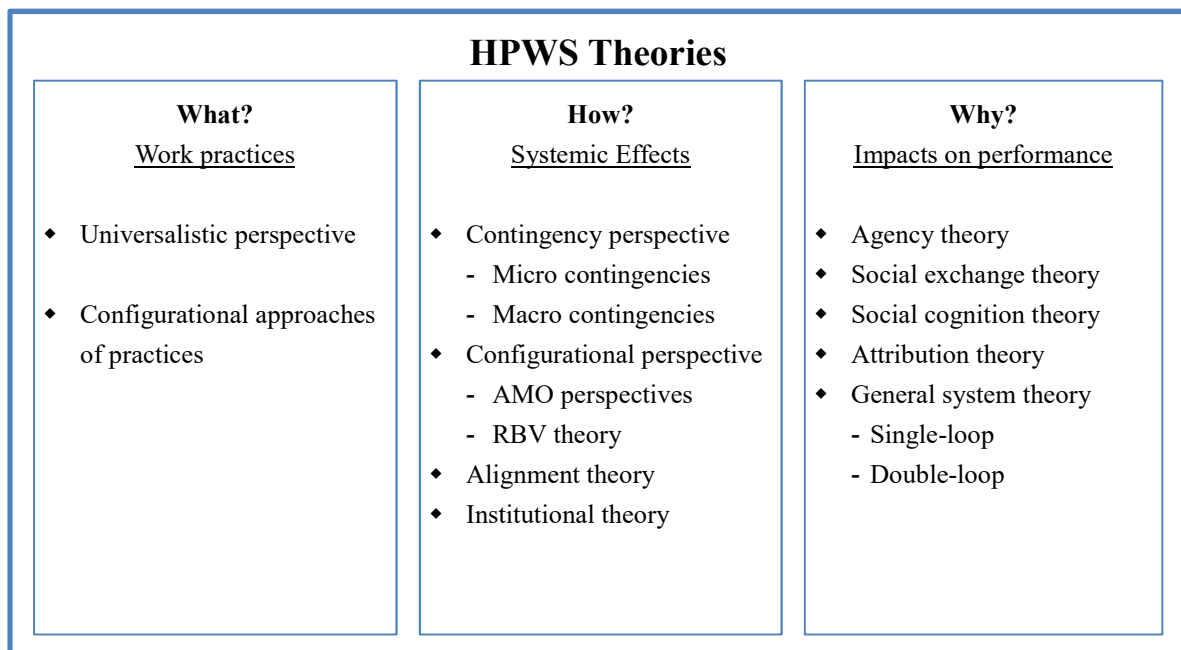
In a nutshell, universalistic, contingency and configurational perspectives are the foundations for the historical debates regarding whether the best practices or the best fits approach should be an ideal notion of HRM methodology (Chandler and McEvoy 2000). Regardless the different standpoints among the three perspectives, they are neither necessarily competing nor conflicting. The best practices may provide a general framework for an organisation to construct HRM system, while differentiated tactics may help the organisation to identify a best-fit method to manipulate these overarching best practices (Becher and Gerhart 1996, Chandler and McEvoy 2000).

In the extant literature, HPWS scholars tend to leverage more than one theory to construct their analytical framework to support their research arguments (Boselie et al. 2005). Based on the above systematic review, these theories may be roughly categorised into three groups according to their prospective focuses. Specifically, the

first cluster is to explain what kinds of individual HR practices are likely to be present in HPWS bundles; the second group centres on the patterning mechanism of how the HPWS components interact with each other and with stakeholders to generate systemic synergy. And the last group concerns why HPWS can deliver certain influence to FP at varied levels.

For easy understanding of the HPWS theoretical structure, I drafted a schematic diagram by leveraging the conceptual scheme of HPWS (in Figure 1) with necessary modifications. As shown in Figure 3, the three columns comprise the theories incorporating the what, why and how questions, hence to tease out the mainstream in the current HPWS theoretical discussion.

**Figure 3. Theoretical Foundation of HPWS**



## CHAPTER 3. META-ANALYTICAL FRAMEWORK AND HYPOTHESES

### 3.1. Meta-analysis at a Glance

The research project primarily adopts a meta-analytical method to evaluate the HPWS-FP relationship. Therefore, it is essential to understand what is a meta-analysis, and how it works.

#### 3.1.1. *What is Meta-analysis*

Based on the definition of Glass (1976), meta-analysis is the “statistical analysis of a large collection of analysis results from individual studies for the purpose of integrating the findings”. Generally speaking, statistical analysis can be constructed by primary analysis, secondary analysis, or meta-analysis (Glass 1976). Primary analysis is the most typical method by which researchers collect raw data for empirical inquiry. This kind of raw data is usually obtained from individual persons or organisations directly to support the analyst to achieve the analytical objectives of a designed study (Card 2012). Secondary analysis is to re-analyse the existing primary data, either to address different research questions, or to answer the same research questions as the original study with more nuanced assessment by an alternative statistical technique (Cheng and Phillips 2014). Both primary and secondary analyses require full access to the raw dataset, as they use raw data as the input to detect the relationship between dependent and independent variables. In contrast, meta-analysis concerns the statistical investigation of the results of more than one study to draw inferences. Thus, meta-analysis does not have to access the entire raw dataset. It uses

findings, particularly the effect sizes, i.e. the correlation between the variables of interest from previous primary studies with the same research focus, as the unit inputs for a further investigation (Card 2012). By collecting, combining and comparing findings across a large number of empirical studies conducted by scholars on a subject of interest, meta-analyst may discover a more precise image to the relationship between the variables of concern, and further to develop theories or to depict such relations (Hunter and Schmidt 2004). From this point of view, meta-analysis can be ascribed as a particular type of literature review, which uses quantified research evidence (Olkin 1990) to detect potential patterns between the variables concerned (Card 2012).

The traditional literature review typically adopts a narrative approach for synthesis. Besides the advantages of obtaining a general insight to a certain topic, its weaknesses are also apparent. Bushman and Wells (2001) proposed that, compared with meta-analytic reviewers, narrative reviewers are more likely to draw conclusions according to the subjective judgments and preferences influenced by their heuristics or mental shortcuts. Also, due to the lack of commonly recognised reasoning principles and methodologies, the ignorance to the magnitude of treatment effect, and the deficiency in weighting estimation of different research studies, traditional narrative reviews may cause deviations and errors when dealing with disagreement or conflicting findings. Further, conventional narrative reviewers are not able to provide quantitative evidence when elaborating academic viewpoints or proposing prospective directions for future inquiries. Their answer also may be powerless to such complex

questions as magnitude, significance or heterogeneity of the effect sizes (Borenstein et al. 2009). Therefore, how to extract a reliable conclusion from different research findings becomes a question which narrative reviews could not solve very well.

In the discussion of quantitative reviews, Stanley (2001) noted that meta-analysis is one of the critical statistical methods to evaluate empirical research findings. It is also applicable to interpret the potential causes for variations among research findings from relatively independent studies. In this vein, meta-analysis can be described as a “study of studies” (Bullock 1986).

### ***3.1.2. Strengths of Meta-analysis***

#### *Scientific Judgement*

One of the advantages of meta-analysis is its nature of scientificity, systematicity and objectivity. It is a fundamental methodological concept of statistically integrating evidence from multiple primary studies that address common research questions (Quintana 2015). Without setting a prior judgment and assumption before the experiments, the meta-analytical conclusions are derived from the statistical test results of several independent research (Wampler 1982). Further, meta-analysis offers a better way to eliminate the constraints of small sample sizes by pooling the results from a number of primary studies with comparable findings, and thus to improve the precision and accuracy of the estimations (Jak 2015). Hence, meta-analysis can achieve a higher statistical power to the study objects (Nordmann, Kasenda and Briel 2012).

In principle, analysis findings concluded from a particular group of samples are

only generalisable to populations with the same characteristics as this sample group (Card 2012). For example, the research conclusions based on Chinese firms may not be appropriate to draw inference for businesses in Australia. By combining primary study findings with multiple research characteristics, meta-analysis is used to collectively estimate a typical relationship by a quantified figure to reflect the overall association (i.e. the effect size) between the variables or the range of such a relationship (Card 2012). Therefore, an average effect size extracted from a meta-analysis can provide some reference in hypotheses constructing for future studies under different research conditions.

#### *Interpretation of Convergence/ Divergence*

Meta-analysis aids to detect the existence of variability among primary studies by comparing primary findings. When the study findings are statistically consistent with each other, a convergent deduction is likely to present, thereby the mean effect size is perceived as representative to all the sample studies (Sánchez-Meca and Marín-Martínez 1997). Under such circumstances, the homogeneity among sample effect sizes is evident.

Sometimes divergent findings may arise across primary studies due to various models adopted by researchers. In this case, it is impractical to carry out more empirical studies to reduce the prediction uncertainty in a particular topic (Cheung and Chan 2005). When a significant variation is apparent among sample effect sizes, i.e., heterogeneity is evident, this variation should be a result of the influence from a particular aspect of the studies that differ from one to another, implying that potential

moderators associated with study characteristics may exist (Hunter and Schmidt 2004). In this regard, identifying the subgroups among sample studies, by geographic diversities or specification of managerial interventions, for instance, will be helpful for searching for potential moderating effects (Nordmann et al. 2012). Therefore, meta-analysis can be used to identify the various pathways and moderating effects in the relationship between variables concerned, which is achieved by pooling a mean effect size from a series of sample correlations, while taking into consideration of the characteristics of primary studies (Cheung and Chan 2005).

#### *Study Gaps Corroboration*

Another strength of meta-analysis is to identify a potential inadequacy of empirical evidence that warrants further analyses in a particular topic (Nordmann et al. 2012). For example, in the meta-analysis of Rabl et al. (2014), the researchers found the moderating effects caused by national culture and institutional flexibility on the HPWS-FP relationship. Due to the lack of primary studies, however, the meta-analysts are unable to investigate other country-level moderators, such as national education system and capitalism approaches. This conclusion points out a possible direction for primary studies, and also recommends a research opportunity for future meta-analysis.

#### **3.1.3. Limitations of Meta-analysis**

Just like most of the statistical techniques, meta-analysis is by no means perfect.

A critical limitation is the constraints of the primary studies included in a meta-analysis. That is to say, the quality of the sample studies will directly affect the



quality of the meta-analysis outputs. Here the “quality” of sample studies may include several aspects, such as the study design, population identification and sampling approaches, study artefacts and statistical power, etc. (Card 2012).

### *Study Design*

Generally speaking, whatever limits caused by a primary study design also will be transferred into the subsequent meta-analysis (Card 2012). For example, if the majority of sample studies suffer a deficiency of internal validity, a meta-analysis constructed on top of these samples will also be hampered by low validity. Some possible causes of validity deficiency could be, for example, the questionnaire designed for evaluating the degree to which a firm deploys HPWS could not realistically reflect the real status, fails in controlling for some contextual factors which are commonly admitted to be influential to the research outcomes, inconsistent instrument applied throughout the whole study, and so forth.

Common method bias due to imperfect study design in sample studies also influences the accuracy of meta-analyses, such as dependant and independent variables are obtained from the same source or rater, , and the context in which the measures are obtained (Podsakoff et al. 2003).

### *Sampling Bias*

The imbalance of findings is well documented yet prevalent in the extant studies (Song et al. 2010). It is very common for the primary researchers that, when the targeted study objects are not interested in or could not see any benefits from the research project, they may not be willing to provide feedback for analysis. For

example, firms that have a better utilisation and benefit from HPWS may respond to the researcher actively, whereas other organisations would rather deny the call for data submission if they do not have sufficient resource for HPWS implementation or even suffer from a dysfunctional HPWS. Further, due to the file drawer problems and publication bias, studies without statistically significant outcomes are less likely to be published (Song et al. 2010). Although those unpublished studies may present findings from different perspectives, they are hardly circulated to the readers. On the contrary, significant findings from the same dataset sometimes are published in multiple articles, which consequently resulting in the same sample being repeatedly counted in a meta-analysis and overweighted in the statistical synthesis, since it is often difficult for researchers to distinguish if the two studies are based on independent data collection procedures or duplicates from the same origin (Egger and Smith 1998). All these issues increase the possibility that meta-analytical results may be limited and not representative given the difficulty of acquiring a well-balanced sample pool.

#### *Study Artefacts and Statistical Power*

The limits of study artefacts may associate with imperfectly designed measurement construct, sampling homogeneity, inadequate sample size, or unrealistic statistical models and analytical strategies. Study artefact flaws may lead to low statistical power and high possibility of committing type II errors (Card 2012). Although meta-analysis can reach higher statistical power by aggregating sufficient amount of underpowered primary studies, such a well-performed meta-analyses still

cannot avoid the influence from questionable quality of primary studies, which known as the “garbage in – garbage out” effect (Nordmann et al. 2012). In addition, since researchers tend to define the measurement construct of a particular variable for their own research requirements, definition discrepancies may exist even the variable bears the same name in multiple studies. For example, in some circumstances, researchers measure “innovation” by the quantity of newly developed products (Ngo et al. 1998), while sometimes the extent to which firms are satisfied with their innovative activities is used as a proxy for innovation (Chen and Huang 2009). Despite the same names, these two concepts of "innovation" differ obviously. Therefore, meta-analysts have to be careful when combining related findings if these variables are critical to the research topics, hence to avoid the “apple and orange” problems (Card 2012).

#### ***3.1.4. Summary***

In summary, meta-analysis is primarily used to verify previous findings on a causal relationship between the variables of interest, and to present an overall effect size of such a relationship. Through the estimation of homogeneity and heterogeneity among samples, meta-analysis further identifies any potential factors which may moderate a particular relationship, as well as the degree to which these moderators influence the relationship.

In what follows, research hypotheses will be developed around the HPWS-FP relationship to analyse the overall and possible moderating effects on the relationship.

### **3.2. HPWS and Firm Performance**

In the extant HPWS literature, empirical researchers normally examine the

HPWP and FP association from three mainstream trends. In particular, scholars usually view HPWS either as an integrated compilation (Rabl et al. 2014), a combination of various subgroups (Jiang et al. 2012) or as individual practices (Saridakis et al. 2017) to test the HPWS influence on FP.

Through the lens of resource-based view (RBV), a firm's competitive advantages originate from the tangible and intangible resources which are valuable and rare to the organisation, while inimitable and non-substitutable to the rivals (VRIN, Barney 1991). The firm acquires, controls and utilises the VRIN assets at their disposal to sustain survival and competitiveness in the market. Some scholars argue that a set of well-balanced and reinforcing HPWS outperforms the aggregation of individual HRM interventions (e.g., Combs et al. 2006). The successful implementation of such an HPWS bundle provides multiple ways for organisations to better deploy human capital to create unique VRIN resources (Fu et al. 2013). Also, such a carefully designed HPWS package delivers a signal of the firm's expectations to its employees' behaviour and performance (Heffernan and Dundon 2016). When the employees perceive this message as a support and commitment, they may feel obliged to feedback with better behaviour (Imran et al. 2015), which ultimately lead to a better outcome for the business.

Scholars have repeatedly tested the HPWS-FP relationship in both direct and indirect manners across industries, countries and cultural settings (Chow et al. 2013, Ivars and Martinez 2015, Lin 2012, Mansour, Gara and Gaha 2014). In an earlier study, Huselid (1995) conducted a study on systems of high performance work

practices (HPWP) in predicting firm performance. Based on the data from 968 firms representing all major industries in the USA, Huselid indicated that an efficient HPWS system is the source of competitive advantages, which benefits the corporate with lower turnover rate, higher productivity and better financial performance. Many HPWS researchers have reached consistent conclusions. By analysing the data from 351 professionals of 14 Tunisian companies in financial service industry, Mansour and colleagues (2014) found a coefficient of 0.7204 at 0.01 level of significance between HPWS and perceived organisational performance, which assures that HPWS is a major determinant to predict FP. Similarly, by investigating the survey feedback from 330 respondents of the telecom sector in Pakistan, Imran and colleagues (2015) also discovered that HPWS demonstrates a strongly positive role in promoting employees' organisational citizenship behaviour and commitment, thereby improves the firm's overall performance.

Despite the rigorous evidence for the positive relationship between HPWS and FP, some scholars argue that HPWS does not always promote FP in all circumstances. On the contrary, HPWS sometimes may also bring negative impacts on FP.

As commonly admitted, the primary objective of HPWS is to promote organisation's productivity and profitability through a high-quality workforce. According to the AMO framework (Appelbaum et al. 2000), firms are bound to invest in practices that are deemed to be essential for FP improvements, such as HPWS compositions of competitive compensation, selective recruitment, flexible work arrangement, extensive training, and information sharing (Pfeffer 1995, Combs et al.

2006). Higher investment in HPWS, however, leads to higher personnel costs, which may offset the value of the possible increase in economic output (Chi and Lin 2011). This assumption is particularly prominent for SMEs where the cost-benefit trade-off resistance is lower than large firms (Patel and Conklin 2012). For example, extensive training and development programs benefit the firm with a number of highly capable staff, but higher replacement cost is unavoidable if these well-trained workers finally decide to leave (Steigenberger 2013). Additionally, although the firm's overall performance will improve via such a highly competent work team, the increase of accessing to advanced ability and control over the firm's core technology by the key talents also enable the transfer of bargaining power from the organisation to the employee (Steigenberger 2013). If managers do not have sufficient power to retain and manage such a high-quality workforce, then the firm may encounter challenges of performance damage, or even survival issues.

Coping with these contradictory findings, meta-analysis methodology provides a powerful approach to compile and synthesise the correlations between HPWS and FP from established quantitative analyses (Card 2012). Leveraging the meta-analysis method, Combs and colleagues (2006) conducted a review to 92 published and unpublished studies concerning HPWS-FP relationships. The test results found an average effect size of  $\bar{r} = 0.15$  ( $p < 0.01$ ) for the overall HPWS-FP relationship, and suggested that HPWS as an integrated bundle outweighs individual HRM practices regarding the effectiveness of improving FP ( $r_{\text{bundle}} = 0.21$  versus  $r_{\text{individual}} = 0.11$ ,  $p < 0.01$ ). By adopting a very similar strategy of quantitative analysis, Saridakis (2017)

also reached an analogous conclusion. Grounded on 8 studies which utilised panel data for analysis, Saridakis (2017) found that effect sizes of overall HPWS adoption, HPWS bundle and individual practices with firm's later performance are  $\bar{r} = 0.216$  ( $p < 0.001$ ),  $r_{\text{bundle}} = 0.271$  ( $p < 0.05$ ) and  $r_{\text{individual}} = 0.128$  ( $p < 0.01$ ), respectively. This research finding further confirmed that the adoption of HRM systems could drive the firm to achieve better performance, rather than merely being associated with it. Likewise, based on the review of 116 empirical studies representing 31,463 organisations, Jiang and colleagues (2012) examined the HPWS-FP relationship from both direct and indirect methods. Their analysis confirmed that HPWS is a practical approach to improve organisation's operational outcomes in terms of productivity, quality and innovation ( $r = 0.34$ ,  $p < 0.01$ ). Meanwhile, the three AMO dimensions of HPWS, in particular, ability-enhancing practices, motivation-enhancing practices and opportunity-enhancing practices all bring a directly positive consequence to firms' financial outcomes comprised by return on assets (ROA), return on equity (ROE), market return and sales growth. These effect sizes ( $r_A = 0.13$ ,  $r_M = 0.18$ , and  $r_O = 0.09$ , respectively) are all statistically significant (p-value are all at 0.01 level of significance). Also, when considering the mediating impacts which are empirically proven to be significant, e.g., human capital, voluntary turnover, employee motivation and firm's operation performance, the association between HPWS and financial performance is still robust ( $r = 0.21$ ,  $p < 0.01$ ).

Given the rapid development of SHRM discipline, an updated evaluation of the HPWS-FP relationship by including recent empirical studies will be beneficial to both

academia and business professionals. Therefore, the first hypothesis is designed to further verify the positive HPWS-FP relationship by summarising the existing research findings, described as below:

Hypothesis 1: HPWS positively relates to firms' overall performance (FP).

### **3.3. Moderating Effect – Country of Origin**

Contingency theory argues that there is not a particular method or resource could be universally the best one for all organisations. Rather, HRM practices have to fit into the social and organisational environment (Snell and Youndt 1995, Delery and Doty 1996). Given the contingent nature of HPWS models, a particular combination of HR practices may be sensitive to its environmental settings where the business is operating (Gilman and Raby 2013). It implies that the interacting mechanism of HPWS-FP relationship is facilitated by a series of contextual and institutional factors (Paracha, Ismail and Amin 2014). Some moderators relate to the micro-environment within the organisation, which can be observed and managed by the firm relatively easily. These may include organisational strategy (Shin 2014), corporate culture (Patel and Conklin 2012), support of executive officers (Rhee, Zhao and Kim 2014), management flexibility (Lin and Liu 2016), and so on. Other moderators are associated with the macro-environment in which the organisation is located, and may not be changeable at the will of a particular organisation. These moderators may relate to industry dynamics (Chadwick et al. 2013, Chi and Lin 2011), unemployment rate in a particular industry or society (Schmidt et al. 2016), historical context (Appelbaum



and Batt 1993), national culture (Rabl et al. 2014), etc., which are beyond the control of the organisations.

In spite of the growing body of research that identified potential moderators, the “black box” in the HPWS-FP relationship has yet to be unlocked thoroughly. Therefore, this research tried to narrow the research gap by examining some potential moderators.

Academics have previously identified several possible moderators. Analysis on the “country of origin” effect, however, is insufficient in current literature. Among the few available studies, some scholars have recognised national culture for its critical role in the HPWS-FP relationships (e.g., Rabl et al. 2014, Zhang et al. 2016, Gilman and Raby 2013, etc.). Despite the consideration given to cultural issues, other national differentiations may also be relevant (Rabl et al. 2014). Bloom and colleagues (2012) found a close link between a firm's managerial quality and quantity compared with the level of productivity in diverse national settings, and found that practices that are effective in one country may not demonstrate the same functionality in other countries. In order to maximise the operational proficiency, managers should focus on distinguishing HR practices to fulfil the distinctive needs of the workers in countries with different degree of development. For instance, workers in countries with a high level of poverty may value monetary incentives more than the involvement in decision-making process. In contrast, staff in developed countries who have acquired a sound educational background and satisfactory standard of living may demonstrate a rational self-awareness. Therefore they may cherish self-autonomy and job discretion

far beyond the monitoring of their performance (Inglehart and Welzel 2005, Posthuma et al. 2013). Besides, individual firms can do little to affect the external environment, especially when dealing with macro environmental factors regarding legislation, cultural norms, economic systems and political regimes (Fey and Björkman 2001). Based on these assumptions, there is not a “one size for all” HPWS composition which can be universally valid for firms in different national settings, i.e., a set of HPWS composition may have varied influences on FP across countries at various stages of development.

Further, since Peter Drucker proposed the concept of HRM for the first time in his famous book, "The Practice of Management" in the USA in 1954 (Drucker 1954), HRM theories and instruments have been thriving in western countries for decades. Following this fad, scholars have consistently highlighted that HRM practices must fit with contextual characteristics, such as culture (Rabl et al. 2014), social capital (Jiang and Liu 2015), institutional features and economic environment (Singh, Darwish and Potočnik 2016b). When introducing a particular HRM practice into a different environment without any customisation, problems may arise due to the technological, cultural and political incompatibility between the two societies (Ansari, Reinecke and Spaan 2014). In this vein, HPWS philosophy and its practices, which were originally conceived and evolved in the USA, should correspond better to the organisational and cultural requirements of the American society or other countries with a similar historical inheritance (Appelbaum and Batt 1993). Most of the countries which have such cultural traditions are developed countries, such as UK, Canada, Australia, New

Zealand, and so on (IMF 2016). Therefore, when integrating these HRM practices into a synergised system, HPWS should be more applicable and perform better in the business environment of developed countries where the development condition is better than its counterparts in developing countries. Accordingly, the second hypothesis is designed as:

Hypothesis 2: The positive relationship between HPWS and FP is stronger in developed countries than in developing countries.

However, it might also be possible that the HPWS-FP relationship in developed countries is weaker than it in developing countries, due to the effect of diminishing marginal utility (Marshall 1961). Given that HPWS philosophy and practices have been implemented for a long time in developed countries, it might lead to limited HPWS-FP efficiency in such national settings. Nevertheless, subsequent meta-analysis will evaluate this hypothesis in details.

#### **3.4. Moderating Effect – FP Dimensions**

Besides the goal of maximising profit, business enterprises have a broad purpose for their presence in the society. It means that “performance” is a relatively spacious terminology with multidimensional measures. Organisations seek to use various ways to quantify their operational success and general abilities to satisfy expectations of multiple stakeholders, such as investors, business owners, workers, customers, and the society and environment where the firm is based (Richard et al. 2009, Santos and Brito 2012).

An organisation’s performance can be approximately categorised into two

dimensions to reflect the firm's general effectiveness (Santos and Brito 2012). The first dimension is the financial performance. It is usually derived from accounting figures, for instance, profitability, ROA, ROE, sales growth, market share, Tobin's Q, and so on. This performance category cares about satisfying the expectations of investors, business owners and other shareholders (Steigenberger 2013) by reattributing their prior investment with financial means of return (Boselie et al. 2005). The second dimension is the operational performance measuring firm's operational capability in meeting the aspirations of employees, customers, society and environment. Such examples as employees' job satisfaction and well-being, turnover and retention rate, product and service quality, innovation ability, organisational reputation, corporate social responsibilities and eco-friendly behaviour are all primary factors in operational performance (Venkatraman and Ramanujan 1986).

Extensive literature has consistently ascertained the positive influence HPWS delivered to each dimension of FP. Based on a longitudinal observation of 275 SMEs in France over two time-slots in 1998 and 2005, Razouk's (2011) proved HPWS to be a good predictor of the firm's future profitability, innovation climate and social climate, which represent the key indices of financial performance and operational performance, respectively. Moreover, when analysing the data of "Human Capital Corporate Panel Survey" in Korea, Choi and Lee (2013) found support for the positive association between HPWS and financial performance by a proxy of ROA. In this study, they also confirmed the importance of workers' job satisfaction to the operational performance and suggested that a happier and healthier staff team is

beneficial for achieving better economic outcomes. Sheehan (2014) further verified these findings through a test of 336 SMEs in the UK. This study indicated that greater attention allocated to HPWS would improve FP from both financial aspect in terms of profitability, and operational means of innovation capability and employee turnover. This positive HPWS-FP relationship then enables the business to obtain and retain competitive advantages in the long run.

Although HPWS improves FP from the both dimensions, the strength of such an influence may be different. This is because that HPWS focuses on the enhancement of human capital's KSAs and motivation, which are closely associated with some operational performance indicators such as employees' organisational commitment (Mansour et al. 2014), job satisfaction (Choi and Lee 2013), innovation activities (Sheehan 2014), etc. Such an enhanced operational performance, in turn, converts to improved financial returns eventually (Huselid 1995). In this regard, HPWS should demonstrate stronger influence on FP when it is measured in operational means than in financial means.

Some studies provided support to this proposition. For instance, Crook and colleagues (2011) found a stronger effect size between HPWS and operational performance over financial performance in a statistical review on 66 primary sample studies. Through a meta-analysis of 59 peer-reviewed studies, Steigenberger (2013) also reached a similar conclusion suggesting that HPWS has a greater influence on employee retention than rent appropriation of shareholders (i.e., ROI, ROE, etc.). However, disagreements on this issue are also visible. Some meta-analyses showed

that the relationship between HPWS and FP should be invariant across performance measures. For example, based on a statistical aggregation of 92 empirical studies, Combs and colleagues (2006) found that the HPWS-FP relationship is not affected by the choice of FP measures. In a later meta-analysis study, Saridakis and colleagues (2017) confirmed this finding and reinforced a statistically undifferentiated HPWS-FP effect size under both financial and operational performance measures. However, these meta-analyses were largely based on primary studies which focusing on individual HR practices, rather than using a bundle of HR practices as a synergised system. For example, 62 per cent of 92 studies in Combs and colleagues' (2006) paper were based on individual HR practices. This ratio in Saridakis and colleagues' (2017) study was also as high as 50 per cent. These studies may be biased to the researchers' choice of individual HR practices and were not reflective of the aggregate effect of HPWS as a system (Combs et al. 2006). Therefore, it is problematic whether the findings apply when the individual HR practices are considered as being in an integrated system.

To further verify the moderating effect of FP dimensions on the HPWS-FP relationship, the third hypothesis constitutes two replicated sub-hypotheses, stated as follows:

Hypothesis 3a: The positive relationship between HPWS and FP is stronger when FP is measured in financial terms;

Hypothesis 3b: The positive relationship between HPWS and FP is stronger when FP is measured in operational terms.

### **3.5. Moderating Effect – HPWS Composition**

In the extant studies, three dominant taxonomies are frequently presented to categorise HPWS composition, namely, AMO theory, “logics of control” philosophy and common practice approach through a universalistic perspective.

#### ***3.5.1. AMO Model***

The Ability-Motivation-Opportunity (AMO) model (Appelbaum et al. 2000) is the most widely quoted taxonomy to decompose HPWS bundles. It states that organisational interests are best served by an HRM system that attentive to employees' ability, motivation and opportunity to contribute. The AMO model provides a conceptual structure for managers to ensure that the employee can do the job with adequate abilities (A), will do the job with enthusiastic motivation (M), and when there are appropriate opportunities (O) for doing so (Choi 2014b). Within an HPWS, therefore, the components can be grouped into ability-enhancing, motivation-enhancing and opportunity-enhancing practices according to their respective developmental focuses (Jiang et al. 2012).

Ability-enhancing practices increase employees' KSAs and competencies (Kostopoulos, Bozionelos and Syrigos 2015). With this regard, HRM practices such as intensive recruitment and comprehensive selection procedures help firms increase competencies by acquiring appropriately qualified candidates into the firm (Chadwick et al. 2015). Extensive training and development programs improve talent capabilities to perform better and thereby avoid devaluation of human capital (Lin and Shih 2008). And job rotation opportunities equip employees with multi-skills thus accumulate

more human capital for the firm (Eriksson and Ortega 2006). Motivation-enhancing practices strengthen employees' self-efficacy and passion for fulfilling their roles and meeting work goals with better performance (Kostopoulos et al. 2015). Applicable methods, such as competitive compensation and benefits programs reinforce employees' desired behaviour and exceptional efforts by financial or non-financial reward schemes (Armstrong 2010). Performance appraisal procedures inspire employees in targeting the directions for continuous improvement, reducing team disputes, and enhancing team cooperation by clearly specified evaluation criteria and constructive feedback communication (Lin and Shih 2008). Information sharing practice entitles employees with good understandings of the firm's strategy and market position, strengthens shared perceptions between employee and organisational values, and increases employees' identification and ownership with the firm. As such, employees may feel more obliged to take proactive action in line with the organisation's strategic orientation (Gardner, Wright and Moynihan 2011). Finally, opportunity-enhancing practices inspire employees to dedicate to their jobs and to contribute to organisational success by promoting their psychological empowerment and autonomy (Kroon et al. 2013). In this category, employee involvement practice in the decision-making process creates opportunities for employees to have their say in the business operation and devote their efforts toward organisational outcomes (Choi 2014b, Hong et al. 2016). Job enrichment practice offers staff more opportunities to utilise their skills with increased autonomy and flexibility, which enhances job satisfaction and in turn contributes to superior organisational performance (Wood et al.



2012).

Despite a relatively clear structure of AMO, there is not a fixed standard of HRM practices included in the three groups. For example, some scholars (e.g., Gardner et al. 2011) believe that information sharing should be a motivation-enhancing practice, whereas other scholars (e.g., Fu et al. 2013) concentrate on its contribution to building required skills by informal knowledge sharing among the workforce. Besides, there are also some other studies suggest that it should be one of the opportunity-enhancing practices (e.g., Jiang et al. 2012), since employees may have more opportunities to make discretionary decisions if they have sufficient information at hand. A possible reason may be the lack of consensus about what practices should be in a comprehensive “HRM checklist”, since there is not a commonly agreed theoretical rationale and evaluation metrics to quantify the effectiveness of these practices (Boselie et al. 2005).

### ***3.5.2. “Logics of Control” Philosophy***

The second HPWS taxonomy is conceptualised by the “logic of control” theory (Bamberger, Biron and Meshoulamet 2014). It holds that HPWS practices are clustered around three types of control to regulate employees’ performance, that is, investment, involvement, and inducement HR practices (Dyer and Holder 1987).

Specifically, investment HR practices monitor the antecedent input of performance by introducing relevant competency models and appropriate management tools to improve employees' KSAs, motivation and performance (Chow et al. 2013). Practices in this category involve extensive training and people

development programs to enhance the quality of human capital. It also contains selective recruitment, performance-based incentive and promotion-from-within practices to increase employees' competencies, motivation, and performance standard (Chadwick et al. 2013). The second category of involvement HR practices controls the performance output by translating managerial intentions into performance targets instead of operational procedures. Practices in this category, such as self-managed work teams and employee discretionary practices, provide maximum challenges, participation opportunities, delegation and discretionary flexibility to enhance employees' commitment and willingness to devote their efforts to the firm success. And the third category, inducement HR practices, controls workers' on-the-job attitude and behaviour by attracting workers to align their autonomous efforts with the organisational expectations by heuristics of extrinsic rewards and intrinsic recognitions (Chow et al. 2013). Practices in this category demonstrate firm's willingness of long-term engagement and a mutually beneficial employment relationship with the workers. Such HR practices as participation in the business decisions, fair treatment and equal opportunities, flexible work arrangement, perquisites and supplementary compensation, are all typical inducement practices (Schmidt et al. 2016).

### ***3.5.3. Common Practices Through the Lens of Universalism***

The third taxonomy is to capture the critical components of HPWS according to the common practices adopted in real world businesses. These practices are likely to be found in most organisations with at least some basic HR functions (Muduli 2015,

Mansour 2015). Compensation (e.g., rewards, wages, incentives, contingent pay, bonus, and intangible benefits, Delaney et al. 1989; Armstrong 2010), employee relations (e.g., grievance procedures, standardised codes of conduct, flexible work arrangement, and teamwork, Delaney et al. 1989; Al-Damoe et al. 2015; Dyer and Reeves 1995; Meuer 2016), performance management (Delaney et al. 1989), training and development (e.g., formal training system, knowledge sharing, off-the-job training, on-the-job training, and mentoring, Delery and Doty 1996; Chen et al. 2016; Choi and Lee 2013), promotions (e.g., career development plans, internal mobility, and internal career opportunities, Choi and Lee 2013; Kostopoulos et al. 2015; Singh et al. 2016b), and recruitment and selection (e.g., job description, selective hiring practices, and staffing, Kostopoulos et al. 2015; Pfeffer 1995; Kim and Ployhart 2014) are among the most commonly discussed HR practices in HPWS research (Rabl et al. 2014).

### *Compensation*

Compensation practice refers to the reward system that encourages employees to actively engage in their roles at work (Paracha et al. 2014). Compensation is a broad concept, which usually comprises both tangible and intangible items. Tangible rewards, such as salary and contingency bonuses, are those extrinsic means of monetary remuneration that the company pays for exchanging employees' effort at work (Armstrong 2010). Intangible rewards stand for the conditions that a firm established to attract employees' emotional attachment by offering a better work-life quality, such as comfortable office layout, advanced working equipment, free club

gym memberships, and so forth (Baptiste 2008).

Competitive compensation shows firm's strong commitment to employees, which may induce employees' passion for hard work that brings superior performance (Lin and Liu 2016). Also, highly competitive reward scheme can help organisations stay advantageous in talent acquisition and retention. In particular, it offers a powerful tool for managers to attract high-quality candidates from external labour market and to reduce quit intentions of capable employees (Chiu, Luk and Tang 2002).

In the extant literature, compensation practice has been proven for its promoting role on the organisational performance repeatedly. For example, through the analysis of Canadian businesses, Shin and Konrad (2014) found that compensation and benefits positively predict later productivity. A similar conclusion was also found in the study of Taiwanese companies, indicating that firms would achieve better administrative and technical innovation performance if they have well-developed compensation practices (Chen and Huang 2009). All these studies provide empirical evidence that compensation practice is a key feature of HPWS.

### *Employee Relations*

HR practice of employee relations promotes a supportive and cohesive work environment through reducing conflict, encouraging teamwork, participation in decision-making, improving information sharing, providing grievance solutions (Lin 2012), standardising codes of conduct and modifying behaviour in the workplace (Al-Damoe et al. 2015). Implementing employee relations practice does not mean to neglect or to sacrifice the interests of either employer or employee when conflicts

arise. Rather, if the firm adopts appropriate policies and practices to regulate the relationship within the workplace, some level of consent and co-operation can be achieved (Godard 2004), so as to stimulate the sense of belongingness and obligations among the workforce. Such derived feelings of ownership will then guide employees to devote their best services to both the operational performance and financial gains of the firm (Lin 2012).

Employees in various positions do not necessarily contribute equally to organisational outcomes, which have been confirmed in research based on semiconductor factories in Asia, Europe and the USA (Appleyard and Brown 2001). It shows that at least in technology-intensive industries, shop floor operators may contribute less than their co-workers in technical positions. But this does not mean that companies should focus employee relations practices only on knowledge workers while ignoring the on-the-job feelings of shop floor workers. On the contrary, managers have to pay more attention to the well-being of those “grass-roots” workers. Organisation’s care and commitment promote a trust environment within the team, which in turn induce employees' sense of ownership and responsibility (Baptiste 2008). Although the contribution of the individual junior-level worker may be trivial, the aggregation of these small efforts will become a considerable strength to push the organisational improvement, since these front-line workers usually account for the majority of total headcount in the organisation. Similarly, any small dissatisfaction from them also may bring together into a big challenge to the business operations, and thus lead to unexpected damage to the firm's interests.

## *Performance Management*

Performance management practice is a tool to establish a clear set of indications for effort, outcomes and appraisal criteria. By doing so, performance management system offers necessary resources to support workers to achieve the performance objectives (Chen and Huang 2009).

Unlike traditional control-oriented HR practices that rely on rules and supervision to regulate employees' behaviour at work, HPWS practitioners usually use performance management practices to encourage employees to align with organisational goals by self-motivated efforts (Chang and Chen 2011). Such an HRM practice, however, should not be merely restricted to setting goals and pushing workers towards the goals. It should be an integrated process that allows managers to discuss with their subordinates about expectations, evaluating benchmarks and reviewing procedures from time to time. Also, managers need to provide timely feedback and incentives to reward employees' behaviour that compliant with organisational value and ethical requirement, if they want to elicit and reinforce such kind of desired work-related actions from the workforce (Den Hartog, Boselie and Paauwe 2004).

Through the implementation of performance appraisal practices, HR practitioners also can identify essential connections between organisation's strategic objectives and obligations that individual employees should share in their respective positions. Therefore, by cascading the strategic goals down to individual employees, managers will be more confident in controlling the overall direction of enterprise

development (Roberts 2001).

The importance of performance management in HRM practices received plenty of attention by scholars. According to the extant research findings, managers should pay sufficient attention to the performance management if they intend to inspire needed motivation and employees' hard work to deliver high-quality service (Liao et al. 2009), to improve customer satisfaction (Haynes and Fryer 2000), or to promote financial performance (Wan, Ong and Kok 2002).

### *Training and Development*

Compared with other HPWS practices, training and development (TD) practice is a relatively ambiguous measure (Goergen et al. 2012). Sometimes it serves as a firm's long-term commitment to employees' career development. In this circumstance, TD is used to develop employees' KSAs attainment for better individual performance, or to optimise the workplace climate such as teamwork and cooperative behaviour for better work experience. Sometimes TD is regarded only as an aid to cope with a firm's basic needs, such as new hires induction, or reducing the high turnover rate (Darwish et al. 2016). Notwithstanding its different purpose, TD practices always show the firm's acknowledgement to the value of its human capital (Paracha et al. 2014). Through TD programs, employees are equipped with adequate KSAs not only to fulfil their immediate roles at work, but also to respond to future challenges in the dynamic business environment (Chowhan 2016).

According to the analysis of 99 financial services firms in Jordan, Darwish and colleagues (2016) found that, of the six HR practices, training practice is the only one

that positively related to both ROA ( $b = 0.52, p < 0.01$ ), and ROE albeit the coefficient is marginal ( $b = 0.34, p < 0.10$ ). Similarly, when analysing hotels in Spain, Ubeda-Garcia et al. (2013) also found that training is positively correlated with FP, whether it is measured by objective means of productivity and other financial figures, or by subjective terms of perceived financial performance.

However, the investment in TD practices does not follow the generic pattern of “the more investment, the better performance”. On the one hand, excessive in-classroom and on-the-job training programs distract workers from completing their routine job tasks and interfere the regular pace of production process (Appleyard and Brown 2001). On the other hand, increased cost associated with TD programs also add burden to the operational expenditure causing the shrinkage of firm’s profitability, and thus result in a decline in the financial performance of the enterprise (Chi and Lin 2011). As such, it is critical for HR practitioners to make a well-balanced decision between the input of TD investment and the output of organisational performance.

### *Promotion*

Promotion practice, also known as internal career opportunities (Darwish et al. 2016), offers a pathway by which an employee can internally transfer into other roles, or progress to a higher position with extended responsibilities. It helps the organisation to retain firm-specific skills and expertise, which may be critical for the business entity to establish and sustain unique competitive advantages (Glen 2006). The retention of key talents may lead to a lower turnover rate, thereby decreases the staff replacement costs, as well as reduces the risks of the technological and



intellectual capital spillover to the competitors (Glen 2006). Also, internal promotion and job rotation opportunities motivate employees to work hard and to achieve stretched performance goals (Ramdani et al. 2014).

The promotion decision, however, requires fair and procedural justice. Because there is always a minority of employees who can receive a promotion opportunity, managers should be objective and impartial when making such a decision, and thus to avoid unexpected emotions and behaviour among the majority of workers (Bagdadli, Roberson and Paoletti 2006). For those promoted employees, they will be motivated only when they believe that promotion decisions are made based on their qualifications and capabilities, rather than other factors such as interpersonal relationships with supervisors and loyalty towards the firm (Ramdani et al. 2014).

The positive association of promotion practice with FP is evident. Using the sample of 151 firms in Brunei, internal career opportunity exhibited a significant impact on the enhancement of perceived financial performance with a coefficient of 0.302 at 0.01 level of significance (Singh et al. 2016b). Besides, promotion decisions based on qualification and experience also lead to better individual performance and higher operating efficiency (Ramdani et al. 2014). As such, promotion practice is considered as a useful element for organisational performance improvement.

### *Recruitment and Selection*

Recruitment and selection practice is to use a set of carefully designed instruments to attract, identify and place candidates into the right position of an organisation (Mansour 2015). Through comprehensive recruitment channels and

selection procedures, managers are able to source and identify capable candidates with competent KSAs to fulfil the development needs of the organisation. These carefully selected candidates may better adapt to their new roles via formal and informal training to develop firm-specific knowledge, which enables them to better perform and contribute towards the organisational goals (Chang and Chen 2011). Also, it is proved that those elaborately selected candidates are more likely to succeed in their jobs, and have a higher motivation to stay longer and to produce more exceptional performance for the team (Singh et al. 2016b). Managers, however, also need to be careful when designing selection criteria and strategies for recruitment activities, so that to avoid introducing candidates whose skill sets do not properly match the firm's development requirements into the team. Otherwise, the organisation may suffer from a variety of operational problems, such as increased turnover, impaired quality and productivity or dissatisfied attitude among the workforce (Storey 2007).

Empirical studies also have identified that successful implementation of recruitment and selection practices may lead to superior performances for enterprises. For instance, Amin et al. (2014) found that universities that have effective recruitment procedures and selection techniques usually demonstrate better academic quality and reputable international rankings. Similarly, by analysing the SMEs in China, Zheng, Morrison and O'Neill (2006) also found that firms may present improved HRM outcomes if they have freedom to define selection principles when hiring needed staff from external labour market.

#### ***3.5.4. The Variation of HPWS Composition***

In the real world businesses, people have long been witnessing that organisations committed to trying numerous HRM practices and combination approaches to improve productivity and profitability. Not all of these efforts, however, lead to the improvement of organisational performance. Despite various components included in the HPWS, a systematic perspective of composition planning is critical. The deployment of HR practices must be internally coherent in an HPWS bundle, and externally align with the firm's strategic objectives (Marathe and Pathak 2013) and its cultural settings (Rabl et al. 2014). Such a set of complementary practices, therefore, reinforces the positive influence on the firms' overall performance (Ngo et al. 2014). Further, the synergy created by HPWS bundle only increases when its components achieve a robust interconnection. In this scenario, the additive effect of all these individual practices will be greater than the sum of each ingredient used in isolation within a particular contextual configuration (MacDuffie 1995, Becker et al. 1997, Combs et al. 2006). For example, employees who are hired through exhaustive selection process may demonstrate higher potential in knowledge and skills development. Therefore, comprehensive training and development programs may accelerate the people development to accomplish more significant contribution to the organisation. In contrast, an HRM system that only piled up by the "best practices" from other companies may not guarantee the firm's competitiveness. When introducing two or more conflicting HR exercises into the company, such a deadly combination is likely to decline the business performance (Becker et al. 1997). For

example, employees will be demotivated if performance management system is introduced while performance appraisal result is only given limited weight or even excluded for compensation adjustment. In this scenario, the form may suffer from either a mere formality of the performance management activities, or emotional resistance from the workers. From this point of view, the components of HPWS need to be carefully selected and well balanced to construct “powerful connections” while avoiding “deadly combinations” so that to eliminate impaired effects to the organisational outcomes (Becker et al. 1997).

As discussed in above sessions, most of the current studies focus on analysing the HPWS-FP relationships by viewing HPWS either as an integrated instrument or from one of the three taxonomies, i.e. AMO framework, “locus of control” philosophy, and universalistic approach. The variation of HPWS composition, however, has hitherto received little attention. The scarcity of analysis on this topic may obstruct a further understanding of how HPWS components interact collaboratively, as well as the degree to which various HPWS compositions moderate the effectiveness of HPWS-FP relationship. For easy understanding, one may consider such a common phenomenon in our daily life as a metaphor. Every baker uses some common ingredients for preparing bread, such as flour, milk, sugar, eggs, butter and yeast. But, the taste of the bread can be very different, some are fluffy and sweet, while other are crusty and chewy. The reason may be due to the variation of the composition of those ingredients: some bakers prefer to put more milk, while others would like to use more butter. Just because the bakers add various “amount” of each kind of ingredient to the

dough, bread eventually presents unique flavour.

Similarly, the discrepancy in HPWS practices composition will also lead to different reflections on organisational performance. Assuming that two companies are operating in precisely the same societal and industrial environment, and they adopt exactly the same components of HPWS. One firm which invests more in training and development activities may demonstrate higher workforce quality to achieve better performance, while the other one which allocates too much energy in retention strategy might end up with an unambitious staff team, making its FP unlikely to move forward.

In this regard, the variation of HPWS composition deems to be a meaningful topic for analysing the “black box” of the HPWS-FP relationship. Given all components of HPWS are important in theory, however, the impact of the variation of HPWS composition on the HPWS-FP relationship is more an empirical issue than a theoretical one. Extant HPWS scholars have paid little attention to this issue. In order to narrow this research gap, I follow the common practices approach explained in the last section to propose the following hypotheses for empirical test.

Hypothesis 4a: The positive relationship between HPWS and FP is stronger when HPWS contains a higher composition of compensation practice;

Hypothesis 4b: The positive relationship between HPWS and FP is stronger when HPWS contains a higher composition of employee relations practice;

Hypothesis 4c: The positive relationship between HPWS and FP is stronger when HPWS contains a higher composition of performance management practice;

Hypothesis 4d: The positive relationship between HPWS and FP is stronger when HPWS contains a higher composition of training and development practice;

Hypothesis 4e: The positive relationship between HPWS and FP is stronger when HPWS contains a higher composition of promotion practice;

Hypothesis 4f: The positive relationship between HPWS and FP is stronger when HPWS contains a higher composition of recruitment and selection practice.

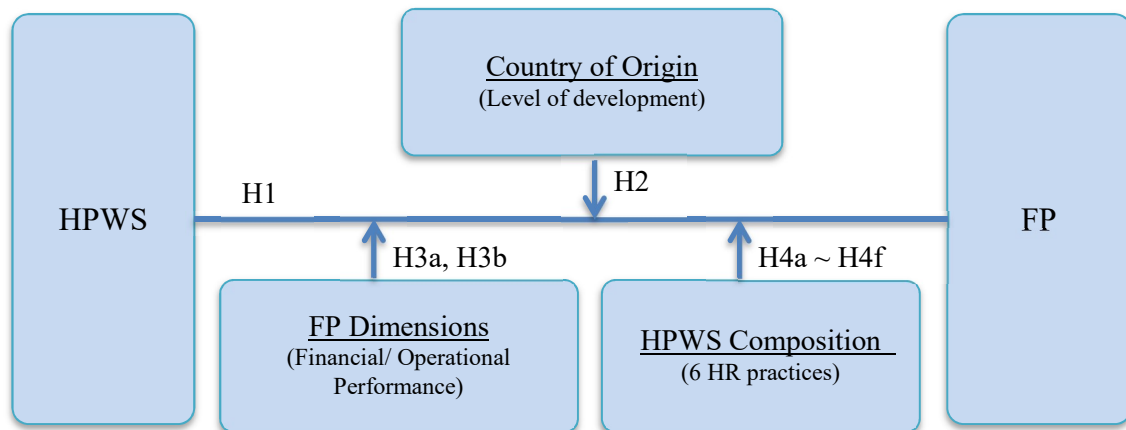
### **3.6. Summary**

To summarise the discussion, Figure 4 depicts an illustration of the meta-analytical framework and hypotheses in the present study.

The fundamental assumption is a direct positive HPWS-FP relationship. Such an association will be affected by a series of moderators, i.e., the country of origin effect, FP dimensions, and the variation of HPWS composition. Specifically, the adoption of HPWS will improve the firm's overall performance positively (Hypothesis 1). The HPWS-FP relationship will be stronger in firms operating in developed countries than in developing countries (Hypothesis 2). A stronger HPWS-FP relationship also will be found when the FP is measured in financial indices (H3a) or operational indices (H3b).

Further, the HPWS-FP relationship will be more effective when the HPWS composition comprises higher proportion of compensation practice (H4a), employee relation practice (H4b), performance management practice (H4c), training and development practice (H4d), promotion practice (H4e), or recruitment and selection practice (H4f).

**Figure 4. Hypotheses Illustration**



## CHAPTER 4. METHODOLOGY

The primary estimation approach of the study is meta-analysis, mainly following the statistical methodology introduced by Hunter and Schmidt (2004), with reference to some tactics recommended by Card (2012), and Borenstein and colleagues (2009). Based on the empirical results extracted from relevant literature concerning the relationship between HPWS and FP at present, the study aims to address the hypotheses and draw inferences from the descriptive, subgrouping and meta-regression results.

Similar to any other research approaches, conducting a meta-analysis runs through three generic steps, i.e., data collecting, data processing and research findings reporting (Egger, Smith and Phillips 1997).

### 4.1. Sample Source

According to the initial design of research questions and hypotheses, meta-analysts should define an appropriate strategy for the searching of primary sample studies (Egger et al. 1997). An elementary yet critical first part of the analysis is to design a list of keywords for the sample studies searching. Keywords have to be highly relevant to the research topic. Some degree of extrapolation and synonyms of the keywords in searching are used to receive the most comprehensive searching feedbacks. Secondly, researchers need to identify pertinent database for the searching. By utilising such a powerful way of electronic searching, most of the targeted studies are retrievable with the support of suitably selected keywords, appropriate searching



techniques and necessary membership entitlement. Additionally, researchers also need to consider other sources for sample collection, such as academic conferences, funding agencies and discipline faculties, to cope with the potential issue of publication bias. In this regard, both published and unpublished articles should be included to obtain an unbiased and exhaustive sample pool (Card 2012). Finally, a realistic and feasible time frame is also essential for the searching. For example, the concept of HPWS was firstly introduced in the mid-1970s, so a broad time-frame beyond that point of time may return irrelevant sample studies, while too narrowed time-frame may lead to a missing of eligible samples (Meline 2006). In a nutshell, an important consideration is that the searching practice should be comprehensive to include as much as relevant studies which comprise the population of the research topic concerned (Card 2012).

Particularly for the present study, an exhaustive search with extended keywords in all available databases has been conducted in June 2016. Therefore, the cut-off date of searching is set as June 2016, and all available studies up to this point of time were all included in the searching scope to obtain as many samples as possible.

Multiple keywords and phrases have been used for searching, including, “high-performance work system”, “high-performance work practices”, “high-performance work organisation”, “high-performance”, “human resource management”, “strategic human resource management”, “human resource practice”, and “human resource”, combined with “firm performance”, “operational performance”, and “financial performance”. Abbreviations and synonyms and to the

above terms were also used in the searching, for instance, “HPWS”, “SHRM”, “HRM”, “HR”, “personnel”, “high commitment”, “high involvement”, “business”, “economical”, “productivity”, “profitability”, “quality”, “growth”, “satisfaction”, “innovation”, “performance”, “turnover”, “innovation”, “outcomes”, and “outputs”.

The searching follows a six-step strategy. Firstly, several databases and search engines have been scanned for sample studies, such as ABI/INFORM Collection, Asian and European Business Collection, Central Europe Database, Continental Europe Database, East and South Asia Database, East Europe, Emerald Insight, Google Scholar, JSTOR, Latin America and Iberia Database, Middle East and Africa Database, Murdoch Library, ProQuest Central, ProQuest Dissertations and Theses Global, PsycARTICLES, Psychology Database, PsycINFO, Social Science Database, Sociology Database, and Springer. When searching in these databases and search engines, citations, book reviews, newspaper articles, as well as articles published in a language other than English were all excluded. Secondly, some influential journals in HRM discipline have been screened for relevant articles, such as The International Journal of Human Resource Management, Asia Pacific Journal of Human Resources, Asian Academy of Management Journal, Employee Relations, Human Resource Management, Human Resource Management Journal, International Journal of Manpower, Journal of Business Research, Journal of Management, Knowledge Management Research and Practice, Personnel Review, and Strategic Management Journal. Thirdly, two leading conference programs, i.e. Academy of Management and the Society of Industrial and Organisational Psychology also have been reviewed for

potential articles with the same terms as above. Fourthly, a review of the reference lists of sorted studies, especially previous meta-analyses (e.g., Combs et al. 2006, Subramony 2009, Jiang et al. 2012, Rabl et al. 2014, Rauch and Hatak 2016), have been scanned to cross-check whether there are any missing articles after these three rounds of searching. Fifthly, the primary authors of not downloadable articles have been emailed asking for an electronic copy. And finally, authors of targeted studies were contacted for any relevant works that have not been published in order to minimise publication biases.

Upon completion of the initial sample study searching, it is necessary to funnel down appropriate samples according to the pre-defined inclusion and exclusion criteria. In fact, the inclusion criteria are akin to the principles that have been applied in the sample searching stage (Meline 2006). When screening these retrieved studies, inclusion criteria are also applicable to supplement the sample pool. Through a scanning to the reference list of the literature, backward searches and forward searches are necessary for completing the sample pool (Card 2012). In particular, articles cited in the current sample study, as well as other possible articles which have cited the current study, also should be considered for their suitability for inclusion. As of the exclusion criteria, they only should be applied to exclude a sample study if it apparently coincides with one or more of the exclusion criteria after a thorough evaluation (Meline 2006). Some possible exclusion criteria may be, for instance, research approach is solely qualitative without any quantitative analysis, significantly different to the research subject, no quantitative evaluation of the relationship between

major variables, missing of sufficient data for effect size computation, vague or lacking of indication in the data characteristics (e.g. the country of data origin), repetitive publications, language limitations, and so forth (Majd et al. 2015). The meta-analyst, however, needs to be careful when defining the exclusion criteria, so as to avoid the exclusion of eligible studies, which lead to a biased sample set.

Based on the above strategies, the first step of sample screening is to remove all duplicated articles from the sample pool. In what follows, remaining articles were filtered by an in-text keyword assessment to check whether “method”, “methodology”, “hypothesis”, “sample”, “correlation” or “effect” appears in anywhere of the content in the article, so as to rule out purely qualitative studies (Rabl et al. 2014). Then, a quick review has been conducted to the abstract of each study according to the following inclusion/ exclusion criteria:

To be retained in the sample pool, a study must align with the following inclusion criteria:

(1) All targeted studies have to report bivariate correlations, inferential statistics, descriptive statistics, probability levels of significance tests or omnibus tests for HPWS (elements or as a bundle) and FP (dimensions or as a whole), for coding purposes in the following steps (Card 2012).

(2) Studies have to measure any dimensions of FP, either financial, operational, or a combined measure of performance at firm or establishment level. Acceptable measures of FP could be financial or accounting indices, e.g. return on asset (ROA), return on equity (ROE), return on investment (ROI), profit, sales, growth, or

operational indices, such as product or service quality, innovation, customer satisfaction, productivity, talent retention, turnover, and organizational ambidexterity.

(3) FP measures could be acceptable for either objective figures from accounting records such as corporate annual reports or other financial statements, subjective ratings reported by survey informants of the sample studies such as perceived overall performance or perceived market positioning over competitors, or a consolidation of these two types of measures. Previous academics have ascertained that, compared with objective figures collected from a firm's financial reports, carefully designed measures of subjective data are equally valid and reliable to reflect a firm's financial performance when collecting objective financial data is difficult (Singh et al. 2016a).

(4) Studies have to report the components comprised in the HPWS bundle, preferably the composition percentage, or at least the approximate structure of the HPWS composition.

(5) The sample study must concern the use of HPWS, HR practice packages, or the aggregated or synergised effect of individual HR practices for which HR practices are analysed as an integrated system instead of individual HR activities (Rabl et al. 2014).

(6) Studies have to report the country of data origins, so that to match country-level measures in the following analysis.

A study will be eliminated if it meets any one of the following exclusion rules:

(1) Studies use purely qualitative analysis as their research methods.

(2) Studies use mixed or quantitative research methods, but have not reported

bivariate correlations or other useful figures among variables of interest which are essential for data coding in the following steps.

(3) Studies have only examined ideological performance dimensions such as employees' attitude, organisational citizenship behaviour and team cohesion as FP terms, no matter whether these indices have been aggregated to firm level or not.

(4) Studies that only analysed HPWS impacts on individual (employee) performance without an aggregation on firm or establishment-level performance;

(5) Studies that examined solely on individual HPWS practices, without empirical investigation of the relationship between HPWS and firm's overall performance or any one of the FP dimensions.

(6) Comparison studies using data collected from more than one country without separate analysis, or from anonymous countries.

After scanning by the above inclusion and exclusion criteria, 190 articles (as marked with an asterisk in the reference list) meet all these requirements. The majority of these articles offer only one sample set, except two articles composed by Gilman and Raby (2013), and Shaw et al. (2009). In Gilman and Raby's (2013) work, two sample sets were extracted representing SMEs in France and UK, respectively. Shaw and colleagues' (2009) work contains two independent studies, one is from 1999 TTS Blue Book of Trucking Companies in the USA, and the other is from stores of a single-unit supermarket in the USA. As such, 192 samples were finally coded in this study, representing 47,741 firms and establishments from 34 countries and regions. Therefore, these 192 primary samples make up the final sample pool of this

meta-analysis.

## **4.2. Effect Size Computation**

As a fundamental element of meta-analysis, effect sizes must be coded from sample studies in an accurate and deliberate manner. The complexity of effect size coding task depends on the hypotheses and the primary purposes underlying the meta-analysis (Hunter and Schmidt 2004).

Generally speaking, effect size, a standardised numerical scale, makes the key research findings of different studies comparable. It is the most valuable information extracted from sample studies (Lipsey and Wilson 2001). Depends on the outcome types in sample studies, meta-analyst shall adopt an appropriate kind of effect size for combination and comparison. Some practical types of effect size could be, for example, Pearson correlation, standardised mean difference, odds ratio, and so on. When choosing a particular kind of effect size, one should consider whether the information needed for effect sizes computation is likely available in the majority of sample studies. Also, the effect size should be substantially meaningful so the underlying implications of the meta-analysis results can be easily interpreted (Borenstein et al. 2009, p.18 - 19).

Pearson correlation is a typical type of effect size, denoted as “r”. It represents the magnitude of the relationship between two continuous variables of interest (Card 2012). A normal approach to capture Pearson r is by correlation coefficient matrix reported in the sample study. In case such a correlation matrix is missing in a particular study, some other statistics also can be used for effect size calculation, such

as t-test, F-ratio, and two-by-two contingency  $\chi^2$  (Card 2012, p.97). Pearson  $r$  is widely adopted in meta-analyses in the HRM literature (e.g. Jiang et al. 2012, Rabl et al. 2014, etc.), since it is flexible for computation, and the basic data needed for the calculation are commonly reported in the vast majority of primary studies.

Followed this guideline, Pearson's  $r$  is adopted as the effect size in this meta-analysis. Three indices are essential for effect size coding, i.e., the bivariate correlation coefficients estimating the HPWS-FP relationship, the sample size, and the measurement errors reported in primary studies.

Some of the targeted studies have directly reported a bivariate correlation coefficient of the HPWS-FP relationship. In this scenario, such a correlation coefficient was directly coded as the effect size ( $r$ ) for this particular study (as the cases in studies of Chang 2015, Donate and Guadamillas 2015, etc.). Some other studies have reported multiple correlation coefficients of various dimensions of HPWS and FP, or a particular HPWS and FP construct over several time slots in a correlation matrix (Chadwick, Super and Kwon 2015, Sheehan 2014, etc.). In this circumstance, a linear composite correlation was computed to estimate an aggregated effect size. The aggregation approach follows the method proposed by Hunter and Schmidt (2004, p. 437 – 439), using equation 2 as follows:

$$r_{xy} = \frac{\sum r_{xij}}{\sqrt{n+n(n-1)\bar{r}_{xixj}} \cdot \sqrt{m+m(m-1)\bar{r}_{yiyj}}} \quad (2)$$

In the above equation,  $\sum r_{xij}$  is the sum of the correlations between HPWS dimensions and FP dimensions,  $\bar{r}_{xixj}$  is the average correlation among HPWS



dimensions, and  $\bar{r}_{yiyj}$  is the average correlation among FP dimensions. “n” and “m” stand for the counting numbers of HPWS dimensions and FP dimensions, respectively.

Sample size is a fundamental factor for correcting sampling errors in later analysis. Scholars recommended that sample size demonstrates a negative relationship with the sampling error, which means larger samples size includes less sampling error (Hunter and Schmidt 2004, p. 81). The number of firms or establishments surveyed in the primary study was recorded as the sample size. If the numbers of business entities involved in analytical steps of a study are inconsistent, the minimum of the multiple sample sizes was adopted as the final sample size for this particular study.

Measurement errors are essential for correcting the attenuation due to the constraints of construct reliabilities in dependent variables (i.e. FP, denoted as  $r_{yy}$ ) and independent variables (i.e. HPWS, denoted as  $r_{xx}$ ). Hunter and Schimdt (2004) offered a thorough introduction to the methods of correcting for study artefacts, e.g. random sampling errors, construct validity in dependent and independent variables, measurement reliability, etc. By extracting the validity and reliability indicators from sample studies, a meta-analyst is able to improve the precision and accuracy of the synthesised conclusions. According to Hunter and Schmidt (2004, p.75 – 136), researchers shall pay attention to the inter-item reliability of variable constructs, and within-study inter-rater reliability for measurement error corrections. Since few studies have reported estimates of within-study inter-rater reliability (except Youndt et al. 1996, Youndt and Snell 2004, and Wright et al. 2005), it is unrealistic to make

corrections for such kind of measurement errors. Therefore, only inter-item reliability (Cronbach'  $\alpha$ ) was coded for measurement error corrections in this study. If multiple reliability estimates of HPWS or FP variables were reported in a sample study, an arithmetic average of the reliabilities was coded as the reliability of this particular variable (Rabl et al. 2014). As of inter-rater reliability of the coding task, since I have finished all the data coding tasks solely by myself, so the coding process can be regarded as internally consistent. Besides, my supervisor, an academic expert in the discipline, has randomly crosschecked the coding outcomes during the coding process. Since the supervisor and I have reached agreements with the coding results in all the randomly checked samples, the accuracy of the coding work can be regarded as satisfactory. Therefore, the inter-rater reliability should not be a critical issue for the estimation quality, and its impact on the meta-analysis accuracy is excluded from consideration in the following evaluation process.

### **4.3. Moderators and Control Variables Identification**

Meta-analysts often assess the characteristics of the sample studies to check if they systematically predict variance in sample studies, so as to determine the potential moderators to explain the dispersion observed in sample effect sizes (Card 2012, p.97). As previously discussed, country of origin effect regarding national development levels, FP dimensions, and HPWS composition are the hypothesised moderators to explain the heterogeneities among sample effect sizes in this study.

#### ***4.3.1. Country of Origin***

To identify the influence of country of origin, the country where the primary data

of a sample study initially collected was firstly coded and then converted to a categorical variable (i.e., dummy variable). According to the International Monetary Fund (IMF) report of *World Economic Outlook* (IMF 2016), 42 countries and regions are classified as advanced economies, which are commonly known as developed countries. Another 85 countries and regions are classified as emerging market and developing economies, which are known as developing countries. The classification criteria are basically according to each country's per capita income level, export diversification, degree of integration into the global financial system, and other country-level conditions <sup>3</sup>. With the aid of this socioeconomic typology, a dummy variable representing the country of origin takes the value of "1" if the sample country falls into the developed countries category, otherwise it is coded as "0" if the sample was originally collected from a developing country.

#### **4.3.2. FP Dimensions**

The FP dimensions were also coded by a dummy variable to identify whether a sample study concerns a firm's financial performance or operational performance. A dummy variable is coded as "1" when FP variable is measured solely by financial terms, otherwise, it is entitled a value of "0" showing that the FP measures includes operational terms.

#### **4.3.3. HPWS Composition**

In the existing HPWS studies, numerous practices have been discussed and analysed. This study adopts the six HR areas proposed by Rabl and colleagues (2014) when analysing the HPWS composition, including compensation, employee relations,

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<sup>3</sup> For a detailed explanation of how developed and developing countries are defined, please see IMF website: Frequently Asked Questions: World Economic Outlook (WEO) (<https://www.imf.org/external/pubs/ft/weo/faq.htm#q4b>)

performance management, training and development, promotion, and recruitment and selection. Given that Rabl and colleagues' (2014) work was based on comprehensive reviews of 156 primary studies, and published in a high-ranking journal (Journal of Applied Psychology, Impact Factor in 2016: 4.130, ABDC rating in 2016: A\*)<sup>4</sup>, the approach of HPWS practice selection in this study is considered reliable. HPWS composition is estimated by the percentage of the component practices that matched with the six HR areas in the whole HPWS package, so as to determine a weighted combination of HPWS composition. Particularly, the number of individual practices that falls into each of the six HR areas was divided by the total count of practices reported in a sample study, and the ratio is coded as the composition percentage of such an HR practice in this study. The sum of these six percentages does not necessarily equal to 100%, since the HPWS composition adopted in sample studies are highly divergent. Some studies focus only on a few of the six HR areas, whereas some other studies concern more practices, which are out of the scope of these six items.

#### ***4.3.4. Control Variables***

It is important to control factors related to the specifications of primary studies if they possibly lead to dispersions in research outcomes (Steigenberger 2013). In this regard, some control variables are included in the analysis in order to isolate their potential influence on the HPWS-FP relationship for a relatively precise estimation result. The first control variable is industry category, which was coded by two dummy variables to distinguish whether the sample data was drawn from manufacturing,

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<sup>4</sup> Source of Impact Factor: American Psychological Association website  
(<http://www.apa.org/pubs/journals/apl/>)

Source of ABDC rating: Australian Business Deans Council website  
(<http://www.abdc.edu.au/news.php/100/abdc-releases-new-journal-quality-list>)

service, or mixed industries. One dummy variable is denoted as “1” if the data is from the manufacturing firms. Otherwise, it equals to “0”. The other dummy variable is coded as “1” if the data is sourced from service firms. Otherwise, it equalled to “0”. Hence, when both dummy variables all equal to “0”, it suggests that the data source of such a sample study is from mixed industries.

The level of analysis is also controlled in this study. It was coded as a dummy variable as well, using “1” to represent that the study is analysed at firm level, and “0” to show that the study is conducted at establishment level.

#### **4.4. Estimation Strategy**

There is not a standardised procedure for the meta-analytical process, perhaps the primary principle is to carry out the analysis centred on the pre-designed hypotheses.

In this study, Microsoft Excel is the computation tool for basic mathematical calculations and transformations in data coding process, and “metaphor” package (Viechtbauer 2010) of R program (version 3.3.3) is the primary tool for meta-analytical investigation.

##### ***4.4.1. Fixed-effect Model versus Random-effect Model***

Before performing a meta-analysis, it is crucial to determine whether a fixed-effect model or a random-effect model is applicable, as the estimation approaches of projected effect size and sample dispersion underlying these two models are different.

The fundamental supposition of fixed-effect model is that the meta-analysis is based on a unified population. As such, there is only one true effect size across all the

sample studies. In contrast, random-effect model assumes that there could be more than one true effect sizes among sample studies, i.e. the true effect sizes vary from one single or a group of studies to another. The dispersion of sample effect sizes may be due to the differences in targeted populations, measurement approaches, or intervention methods in primary studies. These true effect sizes in sample studies are randomly distributed around a mean (Borenstein et al. 2009).

Coping with the specification of this meta-analysis, random-effect model is considered as appropriate, since the study assumes that true effect sizes of the HPWS-FP association will present different strength in countries with various levels of development, when FP is measured by different dimensions, or when firms adopt a specified composition in the HPWS combination.

#### ***4.4.2. Effect Sizes Transformation***

Some scholars advocate of loading sample effect sizes directly into the analysis (e.g. Hunter and Schmidt 2004), whereas others propose that Fisher's z transformation is a more realistic index (Card 2012, p.89). By applying such a "variance-stabilising" transformation, Fisher's z converts Pearson's r into a normal distribution with a known standard error that solely related to the sample size, which is a desirable trait for the later analysis (Lipsey and Wilson 2001).

In this study, the analysis firstly reviews the overall HPWS-FP relationship by complying with the Fisher's z transformation rule to normalise the distribution of sample effect sizes. After the analysis, Fisher's z is converted back to r for result interpretation. As listed below, equation 3 is for transforming Pearson r to Fisher's z,

and equation 4 shows how to compute the standard error of  $z$ , where  $\ln$  stands for natural logarithm, and  $N$  is the sample size in a particular study. The final results can be converted back to Pearson  $r$  with the inverse transformation approach indicated in equation 5 (Lipsey and Wilson 2001).

$$z = \frac{1}{2} \ln \left( \frac{1+r}{1-r} \right) \quad (3)$$

$$\sigma = \frac{1}{\sqrt{N-3}} \quad (4)$$

$$r = \frac{e^{2z}-1}{e^{2z}+1} \quad (5)$$

Secondly, when aggregating sample effect sizes, Hedges and Olkin (1985) suggested that it is unrealistic to treat all the primary findings indiscriminately when estimating an overall effect size. Scholars normally adopt a weighting scheme based on the primary study characteristics to achieve a more accurate estimate. A simple approach is to weight observed effect sizes by sample sizes in each corresponding study (Hunter and Schmidt 2004). Lipsey and Wilson (2001) agreed with this proposition and proposed that studies with larger sample size are expected to be more “precise” than a smaller sized experiment thereby should bear more “weight” in the overall estimation. With this logic, weighing effect sizes by the sample size of each particular study is a practical way when estimating a true relationship between the two variables in the population. The sample size weighting method for determining the average effect size ( $\bar{r}$ ) can be computed using equation 6 as follows (Hunter and Schmidt 2004):

$$\bar{r} = \frac{\sum(w_i \cdot r_i)}{\sum w_i} \quad (6)$$

Substitute  $w_i$  by sample size in equation 6, we get a more straightforward approach for sample size weighted mean effect size ( $\bar{r}$ ), expressed as equation 7, where  $n_i$  is the sample size of the  $i^{\text{th}}$  study,  $r_i$  is the observed effect size of the  $i^{\text{th}}$  study, and  $w_i$  is the weight allocated to the  $i^{\text{th}}$  study.

$$\bar{r} = \frac{\sum(n_i \cdot r_i)}{\sum(n_i)} \quad (7)$$

In what follows, a weighted mean true score correlation ( $\rho$ ) can be obtained by correcting the measurement errors in dependent and independent variables. Equation 8 shows the method of  $\rho$  computing, where  $r_{xx}$  and  $r_{yy}$  are the reliabilities of independent and dependent variables, respectively (Hunter and Schmidt 2004).

$$\rho = \frac{\bar{r}}{\sqrt{r_{xx} \cdot r_{yy}}} \quad (8)$$

#### ***4.4.3. Check for Homogeneity***

Another critical component of meta-analysis is to detect the homogeneity among sample effect sizes through evaluating the variability underlying the sample study findings. In some circumstances, the dispersion of observed sample effect sizes is not statistically significant, showing that they are estimating a single true mean effect size associated with the population. Statistically, such kind of sample set is perceived as homogeneous (Lipsey and Wilson 2001). In other words, if the majority of sample effect sizes are consistent with a common population mean effect size, the assumption of homogeneity among the sample effect sizes is ascertained. On the contrary, sometimes the dispersion among the sample effect sizes exceeds the acceptable variance. It shows that there are more than one true mean effect sizes associated with



the aggregated population composed of all the sample studies, hence the assumption of homogeneity should be rejected, i.e. the distribution of sample effect sizes is heterogeneous (Card 2012). In this scenario, heterogeneity indicates that other than the within-study sampling errors and measurement errors, a true variability is obvious among sample effect sizes, implying that substantial moderators may worth investigation (Card 2012). As such, subgroup analysis and meta-regression could be used to assess the existence of potential moderators and their impacts on the effect sizes, with a similar approach of regressions in primary studies (Borenstein et al. 2009, p. 187).

To assess the homogeneity among sample effect sizes, Borenstein and colleagues (2009) proposed to compute the ratio of observed variation against within-study variance among the sample effect sizes. This estimation usually can be done by Q-statistic with appropriately weighted sample effect sizes under either a fixed-effect or a random-effect model.

Some scholars (e.g., Hedges and Olkin 1985, and Marín-Martínez and Sánchez-Meca 2010) proposed that the inverse variance weighting approach demonstrates a better statistical performance coping with a set of standardised effect sizes in meta-analyses. When dealing with a fixed effect model, the sampling variance ( $\sigma^2$ ) can be simply computed by  $1/(n_i - 3)$ , where  $n_i$  represents the sample size of the  $i^{\text{th}}$  primary study. Therefore, the weight allocated to a particular sample study is to inverse the variance, which will be  $(n_i - 3)$ . As for a random effect model, the weighting approach is roughly the same, but one needs to revise the calculation by an

estimate of the study-level variance across the population studies. Equation 9 displays the computing method of inverse variance weighting for random effect models, where  $w_i$  is the weight assigned to the  $i^{\text{th}}$  study,  $n_i$  is the sample size of the  $i^{\text{th}}$  study, and  $v_0$  is the constant study-level variance (Lipsey and Wilson 2001).

$$w_i = \frac{1}{\frac{1}{n_i - 3} + v_0} \quad (9)$$

Q-statistic is an indicator to show the magnitude of overall heterogeneity resulted from the true variance among studies (Quintana 2015). Equation 10 gives the computing method of Q-statistic, where  $k$  is the total number of sample studies,  $w_i$  is the weight allocated to the  $i^{\text{th}}$  study, and  $r_i$  is the observed effect size of the  $i^{\text{th}}$  study (Lipsey and Wilson 2001).

$$Q = \sum_{i=1}^k (w_i \cdot r_i^2) - \frac{[\sum_{i=1}^k (w_i r_i)]^2}{\sum_{i=1}^k w_i} \quad (10)$$

$$df = k - 1$$

Q-statistic follows the Chi-square ( $\chi^2$ ) distribution with a degree of freedom (df) of  $k-1$ . A statistically significant Q-statistic indicates that sample studies do not share a uniform effect size, and thus heterogeneity among sample studies is evident.

Additionally, Tau-square ( $T^2$ ) represents an estimate of observed variance to simulate the variance among true effect sizes ( $\rho$ ). Analogously, the square root of  $T^2$ , i.e.,  $T$ , offers an estimate of standard deviation among true effect sizes ( $\rho$ ). Computing methods of  $T^2$  and  $T$  are shown in equation 11 and 12 as follows, where  $w_i$  is the weight allocated to the  $i^{\text{th}}$  study (Borenstein et al. 2009, p.114).

$$T^2 = \frac{Q - df}{\sum w_i - \frac{\sum w_i^2}{\sum w_i}} \quad (11)$$

$$T = \sqrt{T^2} \quad (12)$$

Besides the Q-statistic, some scholars also use the percentage of observed variance attributed to the real between-study variability (other than artefacts of sampling errors and measurement errors) to quantify the heterogeneity among sample studies.  $I^2$ -statistic is a tool presenting the true heterogeneity percentage (Huedo-Medina et al. 2006). In practice,  $I^2$  can be calculated as equation 13 (Borenstein et al. 2009).

$$I^2 = \left( \frac{Q-df}{Q} \right) \cdot 100\% \quad (13)$$

An academic consensus of  $I^2$  classifications categorise  $I^2 = 25\%$  to be a low heterogeneity in the samples,  $I^2 = 50\%$  and  $75\%$  as medium and high heterogeneity, respectively (Higgins and Thompson 2002). In this regard, a true heterogeneity among sample studies is admitted when  $I^2$ -statistic is greater than  $75\%$ , hence exploration of moderators is deemed to be informative for further investigation.  $I^2$ -statistic is an intuitive illustration to manifest the extent to which sample correlations are heterogeneous. Unlike Q-statistic,  $I^2$  is not sensitive to the distribution and the number of studies considered, which makes it a practical tool to detect heterogeneity.

In practice, some scholars use the percentage of variance due to artefacts to indicate the degree of homogeneity (e.g. Rabl et al. 2014, Combs et al. 2006, etc.). The percentage of variance due to artefacts is a complementary figure to  $I^2$ -statistic. It explains the proportion of variability attributed to with-in study errors, whereas

$I^2$ -statistic represents the percentage of between-study heterogeneity (Borenstein et al. 2009, p.202).

Upon the confirmation of within-group heterogeneity in the entire sample pool, subgroup analyses may help to identify substantial moderators by categorising the sample studies into subgroups according to study characteristics.

In the present meta-analysis, sample studies can be dichotomised according to the country of origin, i.e., whether the primary data were collected from developed or developing countries. In this circumstance, if the between-group heterogeneity is statistically significant, then the country of origin is a moderator of the effect sizes in HPWS-FP relationships. In a similar approach, when separates the sample pool into two subgroups by FP dimensions, i.e., financial and operational measures of performance, one can determine whether the strength of HPWS-FP association varies under different FP measures. When testing the moderating effect of HPWS composition, however, subgroup analysis is not appropriate, since HR practices adopted in sample studies are most likely to be overlapping, which means that firms normally employ more than one HR practices in its daily operations.

A Q-statistic based on the examination of variance among effect sizes is also applicable in the subgroup analyses. The total variance of the entire sample pool comprises of the variances within all its subset samples, as well as the between-group variances among the subset groups (Borenstein et al. 2009). To illustrate, one can assume  $Q_{\text{total}}$  as the total weighted square deviation among all sample studies,  $Q_{\text{Developed}}$  as the variance within the subgroup of developed countries, and  $Q_{\text{Developing}}$  as

the variance within the subgroup of developing countries. Therefore, the between-group Q-statistic,  $Q_{\text{between}}$ , can be estimated by equation 14 as follows:

$$Q_{\text{between}} = Q_{\text{total}} - Q_{\text{Developed}} - Q_{\text{Developing}} \quad (14)$$

As explained previously, Q-statistic follows Chi-square ( $\chi^2$ ) distribution with a degree of freedom (df) equals to the number of subgroups minus 1. In this example,  $df = 2 - 1 = 1$ . By computing the statistical significance of  $\chi^2(Q_{\text{between}}, df)$ , one can tell whether or not the country of origin is a moderator in the HPWS-FP relationship.

#### ***4.4.4. Meta-regression***

Subgroup analysis is a useful approach for detecting substantial moderators. However, such a bivariate meta-analysis approach is not so sufficient to deal with complicated situations when several moderators influence the correlation of interest simultaneously. Subgroup analysis can estimate the heterogeneity only between one pair of subgroups at a time, leaving other potential moderators out of consideration. To further evaluate the potential impacts from multiple factors, meta-regression can be used to test the multivariate effect of the complex moderating effect (Rauch and Hatak 2016). By introducing all relevant variables into regression models, researchers can explicitly evaluate multiple moderating assumptions to draw a holistic view.

Therefore, a meta-regression is performed to further verify the moderating effects caused by country of origin, FP dimensions, and moderators representing the six HPWS practices of compensation, employee relations, performance management, training and development, promotions, and recruitment and selections.

In principle, meta-regression is akin to the simple or multiple regressions applied

in primary studies. Rather than using a subject index in normal regressions, the dependent variable in a meta-regression is the effect size by its Fisher's  $z$  transformation to eliminate the potential risk of skewed distribution. The independent variables in a meta-regression include all control variables, and study-level covariates i.e. the hypothesised moderators (Borenstein et al. 2009). There are another two distinctions between the normal regression and meta-regression which need consideration. One is to determine whether a fixed-effect model or random-effect model is applicable, and the other is to identify an appropriate weighting strategy. As discussed previously, the current meta-regression uses a random-effect model leveraging the weighted least square regression approach suggested by Lipsey and Wilson (2001), using the inverse variance weighted effect size as the dependent variable in this study.

Four regression models were constructed to test the moderating effects on the HPWS-FP relationship by introducing control variables and independent variables in sequence. In the first regression model, only control variables were entered to test whether they affect the HPWS-FP relationship substantially. In the following, the moderator of country of origin, FP dimensions, and HPWS composition is added to the second, third, and fourth models by turn. Through the computation of t-ratios and p-values of regression coefficients, the regression outputs, e.g. the adjusted coefficient of multiple determination (adjusted  $R^2$ ), the estimate of between-study variance ( $T^2$ ), and the residual variation due to heterogeneity ( $I^2$ ) may provide meaningful inference and implications to the research questions.

## CHAPTER 5. EMPIRICAL RESULTS

### 5.1. Descriptive Summaries

A descriptive summary was calculated to capture the key features of the sample distribution. Table 1 reports the descriptive statistics of all the variables with the total count of sample studies, total sample size, mean, variance, standard deviation and mean standard error to offer a concise understanding to the dataset.

According to the summaries, 192 primary studies are covered in the sample pool, associating with aggregated observations of 47,741 firms and establishments. The unweighted mean of all observed HPWS-FP effect sizes ( $r$ ) is 0.295.

Table 2 presents the correlations among all the variables concerned, as well as the sample distributions according to the characteristics of sample studies. As shown, 147 primary studies concerning the HPWS-FP relationships in 38,569 firms and establishments are from developed countries. The significantly negative correlation ( $R = -0.235$ ,  $p < 0.01$ ) between developed countries (derived from the dummy variable of country of origin) and the HPWS-FP effect size ( $r$ ) suggests a potential moderating effect associated with the country of origin features, which deserves attention in later analysis. Also, as for the 56 samples representing 18,995 business entities reporting FP in financial performance measures, the correlation between financial performance (derived from the dummy variable of FP) and HPWS-FP effect size ( $r$ ) is  $-0.214$  ( $p < 0.01$ ), implying that such a moderating effect is likewise worth noting. A similar assumption is also applicable to the training and development practice in the HPWS

composition. It shows that the variable representing training and development practice is the only one significant element correlated with the HPWS-FP effect size ( $R=0.152$ ,  $p<0.05$ ), based on 182 studies of which 46,332 business entities employed training and development practice in their HPWS composition. Such a significant correlation suggests a possible moderating effect of the training and development practice to the HPWS-FP relationship.

**Table 1. Descriptive Statistics**

	$k_o^a$	$N_o^b$	Mean <sup>c</sup>	Variance	Standard Deviation	Mean Standard Error
r	192	47,741	0.295	0.033	0.183	0.013
95% CI			0.269 : 0.321			
<b>Country of Origin</b>						
Developed Country	192	47,741	0.766	0.180	0.425	0.031
95% CI			0.707 : 0.826			
<b>Firm Performance Dimensions</b>						
Financial Performance	192	47,741	0.292	0.208	0.456	0.033
95% CI			0.227 : 0.357			
<b>HPWS Composition:</b>						
Compensation (%)	185	45,507	15.859	106.974	10.343	0.746
95% CI			14.386 : 17.331			
Employee Relations (%)	184	45,221	26.359	329.870	18.162	1.314
95% CI			23.767 : 28.951			
Performance Management (%)	184	45,568	10.052	80.286	8.960	0.647
95% CI			8.777 : 11.328			
Training & Development (%)	185	45,450	16.884	105.672	10.280	0.744
95% CI			15.417 : 18.352			
Promotion (%)	183	45,156	5.285	45.479	6.744	0.487
95% CI			4.325 : 6.245			
Recruitment & Selection (%)	185	45,450	10.625	105.776	10.285	0.744
95% CI			9.157 : 12.093			
<b>Controls:</b>						
Manufacturing Firm	192	47,741	0.224	0.175	0.418	0.030
95% CI			0.164 : 0.283			
Service Firm	192	47,741	0.255	0.191	0.437	0.032
95% CI			0.193 : 0.317			
Firm Level Study	192	47,741	0.786	0.169	0.411	0.030
95% CI			0.728 : 0.845			

Note:

- $k_o$  = number of studies which reported an observable data for the variable of interest.
- $N_o$  = total sample size of the  $k_o$  studies.
- Unweighted mean (arithmetic average) of observed effect sizes. This is the average of the studies whichever contains a valid observation for the particular variable regardless what subgroup it lies in. For example, all the 192 sample studies have reported the data origin, with 147 from developed countries and 45 from developing countries. As the dummy variable was coded by 1 for developed countries and 0 for developing countries, the arithmetic average of this variable  $= (1*147+0*45)/192 = 0.766$ , indicating that 76.6% of the primary observations were collected from developed countries.



**Table 2. Correlations Among Variables <sup>a</sup>**

	k <sup>b</sup>	N <sup>c</sup>	1	2	3	4	5	6	7	8
1. r	192	47,741	1							
2. Developed Country	147	38,569	-0.235**	1						
3. Financial Performance	56	18,995	-0.214**	0.057	1					
4. Compensation	171	43,781	-0.033	0.131	0.080	1				
5. Employee Relations	163	43,288	-0.066	0.117	-0.131	-0.111	1			
6. Performance Management	143	28,067	0.063	-0.083	-0.018	0.033	-0.290***	1		
7. Training & Development	182	46,332	0.152*	0.098	0.053	-0.010	-0.189**	0.032	1	
8. Promotion	100	22,758	-0.009	-0.028	0.001	-0.122	-0.021	-0.016	0.078	1
9. Recruitment & Selection	133	32,267	0.113	0.008	0.081	0.161*	-0.413***	0.201**	0.105	0.025

Notes:

a. Missing observations removed by pairwise deletion in correlation computation.

b. k = number of studies in each subgroup.

c. N = total sample size of the k studies in each subgroup.

\* p<0.05

\*\* p<0.01

\*\*\* p<0.001

## 5.2. Meta-analysis Results

### 5.2.1. Overall Effect of the HPWS-FP Relationship

Table 3 reports the meta-analytical outcomes. It shows that the sample size weighted mean effect size ( $\bar{r}$ ) is 0.256 for the entire sample pool, with a 95% confident interval of (0.200, 0.310). After correcting for measurement errors with the average reliabilities of HPWS constructs ( $r_{xx} = 0.811$ ) and FP constructs ( $r_{yy} = 0.822$ ), the weighted mean true score of HPWS-FP correlation ( $\rho$ ) is 0.314, with a 95% credibility interval of (0.282, 0.345), which offers a better estimation of the HPWS-FP effect in the population. It suggests that for each standardised unit increase in HPWS, FP can be improved by 31.4%. Additionally, the mean effect size  $\bar{r}$  and the mean true score of effect size  $\rho$  for subgroups in this study are all greater than 0, which confirms the positive HPWS-FP relationship in diversified circumstances. Hypothesis 1 predicts that HPWS positively relates to firm's overall performance. According to the above magnitudes of  $r$ ,  $\bar{r}$  and  $\rho$ , Hypothesis 1 is supported.

To further test the reliability of the mean effect size estimate in this study, I compared the  $\bar{r}$  estimate with the other three peer-reviewed meta-analyses reporting the use of HPWS as an aggregated bundle and its impact on the organisational performance. The comparison results listed in Table 4 indicate that the sample size weighted effect sizes ( $\bar{r}$ ) computed from these four meta-analyses are very similar ranging from 0.21 to 0.256, and no significant discrepancies have been statistically identified (all p-values are greater than 0.05). Therefore, the  $\bar{r}$  estimate of this study is consistent with other meta-analyses on this topic.

### 5.2.2. *Test of Overall Homogeneity*

Q-statistic tests were computed to verify if the within-group and between-group homogeneity are statistically significant. Table 3 displays the within-group and between-group analysis outcomes for all samples and corresponding subgroups. Q-statistic for all the sample studies is 2,562.264 ( $p < 0.001$ ), indicating that the effect sizes underlying the whole sample pool are significantly heterogeneous. This finding suggests that the existence of substantial moderators is apparent.  $T^2$  embodies a projection of variance ( $\sigma_p^2$ ) among true effect sizes, which offers a quantified description about the degree to which the true mean effect size disperses. For all the samples,  $T^2$  is 0.049. Percentage of  $I^2$ -statistic represents the proportion of variance resulted from the correctable difference in sample effect sizes. A complementary figure to  $I^2$ , the proportion of variance due to artefacts quantifies the variance caused by within study artefacts of sampling errors and measurement errors. In Table 3,  $I^2$  is 92.248%. According to the 75% benchmark of  $I^2$  value classification (Higgins and Thompson 2002), it specifies a high heterogeneity among all the sample studies. Meanwhile, according to the “75% rule” as a rule of thumb (Hunter and Schmidt 2004) for variance due to artefacts, moderators are highly likely to be present whenever the correctable artefacts fail to explain 75% of the total sampling variance. According to Table 3, the variance due to artefacts for all samples is 7.752%, which is substantially lower than 75%. These two figures consolidate to concrete evidence proving that the effect sizes in the sample pool are highly heterogeneous, which reinforce the Q-statistic result and confirm the presence of moderators in the sample population.

**Table 3. Homogeneity Analysis**

	k	N	Mean $\bar{r}^a$	$\bar{r}^b$	$\rho^c$	$SE_{\bar{r}}^d$	$\sigma_{\bar{r}}^2^e$	$T^2$ ( $\sigma_{\rho}^2$ ) <sup>f</sup>	$I^2$ (%) <sup>g</sup>	% variance due to artefacts (1- $I^2$ )	$\chi^2$ (Within- group Q) <sup>h</sup>	95% confidence interval <sup>i</sup>	95% credibility interval <sup>i</sup>	$\chi^2$ (Between- group Q) <sup>h</sup>
All samples	192	47,741	0.295	0.256	0.314	0.028	0.151	0.049	92.248	7.752	2562.264***	0.200 : 0.310	0.282 : 0.345	na
<b>Level of National Development</b>														
Developed Country	147	38,569	0.271	0.231	0.283	0.030	0.135	0.041	91.216	8.784	1650.77***	0.171 : 0.290	0.250 : 0.316	131.102***
Developing Country	45	9,172	0.373	0.354	0.434	0.050	0.113	0.065	92.645	7.355	780.392***	0.252 : 0.448	0.359 : 0.508	
<b>Firm Performance Dimensions</b>														
Financial Performance	56	18,995	0.234	0.188	0.230	0.039	0.086	0.021	86.977	13.023	426.755***	0.110 : 0.264	0.192 : 0.268	159.886***
Operational Performance	136	28,746	0.320	0.299	0.366	0.028	0.107	0.056	92.070	7.930	1975.6234***	0.243 : 0.353	0.326 : 0.406	
<b>HPWS Composition</b>														
Compensation	171	43,781	0.295	0.258	0.316	0.031	0.163	0.052	92.889	7.111	2404.493***	0.197 : 0.318	0.282 : 0.350	na
Employee Relations	163	43,288	0.296	0.249	0.305	0.032	0.166	0.053	93.248	6.752	2332.47***	0.185 : 0.310	0.270 : 0.340	
Performance Management	143	28,067	0.308	0.296	0.363	0.026	0.095	0.058	91.819	8.181	2046.949***	0.245 : 0.346	0.323 : 0.402	
Training & Development	182	46,332	0.296	0.254	0.311	0.029	0.151	0.049	92.390	7.610	2443.011***	0.197 : 0.310	0.279 : 0.343	
Promotion	100	22,758	0.286	0.246	0.301	0.035	0.122	0.041	89.914	10.086	965.562***	0.176 : 0.313	0.262 : 0.341	
Recruitment & Selection	133	32,267	0.301	0.269	0.329	0.030	0.121	0.045	91.332	8.668	1583.539***	0.209 : 0.327	0.293 : 0.366	

Notes:

- a. Unweighted mean (arithmetic average) effect size of the studies
- b.  $\bar{r}$  = sample size weighted mean observed effect size
- c.  $\rho$  = mean true score correlation
- d.  $SE_{\bar{r}}$  = standard error of  $\bar{r}$  estimate
- e.  $\sigma_{\bar{r}}^2$  = sample size weighted variance of observed effect sizes
- f.  $T^2$  = estimate of the variance in true effect sizes  $\sigma_{\rho}^2$
- g.  $I^2$  = percentage of the total variance due to heterogeneity caused by between-studies variability. A greater than 75%  $I^2$  suggests high heterogeneity in the sample effect sizes.
- h.  $\chi^2$  = test of homogeneity of correlations, a significant  $\chi^2$  implies heterogeneity among the effect sizes. For the group of all samples and 6 overlapping groups of HPWS composition, between-group  $\chi^2$  are not available.
- i. 95% confidence interval is computed by  $SE_{\bar{r}}$  around  $\bar{r}$ , and 95% credibility interval is computed by  $T^2$  as an estimate of standard deviation of true effect sizes around  $\rho$  (Whitener 1990).

\*\*\* p<0.001

**Table 4. Effect Sizes Comparison with Other Meta-Analyses**

	k	N	$\bar{r}$ <sup>a</sup>	$\sigma_{\bar{r}}^2$ <sup>b</sup>	z-test <sup>c</sup>	p-value <sup>d</sup>
The present meta-analysis	192	47,741	0.256	0.152	na	na
Rauch and Hatak (2016)	27	6,759	0.251	0.0584	0.092	0.927
Rabl et al. (2014)	156	35,767	0.22	0.03	1.150	0.171
Combs et al. (2006)	38	8,615	0.21	0.013	1.369	0.250

Notes:

- $\bar{r}$  = sample size weighted mean observed effect sizes
- $\sigma_{\bar{r}}^2$  = sample size weighted variance of observed effect sizes
- z-test for  $\bar{r}$  difference using the present meta-analysis as a benchmark
- Two-tailed p-value associated with the z-test. None of the p-values for the three peer-reviews studies compared with the present meta-analysis is significant at  $p < 0.05$ .

### 5.2.3. Subgroup Analysis

As for the potential moderating effect caused by country of origin, the between-group Q-statistic of subgroups of developed countries and developing countries (in Table 3) is 131.102 ( $p < 0.001$ ), indicating that the HPWS-FP relationship in countries with a different degree of development is significantly heterogeneous. Further to the results in Table 2, the correlation between effect size ( $r$ ) and developed countries is significantly negative ( $R_{\text{Developed}} = -0.235$ ,  $p < 0.01$ ). Since the country of origin was coded by a dummy variable using the developing country as a benchmark, it is obvious that the correlation between effect size ( $r$ ) and developing countries has the same absolute value while bearing an opposite sign as  $R_{\text{Developed}}$ , i.e.,  $R_{\text{Developing}} = 0.235$  ( $p < 0.01$ ). As reported in Table 3, the unweighted mean effect size ( $r$ ) in firms in developed countries is 0.271, and the sample size weighted mean effect size ( $\bar{r}$ ) is 0.231, and the estimate of weighted mean true score ( $\rho$ ) is 0.283. These indicators of the effect sizes in developing countries are  $r = 0.373$ ,  $\bar{r} = 0.354$  and  $\rho = 0.434$ . It demonstrates that the HPWS-FP correlation is stronger in developing countries. These three analysis findings jointly prove that the country of origin is a

moderator in the HPWS-FP relationship. Further, as the improvement of national development degree, the strength of HPWS-FP relationship will be decreasing although its magnitude remains positive for firms in both developed and developing countries. Hypothesis 2 posits that the positive HPWS-FP relationship is stronger in developed countries, the test results reject Hypothesis 2, indicating that the positive HPWS-FP relationship is stronger in developing countries.

Moreover, according to the various dimensions adopted for FP measures, the sample pool was categorised into two subgroups of financial performance and operational performance. The between-group Q-statistic for these two subgroups is 159.886 ( $p < 0.001$ ), revealing that FP dimension moderates the HPWS-FP correlation significantly. The  $r$ ,  $\bar{r}$  and  $\rho$  for the two FP subsets are  $r = 0.234$ ,  $\bar{r} = 0.188$  and  $\rho = 0.230$  for financial performance measures, and  $r = 0.320$ ,  $\bar{r} = 0.299$  and  $\rho = 0.366$  for operational performance measures. Referring to the correlations shown in Table 2, financial measures of FP presents a significantly negative correlation with the effect size  $r$  ( $R_{\text{Financial}} = -0.214$ ,  $p < 0.01$ ). Since the dummy variable of FP dimensions takes the operational measures as an omitted benchmark, the correlation between effect size  $r$  and operational measures of performance should have an opposite value of  $R_{\text{Financial}}$ , i.e.,  $R_{\text{Operational}} = 0.214$  ( $p < 0.01$ ). All these results confirm the moderating role of FP dimensions in the HPWS-FP relationship, and implying that although HPWS always has a positive influence to FP regardless the terms used for FP measures, the strength of HPWS-FP relationship is stronger when FP is measured by operational means than by financial means. Hypothesis 3 proposes that the dimension of FP measures

moderates the HPWS-FP relationship, and such a positive relationship is stronger when FP is measured in (3a) financial terms and (3b) operational terms. The test rejects Hypothesis 3a and supports Hypothesis 3b, indicating that the positive HPWS-FP relationship is stronger when FP is measured in operational terms.

The subgroup analysis outcomes of FP dimensions are consistent with some of the previous study findings. For example, Jiang and colleagues (2012) found an effect size between HPWS and operational performance of 0.34 ( $p < 0.01$ ), which is significantly higher than the effect size between HPWS and financial performance ( $\bar{r} = 0.21$ ,  $p < 0.01$ ). Similarly, Steigenberger (2013) reported an HR practice effect of 0.352 for employee retention (as a kind of operational performance) versus 0.135 for rent appropriation of shareholders (as a proxy of financial performance). By contrast, there are also some scholars advocated a non-significance statement between the various FP measures, such as Rauch and Hatak (2016), and Combs and colleagues (2006). My analysis outcomes add additional evidence in supporting that the positive HPWS-FP effect size is stronger when operational measures are used for FP evaluation.

### **5.3. Meta-regression Test**

To further test the moderating effect of HPWS composition as well as the robustness of the country of origin and FP dimensions, meta-regressions were performed as a supplementation to the bivariate meta-analysis. Table 5 depicts the regression results of the four models.

In model 1, only control variables (i.e., the two dummy variables identifying the

industry types, and one dummy of the level of sample study) were included in the regression. The result shows that none of the control variables significantly influence the HPWS-FP effect size.

In model 2, the dummy variable representing the country of origin was introduced into the regression. The results indicate that after controlled for industry type and level of study, the country of origin (shown as Developed Country in Table 5) is negatively related to the HPWS-FP effect size ( $\beta = -0.125$ ,  $p < 0.01$ ). Additionally, since the developing country was set as the omitted group in the regression, the results of model 2 suggest that, with all the other variables controlled, the moderating effect of developing countries is always 0.125 units stronger than developed countries, and this difference is significant. Hence, it presents a consistent finding to the subgroup analysis, and further rejects Hypothesis 2, indicating a stronger HPWS-FP relationship in developing countries than in developed countries.

In model 3, the dummy variable reflecting financial measures of FP (shown as Financial Performance in Table 5) was included in the regression. According to the regression results, financial performance demonstrates a significantly negative influence on the HPWS-FP effect size ( $\beta = -0.103$ ,  $p < 0.01$ ). Moreover, the results of model 3 also indicate that, with all the other variables controlled, the moderating effect of operational measures of FP (as the omitted category of the dummy variable for FP dimensions) is always 0.103 units stronger than financial measures of FP, and this difference is significant. Apparently, the regression outcomes of model 3 suggest that the HPWS-FP relationship is stronger when FP is measured in operational terms



that in financial terms, which is consistent with the results of subgroup analysis in previous steps. This regression outcome further rejects Hypothesis 3a, and supports Hypothesis 3b.

In model 4, the six variables representing the composition of HPWS were further introduced into the regression. As shown in the last column of Table 5, only training and development practice affects the HPWS-FP effect size in a significantly positive way, with a coefficient  $\beta = 0.370$  ( $p < 0.05$ ). Therefore, it supports Hypothesis 4d, and rejects Hypothesis 4a, 4b, 4c, 4e and 4f, indicating that the positive HPWS-FP relationship is stronger only when HPWS contains a higher composition of training and development practice. Moreover, the coefficients of developed country ( $\beta = -0.114$ ,  $p < 0.01$ ) and financial performance ( $\beta = -0.118$ ,  $p < 0.01$ ) remain significant to the HPWS-FP effect in model 4, reinforcing the robustness of moderating effects caused by country of origin and FP dimensions in the HPWS-FP relationship. Additionally, the  $I^2$  and adjusted  $R^2$  in model 4 suggest that a genuine heterogeneity among sample effect sizes is 90.90 percent, of which 11.52 percent can be explained by the variables included in the regression model.

Table 5. Results of Meta-regression Analyses <sup>a</sup>

	<i>Model 1</i>			<i>Model 2</i>			<i>Model 3</i>			<i>Model 4</i>		
	$\beta$	<i>SE</i>	<i>t</i>	$\beta$	<i>SE</i>	<i>t</i>	$\beta$	<i>SE</i>	<i>t</i>	$\beta$	<i>SE</i>	<i>t</i>
<b>Intercept</b>	0.253***	0.046	5.45	0.356***	0.056	6.350	0.374***	0.056	6.740	0.295***	0.077	3.840
95% CI	0.162 : 0.345			0.245 : 0.467			0.265 : 0.484			0.143 : 0.447		
<b>Manufacturing Firm</b>	-0.036	0.044	-0.830	-0.030	0.043	-0.700	-0.023	0.042	-0.530	-0.021	0.042	-0.490
95% CI	-0.123 : 0.05			-0.115 : 0.055			-0.106 : 0.061			-0.104 : 0.063		
<b>Service Firm</b>	0.043	0.045	0.970	0.050	0.044	1.150	0.029	0.044	0.670	0.048	0.045	1.060
95% CI	-0.045 : 0.131			-0.036 : 0.136			-0.057 : 0.115			-0.041 : 0.137		
<b>Firm Level Study</b>	0.082	0.045	1.820	0.069	0.044	1.570	0.08	0.044	1.830	0.081	0.045	1.820
95% CI	-0.007 : 0.17			-0.018 : 0.156			-0.006 : 0.166			-0.007 : 0.169		
<b>Developed Country</b>				-0.125**	0.040	-3.120	-0.116**	0.04	-2.920	-0.114**	0.041	-2.790
95% CI				-0.204 : -0.046			-0.194 : -0.038			-0.194 : -0.033		
<b>Financial Performance</b>							-0.103**	0.038	-2.740	-0.118**	0.038	-3.120
95% CI							-0.178 : -0.029			-0.192 : -0.043		
<b>Compensation</b>										0.002	0.166	0.010
95% CI										-0.325 : 0.33		
<b>Employee Relations</b>										-0.024	0.108	-0.220
95% CI										-0.237 : 0.188		
<b>Performance Management</b>										-0.038	0.203	-0.190
95% CI										-0.439 : 0.363		
<b>Training &amp; Development</b>										0.370*	0.167	2.210
95% CI										0.040 : 0.699		
<b>Promotion</b>										-0.114	0.250	-0.460
95% CI										-0.607 : 0.379		
<b>Recruitment &amp; Selection</b>										0.263	0.182	1.450
95% CI										-0.096 : 0.623		
N	192			192			192			190		
T <sup>2</sup> <sup>b</sup>	0.04866			0.04613			0.04429			0.04296		
I <sup>2</sup> (residual) <sup>c</sup>	92.29%			91.86%			91.53%			90.90%		
Adjusted R <sup>2</sup> <sup>d</sup>	1.05%			6.20%			9.94%			11.52%		

Notes:

- Weighted least square regression by inverse variance weighted variables in a random effect model is applied following the meta-regression approach suggested by Lipsey and Wilson (2001)
- Restricted maximum likelihood (REML) estimate of between-study variance
- Proportion of variation due to heterogeneity in residual
- Proportion of between-study variance explained

\* p<0.05  
 \*\* p<0.01  
 \*\*\* p<0.001

## CHAPTER 6. DISCUSSIONS

### 6.1. Contributions to the Theory

The current study addresses some gaps in the research on HPWS-FP relationships through meta-analysis techniques. It confirms some findings in the extant research, and reaches some new findings as well.

#### 6.1.1. *Reconfirmation to the Prevailing HPWS-FP Viewpoints*

##### *Overall HPWS-FP Relationship*

This meta-analysis offers additional evidence on the commonly recognised positive correlation between HPWS and FP in the SHRM discipline (e.g. Rabl et al. 2014, Rauch and Hatak 2016, etc.). The study provides a quantified point estimate of the overall capacity of HPWS on improving organisational performance by two essential indicators, i.e., the weighted mean effect size ( $\bar{r}$ ) and the weighted mean true score ( $\rho$ ). In particular,  $\bar{r}$  reports an overall evaluation of the HPWS-FP effect across the 192 primary studies, and  $\rho$  provides the best estimate of HPWS-FP effect in the real world business by considering necessary corrections for artefact errors (Combs et al. 2006). Given the compatibility of integrating an array of study characteristics, this meta-analysis offers a solid foundation for scholars to justify the necessity of HPWS and its indispensable role in enhancing organisational performance.

Additionally, the subgroup analysis reports positive effect sizes in all the subgroups. It once again confirms that the implementation of HPWS enhances firm's performance in the vast majority of circumstances, regardless of the country of origin,

the measurement dimensions chosen for FP evaluation, or the variation of HPWS compositions. This finding reinforces the significant role of HPWS in predicting organisational performance.

### *FP Dimensions*

The HPWS-FP relationship may vary depending on how FP is measured. Previous analysts have revealed conflicting findings regarding the effect of HPWS on organisational performance as measured by financial indicators or operational indicators. Some scholars, e.g. Combs and colleagues (2006) and Saridakis (2017), suggested that the relationship of HPWS with the two distinctive FP dimensions should be invariant. In contrast, some other scholars, Steigenberger (2013) for example, suggested a stronger relationship of HPWS with operational performance than with financial results. My research finding lends substantial support to the argument for a greater effect of HPWS on operational performance than on financial performance.

There are two interpretations for this meta-analytical finding. One explanation is related to a possible time lag. As a kind of SHRM tool, HPWS aims to enhance employees' knowledge, skills and abilities, and thus to contribute to the organisational goals (Jiang et al. 2012). Within an organisation, the operating mode of each functional department has its own characteristics. Some may directly influence the value stream via its operational activities. Marketing department, for instance, can promote sales revenue by advertisement. Procurement department can reduce material cost by negotiating and bargaining with suppliers. Unlike these "value influential"

functions, HR management influences firm's financial performance through the inspiration of willingness and conscious behaviour of the workforce. The willingness and conscious behaviour are directly associated with the operational performance indices, such as employee retention rate (Iverson and Zatzick 2011), workgroup commitment (Veld, Paauwe and Boselie 2010), and organisational citizenship behaviour (Gong, Chang and Cheung 2010). It takes time for the operational outcomes to transform into the improvement in financial performance (Piening, Baluch and Salge 2013). That is to say, HPWS may affect financial performance indirectly through multiple aspects of operational performance, such as service performance (Hong et al. 2016), innovation (Lu, Zhu and Bao 2015), voluntary turnover rate (Jiang et al. 2012), etc., making it an interesting topic for future research.

The other explanation concerns the HPWS implementation cost. Despite the commonly recognised impact of HPWS on FP improvement, the costs underlying these sophisticated practices are high (Chi and Lin 2011). When the investment exceeds the cost-benefit trade-off point, HPWS implementation cost may offset the improvement in financial income, resulting in a tentative decline in financial performance (Chi and Lin 2011). The subgroup analysis and meta-regression result of model 3 support this assumption. In particular, the positive mean effect size ( $\bar{r}$ ) of the financial performance subgroup confirms that HPWS improves financial performance from a long-term prospect. However, the negative correlation coefficient ( $\beta$ ) of the financial performance variable suggests that the HPWS-FP effect size is less strong

when performance is considered by financial measures than by operational measures, implying that the improvement of HPWS-FP effect is accompanied by a compromise of declined financial performance in a certain time.

### ***6.1.2. New Findings to the HPWS-FP Black Box***

#### *Country of Origin*

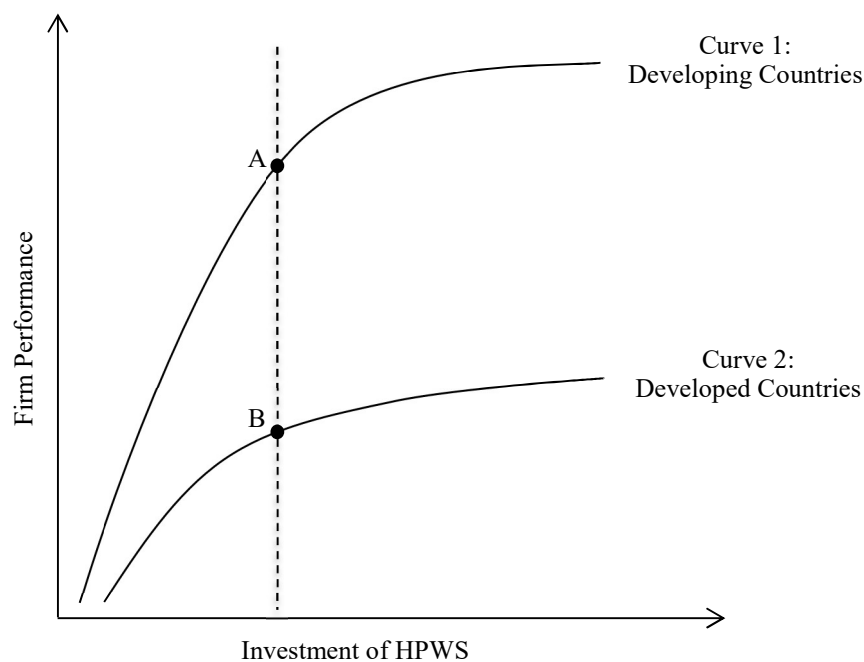
An interesting finding of this meta-analysis is that, the HPWS-FP relationship is stronger in firms in developing countries than in developed countries, which contradicts to the initial hypotheses. To my best knowledge, this study is the first one which has tested the moderating effect of county of origin by categorising countries according to the level of development. Although scholars have examined some of the country level factors (e.g. Rabl et al. 2014 for the moderating effect of national culture), this study contributes to the “black box” issues from a new perspective of national development, and found that HPWS works better on FP improvement in firms in developing countries than in developed countries.

According to the conventional wisdom, HPWS should be more fit to its native country where the concept was initially conceived. In this vein, HPWS should work better in the USA and other developed countries. Despite such a plausible proposition, the finding from this meta-analysis seems to be more reasonable and realistic if explained through the lens of the law of diminishing marginal utility (Marshall 1961). According to this basic concept of economics, every unit of resource inputs leads to an increase of total outputs, while the utility contribution to the output growth rate is diminishing, making it eventually reaches a peak value. Since then, if resource inputs

continue to increase, total output will no longer grow, but decline. Particularly for the issue of HPWS-FP relationships, every unit of HPWS investment may bring a positive marginal utility to the total utility of FP, given that all the other resource input and external circumstance are holding constant. As the increase in HPWS investment, the total utility on FP is still improving, but at a slower pace, i.e. the marginal utility on FP is diminishing. When the HPWS investment reaches a certain degree, the FP yields to its maximum. After that, continuous investment in HPWS may not improve FP any further. Instead, the marginal utility may become negative which results in a reduced FP. In reality, however, this phenomenon of FP reduction due to excessive HPWS investment is hardly observed, because no one company would tolerate extra resource input with decreased overall output.

Figure 5 gives a simple illustration of the findings on the HPWS-FP effect size in countries with different development status in this meta-analysis.

**Figure 5. Diminishing Marginal Utility in HPWS-FP Relationship**



It shows that both Curve 1 and Curve 2 are upward, indicating a positive correlation between HPWS and FP in both developing and developed countries. Point A presents a steeper slope than Point B, showing that the HPWS-FP relationship exhibits a greater effect size in firms in developing countries (at Point A) than in developed countries (at Point B).

As discussed above, this finding can be explained from the perspective of the law of diminishing marginal utility. Since the evolution of HRM prototype in the USA in the 1970s, the effectiveness of HRM and its synergised integration by HPWS on improving organisational performance has repeatedly been proven in the later decades (Barney 1995, Huselid 1995). Given the successful experience of the USA, HPWS application has been introduced into other countries gradually. Particularly for the contingency traits of HPWS, such a set of HRM practices is more adaptable in countries which share a similar cultural inheritance or have close economic ties with the USA, most of which are developed countries. In the extant studies, scholars also empirically confirmed such a positive HPWS-FP relationship in many developed countries, such as Canada (Chadwick et al. 2013), The UK (Sheehan 2014), France (Razouk 2011), Japan (Liao et al. 2009), and so forth. After half a century of progression, HRM philosophy and its derivate, HPWS, have been well established in these developed countries. Leveraging the law of diminishing marginal utility, the initial investment in HPWS can bring a significant improvement on organisational performance. As the continuous increase of HPWS investment, the total utility of performance improvement increases at a slower rate (Cheng, Lai and Wu 2010). The



costs associated with an additional enhancement of organisational performance may continue to escalate exponentially (Hong et al. 2016), and eventually amplifies the operational burden and even damages the firm's financial results at a particular time. It implies that although HPWS still has a positive effect on FP, the effect size is diminishing in developed countries, and the contribution HPWS makes to FP may reach the peak at a certain point, and then stabilises. The analysis of such a watershed is very meaningful to future scholars, though it is beyond the research scope of this study.

Base on the assumption that firms in developed countries should have applied HPWS earlier, and thus have a higher cumulative investment in HPWS, on average, than firms in developing countries. Therefore, the marginal utility of HPWS on FP is diminishing and possibly approaching to saturation in firms in developed countries, and the increase in HPWS investment can hardly get the same improvement on FP than ever before. With the expansion of globalisation, the idea of HPWS was introduced to developing countries at a later period of time. For example, the modern HRM philosophy has been widely applied in Chinese organisations only from the middle and late 1990s, before which, people management function mainly focused on the routine personnel administration (Zhao and Du 2012). In this regard, HPWS is still in a booming stage in many developing countries, and demonstrates a substantial effect on FP improvement. Therefore, HPWS should have plenty of opportunities to play a more critical role in FP improvement in firms in developing countries than in developed countries.

### *HPWS Composition*

Another new finding of the meta-analysis is the identification of training and development (TD) practice as the most important element which influences the HPWS-FP relationship. Previous scholars also have noted the critical role of TD. For example, Jennings, Cyr and Moore (1995) discovered the perception of regarding TD as “the most important strategic HRM practice” by managers in Pacific Rim countries. Likewise, based on an analysis of 99 financial firms listed in Amman Stock Exchange (ASE) of Jordan, Darwish and colleagues (2016) also confirmed that training is the only HR practice that delivered significantly positive impact on financial performance. This study, however, is the first one to test the importance of TD practice in HPWS composition from an aggregated perspective. With the aid of meta-analytical techniques, the study lends additional support to the earlier empirical studies in varying research backgrounds. Also, the study contributes to the SHRM literature with an integrated evaluation of the vital role TD practice plays in the HPWS portfolio, and provides new evidence on the moderating effect that TD practice in HPWS composition influences on the HPWS-FP relationship.

According to the meta-regression results of model 4, among all the six categories of HPWS practices, TD is the only one that significantly influences the HPWS-FP relationship. According to the resource-based view of competitive advantages (Barney 1991), human capital is a kind of unique asset to the organisations (Crook et al. 2011). The distinctiveness of human capital determines that it is not easily imitable and substitutable by the competitors, and thus becomes a core competency for the firm

thriving in the marketplace. Such organisation-specific human capital can be cultivated through TD practice to solve organisation-specific problems, to establish shared mental models and to form organisational routines to outperform their rivals (Kim and Ployhart 2014). In this regard, TD ought to be an indispensable element that deserves additional attention to the design of HPWS composition.

Further, the improvement of human capital mainly focuses on the optimisation of the employees' ability to do the job, motivation to perform with desired standard, and opportunities to do so (AMO, Appelbaum et al. 2000). As a synergised system, every HPWS component should focus on the achievement of either one or multiple aspects of this goal. What makes TD practices an arguably versatile HRM activity is that, it satisfies all the three dimensions of AMO framework simultaneously. Firstly, TD practice has long been ascribed to be an ability-enhancing activity, i.e. the "A" dimension of the AMO framework (Choi 2014b, Hong et al. 2016, Jiang et al. 2012). It equips employees with required knowledge, skills and abilities to fulfil their immediate needs with satisfied job performance (Sum 2009). Meanwhile, it also offers workers an effective approach to convert these learning into competencies by which they could creatively perform their jobs with higher quality (Chowhan 2016). Secondly, TD also enhances employees' motivation, and thus contributes to the "M" dimension in the AMO framework. It delivers a signal that the organisation values its employees, and is willing to help them develop their personal abilities and qualities, which in turn support the workers' self-efficacy and self-actualisation (Tai 2006). It also shows an organisation's commitment to human capital development and the

belief that such kind of investment is essential and promising (Demirbag et al. 2014). According to the social exchange theory (Eisenberger et al. 1986), under the inspiration of firm's commitment, employees will be better motivated to feedback the organisation's care with higher efficiency and better quality of work at a lower level of operational cost (Sum 2009). Thirdly, with enhanced ability and motivation, employees will be more confident and empowered (Tannenbaum et al. 1991) for identifying valuable information from occasional events in their routine works. By combining the available technologies and resource within the organisation, an employee can make a judgment to recognise if it is an opportunity for team development. Then employees with adequate competencies and enthusiasm will endeavour to utilise their own or collective strengths to seize the opportunity. As such, the firm will be able to get the best from the ever-changing technologies and dynamic market conditions (Sum 2009). Also, employees who benefit from TD programmes demonstrate desirable accountability and a high degree of responsibility. They are proactive and self-initiated to leverage existing body of knowledge and technical conditions to bring new ideas for innovation, and thus to create opportunities for the enterprises to solve problems and pursue sustainable development for the long term (Chowhan 2016). Following the value chain of identifying, seizing and creating opportunities, TD practice also demonstrates its integrity to the opportunity-enhancing practices, i.e. the "O" dimension of the AMO structure.

## **6.2. Implications for Managers**

This research offers some implications for practices. First of all, the research

findings suggest that investment in HPWS leads to an increase in organisational performance. Such an increase is found in a variety of conditions. In this vein, this study provides a foundation for managers to justify the investment and efforts in developing HPWS for the improvement of organisational performance.

Besides, the study suggests that managers need to consider country-specific characteristics when deploying an HPWS for the business. Although organisations operate in a diversified environment where the legislative requirement, economic conditions or societal value systems may vary, continuous investment in HPWS practices is rewarding for the organisation to establish and sustain unique competitive advantages in the long run. It might be wise for managers, however, to select proper HR practices and allocate appropriate scale to cope with the contextual conditions concerning the different level of national development features, and thus to achieve a better adaptation to the circumstances. What is more, the research reveals an evolutionary trend of the HPWS-FP relationship through the lens of the diminishing marginal utility theory. As a result, managers in countries with various levels of development should take a differentiated response in HRM strategy. In particular, coping with the challenge of a diminishing effect of HPWS in developed countries, managers should not concentrate merely on endless adding-ups to the currently known HPWS practices, but need to invent creative ways to break through the marginal constraints. For example, ambidextrous HRM practices (Garaus et al. 2016), knowledge-oriented practices (Donate and Guadamillas 2015) and innovation in new products and technologies (Fu et al. 2015a) all could be a good try for continuous

improvement of performance in firms in developed countries. For managers in developing countries, while taking the full potential of HPWS to maximise FP by leveraging the latecomer advantage, they also need to closely monitor the HPWS progresses over time. By adopting appropriate upgrading and updating to the HPWS composition, managers may be able to extend the “valid period” of HPWS to keep the organisational performance on the fast track. Meanwhile, managers also need to bear in mind the fact that the HPWS-FP association may fade with time, so a long-term strategy by introducing new Work practices in sequence will be a smart decision for the firm’s sustainability.

Nevertheless, it does not mean that HPWS practices are “the more, the better” nor “the modern, the better”. Rather, managers must be sensible when choosing HPWS practices to cope with different development priorities of profitability and operational achievements. As evidenced in this research, HPWS is less effective when organisational performance is measured by financial indicators. Owing the expensive implementation cost of HPWS practices, it is crucial for managers to understand the hidden mechanism of HPWS on business outcomes (Hong et al. 2016). An endless pursuit of superior HPWS may not be a wise decision. On the contrary, managers should be aware of the implementation cost, both direct and indirect costs, and potential benefits associated with an HPWS practice. Based on these considerations, managers can make a realistic judgement on whether or not it is worthwhile to sacrifice short-term profit in exchange for implementing such an HPWS practice. For example, introducing new certificate training in special techniques may improve work

quality and efficiency. However, the direct costs of training investment increases, as do the indirect costs. These may include tentative replacement while the trainee is absent from the workplace (Karpinska et al. 2015), certificate renewal fees, subsequent retraining expenses or the staff replacement cost in the following years. All these costs will possibly incur as an indirect expense that the firm may confront while engaging in training activities. Therefore, managers need to have a thorough understanding of potential investments and returns when estimating input-to-output ratios. Consequently, managers can make a balanced decision between maximising performance and minimising costs to improve the sustainability of the company.

The study also points out the vital role of TD in an integrated HPWS package. According to the meta-regression outcomes, TD practice is the only one which demonstrates significantly positive influence on the HPWS-FP relationship. This finding suggests that managers should keep in mind that TD is not a waste of human and material resources, but an investment for the organisation's long-term competitiveness (Blundell et al. 1999). In view of this, managers should not neglect the importance of TD programmes in the HPWS composition. In practice, it is common that managers tend to cut down the TD budget when the firm is facing financial crises or economic downturns (Kim and Ployhart 2014). With the recognition of the strategic importance of TD, managers may try to keep investing in TD activities which are aligned with the business objectives (Sum 2009). Also, managers may consider diverse types of TD activities which require less investment than traditional training forms when encountering financial constraints, e.g. on-the-job

coaching, open communication for knowledge sharing (Neirotti et al. 2013), online courses, and simulation-based training (Salas and Cannon-Bowers 2001). In a nutshell, for the survival and development of the organisation, TD should not only be icing on the cake for corporations staying in the comfort zone. On the contrary, TD is a powerful tool for organisations to get rid of competitive deadlock and to break through the development bottleneck. From this point of view, appropriate and balanced resource allocation to TD programme, both tangibly and intangibly, is crucial for the improvement of organisation's productivity and profitability.

### **6.3. Limitations and Directions for Future Research**

Just like most of the studies, this meta-analysis cannot be without any limitations. A primary limitation comes from the generic aptitude of meta-analysis methodology. As explained in Chapter 4, meta-analysis is undertaken on the basis of research findings from primary sample studies. All the research defects embedded in the primary studies will be unavoidably transmitted to the quality of the meta-analysis. Any hidden imperfections of the primary studies, e.g. not rigorously designed questionnaire, not carefully sorted data, or unreasonably derived analytical process, as well as publication bias and common method bias (Podsakoff et al. 2003) will all damage the precision of meta-analytical outputs (Card 2012).

Another methodological limitation associated with the meta-analysis is the restriction of estimation scope that a meta-analyst can deliver. Since a meta-analysis uses primary study findings as the input for integration and examination, it is impossible for the meta-analyst to go beyond the scope of these primary studies. That



is to say, only those variables reported in the majority of targeted primary studies can be included for a subsequent assessment. Consequently, it hinders the analyst to further investigate additional possibilities in the HPWS-FP relationship. To this end, analysis for other related variables, for instance, detailed HPWS configuration, could be a future research direction to draw a comprehensive understanding of the moderating effect related to the HPWS composition.

Last but not least, the heterogeneity within subgroups is evident according to the  $Q$ ,  $T^2$  and  $I^2$  statistics in Table 3, implying that moderating effect is far more complicated than what has been examined in the current meta-analysis. In this regard, studies with primary data could be a constructive attempt for later research. It will be meaningful and promising for the future studies to assess other variables using a more specific subgrouping strategy, or to test the possible moderating and mediating pathways in the HPWS-FP relationship using other analytical models. Following this clue, future studies could focus on a comprehensive analysis of the HPWS-FP relationship in developing and developed countries by hierarchical linear models, so as to evaluate the nesting effect at multiple layers. Also, scholars may consider examining differentiated HPWS-FP causalities using a structural equation model, and pinpoint the complex mechanism by which the two key variable clusters of FP dimensions and HPWS composition interact to influence the HPWS-FP relationship.

## CHAPTER 7. CONCLUSION

This research attempts to focus on one of the critical topics in SHRM, and tries to answer some aspects of the unsolved problems regarding how to apply HRM practices to enhance a firm's overall performance. It also aims to provide some suggestions to managers on how to manage human resources to cope with the intense competition in the global market.

In the current highly competitive global market, it is crucial for organisations to maximise the operational efficiency of tangible and intangible resources. Human capital, as a source of competitive advantages of an organisation, is one of the most complicated assets which are difficult for competitors to replicate (Wright et al. 1994). It is critical for a firm to consider how to strategically integrate HR practices to form a synergised HPWS packet, and thus to motivate employees to contribute to the company's strategic objectives. From this point of view, an effective HPWS is the foundation for the organisation to convert employees' talent, skills and abilities into long-term competitive advantages for the organisational success (Marathe and Pathak 2013).

In the extant literature, scholars have claimed that HPWS significantly improves organisation's overall performance. Despite an enormous body of research, a detailed interpretation of the relationship between HPWS and FP still has not been discovered clearly. Leveraging the meta-analysis technique, this study provides an updated evaluation of the HPWS-FP relationship by combining a variety of primary study

characteristics while reducing the latent sampling and measurement errors. In particular, this study reviews the overall HPWS-FP association, and delivers a deeper analysis on the moderating role of country of origin, FP dimensions and HPWS composition. Firstly, by a systematic review of the 192 empirical studies, it provides new evidence on the positive HPWS-FP relationship. Secondly, it extends our understanding to the HPWS-FP relationship in various national contexts. By identifying the moderating role of the country of origin, it confirms a stronger HPWS-FP association in firms operating in developing countries than in developed countries. Thirdly, through the test of FP dimensions, the study found that FP dimension is a moderator in the HPWS-FP relationship, and that such a relationship is stronger when FP is measured in operational terms than in financial terms. And lastly, by decomposing the HPWS, the study unveils the vital role of training and development practice in moderating the HPWS-FP relationship, and found that the positive HPWS-FP is stronger when HPWS comprises a higher proportion of training and development practices. Thus, the study sheds fresh light on the issues of HPWS's "external alignment" with the country of origin, and the issue of HPWS's "internal fit" with FP dimensions and HPWS composition.

The study also provides practical implications to managers. It suggests that firms should take HPWS as a strategy to develop competitive advantages. In addition, firms need to focus on long-term rather than short-term interests in developing HPWS, and to allocate sufficient investment in staff training and development practices, and thus to ensure the sustainable development of the organisation. For firms in developing

countries, they should effectively use HPWS to improve organisational performance by leveraging the latecomer advantage. For firms in developed countries, they may engage creative HRM practices to support FP improvement.

In conclusion, the results from this meta-analysis provide some new insights on the unsolved “black box” issues of the HPWS-FP relationship. It also offers a basis on which HPWS scholars and practitioners can identify and examine the uncovered mechanism by which HPWS enhances firm performance.

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## APPENDIX: LIST OF SAMPLE STUDIES

No.	Author/s	Year	Journal	Country	Sample Size
1	Allen	2006	Doctoral dissertation	USA	255
2	Armstrong et al.	2010	Human Resource Management	Ireland	132
3	Arthur	1994	Academy of Management Journal	USA	25
4	Aryee et al.	2012	Journal of Applied Psychology	Ghana	37
5	Bae and Lawler	2000	Academy of Management Journal	Korea, South	138
6	Baluch, Salge and Piening	2013	The International Journal of Human Resource Management	UK	167
7	Batt	2002	Academy of Management Journal	USA	260
8	Batt and Colvin	2011	Academy of Management Journal	USA	97
9	Bayo-Moriones and de Cerio	2002	M@n@gement	Spain	758
10	Bello-Pintado	2015	Human Resource Management Journal	Uruguay	150
11	Beltrán-Martín et al.	2008	Journal of Management	Spain	226
12	Bhattacharya, Gibson and Doty	2005	Journal of Management	USA	123
13	Björkman and Budhwar	2007	Employee Relations	India	76
14	Björkman and Fan	2002	The International Journal of Human Resource Management	China	62
15	Boselie, Paauwe and Richardson	2003	The International Journal of Human Resource Management	Netherlands	132
16	Brand and Croonen	2010	Journal of Small Business Management	Netherlands	171
17	Buck et al.	2003	Journal of International Business Studies	Ukraine	1389
18	Camelo-Ordaz et al.	2011	The International Journal of Human Resource Management	Spain	87
19	Camps and Luna-Arocas	2009	The International Journal of Human Resource Management	Spain	183
20	Camps and Luna-Arocas	2012	British Journal of Management	Spain	163
21	Carroll	2008	Doctoral dissertation	Canada	307
22	Chadwick	1999	Doctoral dissertation	USA	1584
23	Chadwick	2007	Industrial and Labour Relations Review	USA	1212
24	Chadwick et al.	2013	Personnel Psychology	Canada	96
25	Chadwick, Super and Kwon	2015	Strategic Management Journal	Korea, South	190
26	Chan S. C. and Mak	2012	Journal of Chinese Human Resource Management	Hong Kong	227
27	Chan L. L., Shaffer and Snape	2004	The International Journal of Human Resource Management	Hong Kong	49

No.	Author/s	Year	Journal	Country	Sample Size
28	Chand and Katou	2007	Employee Relations	India	439
29	Chandler, Keller and Lyon	2000	Entrepreneurship Theory and Practice	USA	23
30	Chang	2007	Doctoral dissertation	China	135
31	Chang	2015	Human Resource Management Journal	Taiwan	134
32	Chang et al.	2012	Journal of Management	China	139
33	Chen et al.	2016	Human Resource Management	China	144
34	Chi and Lin	2011	British Journal of Industrial Relations	Taiwan	160
35	Chiang, Shih and Hsu	2014	Journal of Business Research	Taiwan	73
36	Choi	2008	Doctoral dissertation	Korea, South	361
37	Choi	2014a	The International Journal of Human Resource Management	Korea, South	356
38	Choi	2014b	Asia Pacific Journal of Human Resources	Korea, South	434
39	Choi and Lee	2013	Personnel Review	Korea, South	245
40	Chow, Huang and Liu	2008	Human Resource Management	China	241
41	Chow, Teo and Chew	2013	Asia Pacific Journal of Management	Singapore	190
42	Chowhan	2016	Human Resource Management Journal	Canada	3154
43	Chuang and Liao	2010	Personnel Psychology	Taiwan	133
44	Collins	2000	Doctoral dissertation	USA	78
45	Collins and Clark	2003	Academy of Management Journal	USA	52
46	Collins and Smith	2006	Academy of Management Journal	USA	136
47	Collins, Smith and Stevens	2001	Working Paper	USA	78
48	Datta, Guthrie and Wright	2005	Academy of Management Journal	USA	132
49	Den Hartog and Verburg	2004	Human Resource Management Journal	Netherlands	175
50	Donate and Guadamillas	2015	Knowledge Management Research & Practice	Spain	111
51	Dorenbosch	2009	Doctoral dissertation	Netherlands	53
52	Elorza, Aritzeta and Ayestaran	2011	The International Journal of Human Resource Management	Spain	26
53	Ericksen	2007	Academy of Management Proceedings	USA	191
54	Esch, Wei and Chiang	2016	The International Journal of Human Resource Management	China	189
55	Ferguson and Reio	2010	Journal of Management Development	USA	350
56	Fey and Björkman	2001	Journal of International Business Studies	Russia	101

No.	Author/s	Year	Journal	Country	Sample Size
57	Foley, Ngo and Loi	2012	Journal of World Business	Hong Kong	138
58	Frenkel and Lee	2010	Industrial Relations Journal	Korea, South	661
59	Fu	2010	Doctoral dissertation	Ireland	111
60	Fu et al.	2013	Supply Chain Management	Ireland	120
61	Fu et al.	2015a	Employee Relations	Ireland	116
62	Fu et al.	2015b	Human Resource Management	Ireland	93
63	Fu et al.	2015c	Journal of Chinese Human Resource Management	China	87
64	Gardner et al.	2001	Working Paper	USA	174
65	Gardner, Wright and Moynihan	2011	Personnel Psychology	USA	93
66	Gilman and Raby	2012	Working Paper	France	137
67	Gilman and Raby	2012	Working Paper	UK	223
68	Gong et al.	2009	Journal of Applied Psychology	China	463
69	Gong, Zhou and Chang	2013	Personnel Psychology	China	138
70	Guest et al.	2003	British Journal of Industrial Relations	UK	366
71	Gurbuz and Mert	2011	The International Journal of Human Resource Management	Turkey	115
72	Guthrie	2000	Group & Organization Management	New Zealand	153
73	Guthrie	2001	Academy of Management Journal	New Zealand	136
74	Guthrie, Datta and Wright	2004	Working Paper	USA	131
75	Guthrie, Spell and Nyamori	2002	The International Journal of Human Resource Management	New Zealand	137
76	Harmon et al.	2003	Journal of Healthcare Management	USA	146
77	Harrell-Cook	1999	Doctoral dissertation	USA	106
78	Heffernan et al.	2009	Academy of Management Annual Meeting	Ireland	165
79	Herdman	2008	Doctoral dissertation	USA	202
80	Hooi and Ngui	2014	International Journal of Manpower	Malaysia	286
81	Hsu et al.	2007	Asia Pacific Business Review	Taiwan	65
82	Huselid	1995	Academy of Management Journal	USA	816
83	Huselid and Becker	1995	Academy of Management Annual Meeting	USA	628
84	Huselid and Becker	1997	Academy of Management Proceedings	USA	547
85	Huselid, Jackson and Schuler	1997	Academy of Management Journal	USA	293

No.	Author/s	Year	Journal	Country	Sample Size
86	Iverson and Zatzick	2011	Human Resource Management	Canada	115
87	Jabbour et al.	2012	Journal of Cleaner Production	Brazil	76
88	Jayaram, Droge and Vickery	1999	Journal of Operations Management	USA	50
89	Jensen, Patel and Messersmith	2013	Journal of Management	UK	87
90	Katou	2012	Management Research Review	Greece	197
91	Katou	2015	International Journal of Manpower	Greece	133
92	Katou and Budhwar	2006	The International Journal of Human Resource Management	Greece	178
93	Kaya	2006	The International Journal of Human Resource Management	Turkey	124
94	Kerr, Way and Thacker	2007	Journal of Small Business & Entrepreneurship	Canada	98
95	Kim	2010	Master's thesis	Korea, South	46
96	Kim, Kim and Ryu	2005	Academy of Management Annual Meeting	Korea, South	249
97	Kintana, Alonso and Olaverri	2006	The International Journal of Human Resource Management	Spain	965
98	Kostopoulos, Bozionelos and Syrigos	2015	Human Resource Management	USA	148
99	Kwon	2009	Doctoral dissertation	Korea, South	153
100	Lam and White	1998	Human Resource Development Quarterly	USA	120
101	Lee and Miller	1999	Strategic Management Journal	Korea, South	129
102	Leffakis	2009	Doctoral dissertation	USA	148
103	Lepak and Snell	2002	Journal of Management	USA	206
104	Liao et al.	2009	Journal of Applied Psychology	Japan	75
105	Lin	2012	Thunderbird International Business Review	China	324
106	Lin and Liu	2016	International Journal of Hospitality Management	Taiwan	203
107	Lin et al.	2014	Asia Pacific Journal of Human Resources	Taiwan	102
108	Lin, Zhao and Li	2014	Nankai Business Review International	China	241
109	Liouville and Bayad	1998	Human Systems Management	France	271
110	Lopez-Cabrales, Pérez-Luño and Cabrera	2009	Human Resource Management	Spain	83
111	Lu, Zhu and Bao	2015	Industrial Management & Data Systems	China	205
112	Lui, Lau and Ngo	2004	Management International Review	Hong Kong	220
113	Maes, Sels and De Winne	2005	Research Report	Belgium	181
114	Mansour, Gara and Gaha	2014	Personnel Review	Tunisia	351

No.	Author/s	Year	Journal	Country	Sample Size
115	Martínez-del-Río and Perez-Luno	2012	Academy of Management Annual Meeting	Spain	263
116	Martínez-del-Río, Céspedes-Lorente and Carmona-Moreno	2012	Human Resource Management	Spain	233
117	Martin-Tapia, Aragon-Correa and Guthrie	2009	The International Journal of Human Resource Management	Spain	143
118	McClellan and Collins	2011	Human Resource Management	USA	180
119	Messersmith	2008	Doctoral dissertation	USA	105
120	Messersmith and Guthrie	2010	Human Resource Management	USA	108
121	Messersmith et al.	2011	Journal of Applied Psychology	UK	92
122	Michaelis, Wagner and Schweizer	2015	Journal of Business Research	Germany	61
123	Mitchell, Obeidat and Bray	2013	Human Resource Management	Jordan	118
124	Moideenkutty, Al-Lamki and Murthy	2011	Personnel Review	Oman	61
125	Moynihan, Gardner and Wright	2002	Working Paper	USA	71
126	Muduli	2015	European Journal of Training and Development	India	150
127	Mustafa, Richards and Ramos	2013	Asian Academy of Management Journal	Malaysia	292
128	Neal, West and Patterson	2005	Journal of Management	UK	70
129	Ngo et al.	1998	The International Journal of Human Resource Management	Hong Kong	253
130	Ngo, Jiang and Loi	2014	Personnel Review	China	157
131	Ngo, Lau and Foley	2008	Human Resource Management	China	600
132	O'Neill et al.	2011	Human Resource Management	USA	21
133	Patel and Conklin	2012	Entrepreneurship Theory and Practice	UK	145
134	Patel, Messersmith and Lepak	2013	Academy of Management Journal	USA	215
135	Patterson, West and Wall	2004	Journal of Organizational Behavior	UK	70
136	Piening, Baluch and Salge	2013	Journal of Applied Psychology	UK	169
137	Prieto and Santana	2012	Human Resource Management	Spain	198
138	Rasool and Nouman	2013	Pakistan Journal of Commerce & Social Sciences	Pakistan	86
139	Razouk	2011	The International Journal of Human Resource Management	France	275
140	Richard and Johnson	2001	The International Journal of Human Resource Management	USA	73
141	Richard and Johnson	2004	Journal of Business Strategies	USA	74
142	Rose and Kumar	2006	Performance Improvement	Malaysia	42
143	Sánchez et al.	2015	Revista Europea de Dirección y Economía de la Empresa	Spain	191

No.	Author/s	Year	Journal	Country	Sample Size
144	Schmidt et al.	2016	The International Journal of Human Resource Management	Canada	292
145	Schmidt et al.	2012	Academy of Management Annual Meeting	Canada	406
146	Scotti, Harmon and Behson	2007	Journal of Healthcare Management	USA	113
147	Scotti, Harmon and Behson	2009	Journal of Health and Human Services Administration	USA	167
148	Seidu	2011	Doctoral dissertation	Ghana	37
149	Sels et al.	2006	Small Business Economics	Belgium	416
150	Seong	2011	Seoul Journal of Business	Korea, South	162
151	Shaw et al.	2009	Academy of Management Journal	USA	209
152	Shaw et al.	2009	Academy of Management Journal	USA	93
153	Shaw, Gupta and Delery	2005	Academy of Management Journal	USA	325
154	Sheehan	2014	International Small Business Journal	UK	336
155	Shih, Chiang and Hsu	2006	International Journal of Manpower	Taiwan	208
156	Shin	2014	The International Journal of Human Resource Management	Korea, South	301
157	Shin and Konrad	2014	Journal of Management	Canada	2228
158	Singh	2003	The International Journal of Human Resource Management	India	84
159	Soens, Buyens and Taylor	2012	Working Paper	Belgium	62
160	Sojka	2015	European Scientific Journal	Slovak	62
161	Stirpe, Bonache and Revilla	2014	Journal of Business Research	UK	229
162	Su and Wright	2012	The International Journal of Human Resource Management	China	192
163	Sun and Pan	2011	The International Journal of Human Resource Management	China	81
164	Sun, Aryee and Law	2007	Academy of Management Journal	China	78
165	Tadic and Pivac	2011	The Business Review	Croatia	76
166	Takeuchi N.	2009	The International Journal of Human Resource Management	Japan	312
167	Takeuchi R.	2003	Doctoral dissertation	Japan	76
168	Takeuchi R. et al.	2007	Journal of Applied Psychology	Japan	76
169	Teo, Le Clerc and Galang	2011	The International Journal of Human Resource Management	Australia	104
170	Thang and Quang	2005	The International Journal of Human Resource Management	Vietnam	137
171	Torre and Solari	2011	International Journal of Entrepreneurial Venturing	Italy	111
172	Triguero et al.	2012	Journal of Economics, Finance and Administrative Science	Spain	102

No.	Author/s	Year	Journal	Country	Sample Size
173	Tsai, Edwards and Sengupta	2010	Journal of General Management	UK	32
174	Way	2002	Journal of Management	USA	366
175	Way et al.	2003	Academy of Management Annual Meeting	USA	375
176	Wei and Lau	2008	Journal of International Business Studies	China	600
177	Wei, Liu and Herndon	2011	The International Journal of Human Resource Management	China	223
178	West et al.	2002	The International Journal of Human Resource Management	UK	61
179	West et al.	2006	Journal of Organizational Behavior	UK	52
180	Wood et al.	2012	Human Relations	UK	1224
181	Wright et al.	2005	Personnel Psychology	USA	45
182	Xing et al.	2010	International Conference Management Science and Engineering (ICMSE)	China	110
183	Youndt	1998	Doctoral dissertation	USA	208
184	Youndt and Snell	2004	Journal of Managerial Issues	USA	208
185	Youndt et al.	1996	Academy of Management Journal	USA	97
186	Yu	2013	International Journal of Organizational Innovation	Taiwan	172
187	Zacharatos, Barling and Iverson	2005	Journal of Applied Psychology	Canada	138
188	Zatzick and Iverson	2006	Academy of Management Journal	Canada	2942
189	Zhang and Li	2009	The International Journal of Human Resource Management	China	127
190	Zhang and Morris	2014	The International Journal of Human Resource Management	China	168
191	Zhou, Hong and Liu	2013	Human Resource Management	China	179
192	Zhu, Chew and Spangler	2005	Leadership Quarterly	Singapore	170