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RESEARCH ARTICLE

Leverage point in high-performance work systems

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Abstract

Drawing on systems theory, this paper aims to search for a leverage point in a high-performance work system (HPWS) wherein a small change of a constituent part significantly enhances the effect of the whole system on organizational performance (OP). Based on meta-analysis of 59,207 firms and establishments from 240 sample studies up to December 2021, the paper examines the effect of HPWS composition, coupled with country of origin and industrial affiliation, on the HPWS–OP relationship. The paper finds that training and development serves as a leverage point to significantly strengthen the synergy of HPWS. However, this leverage point works in advanced countries rather than developing countries, and in service industries rather than manufacturing industries. The finding indicates that a leverage point is not omnipresent, but contingent on country of origin and industrial affiliation. This study has practical implications for managers, highlighting the importance of a leverage point to the HPWS–OP relationship and the contingency nature of the leverage point.

Keywords: High-performance work systems; leverage point; meta-analysis; systems theory; training and development

Introduction

In recent years, strategic human resource management (HRM hereafter) emerged as a growing research stream 'devoted to understand how HRM practices affect organization-wide outcomes' (Combs, Liu, Hall, & Ketchen, 2006: 502). This research stream has identified a cluster of HRM practices, including competitive compensation, selective recruiting, training and development (T&D), employee relations, promotion and performance management, as strategically crucial contributors to organizational performance (OP hereafter), and called the cluster a high-performance work system (HPWS hereafter) (Chen & Chen, 2021; Rabl, Jayasinghe, Gerhart, & Kühlmann, 2014; Sun, Aryee, & Law, 2007). HPWS is thus referred to as the use of multiple, reinforcing, and performance-enhancing HRM practices in an organization (Huselid, 1995).

The research on the HPWS–OP relationship has made significant progress (Fu, Bosak, Flood, & Ma, 2019). Previous studies tended to examine the wholeness of the system, focusing on the interdependence, interaction, and indispensability of individual constituent parts of HPWS (Han, Kang, Oh, Kehoe, & Lepak, 2019; Pfeffer, 1998). Many scholars followed the resource-based theory, the universalistic view, the configuration perspective or the ability–motivation–opportunity (AMO) model, and suggested that constituent parts of HPWS are equally important to the functioning of the whole system (Delery & Doty, 1996; Rabl et al., 2014). Inadequate attention was paid to the possible variation in the degree to which a change in the percentage composition of individual constituent parts in the system can influence the HPWS–OP relationship.

In this paper, we draw on systems theory to develop the construct of a leverage point in HPWS (Broedling, 1999; Kast & Rosenzweig, 1972; Senge, 1990). We argue that although the constituent parts of HPWS are interdependent and interactive, the leverage ratios of these constituent parts can vary significantly. A leverage ratio refers to the proportion of change in the HPWS–OP relationship to the percentage change of a constituent part in the whole system. A high leverage ratio indicates a leverage point in the system wherein a small shift in one constituent part in the system leads to a large amount of change in the effect of HPWS on OP (Kast & Rosenzweig, 1972). Archimedes said that 'give me a place to stand and with a lever I will move the world.' It is the job of strategic HRM practitioners to search for a possible leverage point in HPWS to effectively move an organization forward, and the job of strategic HRM researchers to assist them in the search and find out the conditions under which a leverage point works. To verify our argument, we conduct meta-analysis of 59,207 firms and establishments from 240 sample studies up to December 2021, locate the key practice that may serve as a leverage point in HPWS, and investigate the possible variations of the leverage point across contextual settings.

The remainder of the paper is organized as follows. Section 'Theoretical framework and hypotheses' discusses the theoretical background and develops hypotheses. Section 'Meta-analytical methods' describes the sample and the meta-analytical methods employed in this study. Section 'Empirical results' presents the results. Section 'Discussion' discusses theoretical contributions, managerial implications, limitations of this study, and future research directions. The final section concludes the paper.

Theoretical framework and hypotheses

We draw on systems theory to form the theoretical base of this paper (Kast & Rosenzweig, 1972; Lepak & Snell, 2002). Systems theory is based on the assumption that a system is an entity with interrelated and interdependent parts, producing greater effectiveness and efficiency than the sum of its parts. Changing one part of the system may affect the functioning of the whole system, with predictable patterns of outcomes (Senge, 1990). Systems theory is to explore the patterns of system dynamics, and the conditions under which the dynamics emerge (Broedling, 1999). We follow this line of systems thinking to first examine a possible leverage point in HPWS, and then discuss the conditions in which the leverage point works.

Training and development as a leverage point

Senge (1990: 114) noted that 'the bottom line of systems thinking is leverage - seeing where actions and changes in structures can lead to significant, enduring improvements. Often leverage follows the principle of economy of means: where the best results come not from large-scale efforts but from small well-focused actions.' In systems theory, a leverage point is a place in a system wherein an alteration can lead to a significant change in the functioning of the whole system. A question arises: is there a leverage point in HPWS wherein a percentage change of a constituent part of the system may lead to a significant change in the performance effect of HPWS? To address this question, we need to examine individual constituent parts of HPWS. Thus far, little effort has been made to address this question. Although Bell, Brown, and Weiss (2018) considered team composition to be a leverage point in enhancing human capital, no studies have examined the existence of a leverage point in larger managerial systems like HPWS.

HPWS consists of various constituent parts. HRM researchers usually took two approaches to decompose HPWS. The first approach distinguishes between several subsystems of HPWS. The AMO framework is a typical example of this approach (Appelbaum, Bailey, Berg, & Kallegerg, 2000; Chowhan, Pries, & Mann, 2017). The second approach, often called the common practices model, focuses on individual HRM practices commonly adopted in real-world businesses. Rabl et al.'s (2014) framework of six HPWS components or practices is a typical example of this

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approach. We contend that the second approach is more appropriate for leverage point analysis since it allows us to anchor on a specific practice (rather than a large subcluster of multiple practices) that is central to amplifying the synergy of HPWS.

The six components of HPWS in Rabl et al. (2014)'s framework include compensation, employee relations, performance management, T&D, promotion, and recruitment and selection that are widely discussed in HRM research. We contend that OP is determined by employees' ability, motivation, and opportunities (Appelbaum et al., 2000). All the six components of HPWS interact with one another to enhance AMO and, through them, OP. However, the degree to which these practices take effect on performance outcomes varies substantially.

Among the six components, we believe, T&D is likely to be a leverage point of HPWS. That is, a small percentage change of T&D may lead to a significant amount of change in the overall functionality of HPWS in terms of its effect on performance improvement in an organization. Relatively speaking, T&D is less dependent on the rest five components than they are dependent on T&D. This is because T&D simultaneously influences all three subsystems (AMO) of HPWS.

T&D has long been recognized as an ability-enhancing activity (Hong, Jiang, Liao, & Sturman, 2016; Jiang, Lepak, Hu, & Baer, 2012). It enhances employee knowledge, skills, and abilities to fulfil immediate and long-term job requirements (Sum, 2009). With firm-specific T&D programs, an organization can cultivate employee capabilities in line with its strategic directions and thus enhance its competitive advantages (Vazquez-Bustelo & Avella, 2019). It also helps employees convert new knowledge and skills into competencies to aid organizational ambidexterity by which the organization exploits current business strengths while exploring future capability potential for sustainable gains (Mom, Chang, Cholakova, & Jansen, 2019).

Scholars suggested that T&D also enhances employees' motivation. It delivers a signal that the organization values its employees and is willing to help them develop personal abilities and qualities (Tai, 2006). It also shows an organization's commitment to human capital development, enhancing employees' self-efficacy and self-actualization (Demirbag, Collings, Tatoglu, Mellahi, & Wood, 2014).

In the prior literature, T&D has been perceived as an instrument increasing opportunities for employees to contribute to the organization. With enhanced abilities and motivation, employees can play a more influential role in an organization. They can have more chances to participate in, for instance, decision-making, teamwork, information sharing, network building, and job design (Chowhan, 2016; Sum, 2009).

Our arguments for the vital importance of T&D are consistent with empirical findings. Jennings, Cyr, and Moore (1995) found that managers considered T&D as the most important strategic HRM practice. Darwish, Singh, and Wood (2016) also found evidence that among all HRM practices examined, T&D was the only one that delivered significantly positive impact on the performance of companies. Likewise, in a meta-analysis, Tzabbar, Tzafrir, and Baruch (2017) ascertained that T&D is a universally best HRM practice for performance improvement across industry sectors, organizational sizes, and societal settings. Based on these prior arguments and evidence, we propose the following hypothesis.

Hypothesis 1: The positive HPWS–OP relationship is highly sensitive to the percentage change of the T&D component in HPWS.

The role of country of origin

A leverage point takes shape in a system under certain conditions (Senge, 1990). T&D may serve as a leverage point in HPWS contingent on several factors. Country of origin is likely to be such a contingency. The concepts of HRM and HPWS originated in the US and then spread to other advanced countries in Western Europe, Canada, Australia, and New Zealand which share institutions, level of economic development, ideology, and management philosophy similar to those in

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the US (Drucker, 1954; Singh, Darwish, & Potočnik, 2016). It was not until recently that these concepts were introduced to developing countries. For example, modern philosophy and practices of HRM were applied in Chinese organizations only after the middle and late 1990s, before which people management function mainly focused on the routine personnel administration (Zhao & Du, 2012). Development of HPWS is still at an early stage in many developing countries. As compared to firms in developing countries, firms in advanced countries have accumulated rich experience in implementing HPWS (Zhai & Tian, 2020).

The variation in experience in implementing HPWS bears enormous significance to the role of T&D as a leverage point in the system. To begin with, it affects the generation, acquisition, and utilization of new information and knowledge through T&D that helps enhance employees' capacity for implementing other HPWS practices (Lepak & Shaw, 2008). In organizations with a high level of such experience, employees, who have been involved in HPWS routines for long, are more capable of effectively participating in T&D to maximize the functionality of HPWS (Ramsay, Scholarios, & Harley, 2000). In organizations with a low level of such experience, by contrast, employees lack exposure to HPWS routines, including T&D. They usually have limited opportunities and resources to practice their skills in utilizing T&D instruments, and thus are relatively incompetent to perform HPWS and other job tasks effectively (Bos-Nehles, Van Riemsdijk, & Looise, 2013). In addition, these organizations usually do not have adequate capacity to ensure expected T&D quality and quantity (Garavan, McCarthy, Lai, Murphy, Sheehan, & Carbery, 2021). It is difficult for employees in these organizations to leverage T&D investment to achieve the same performance outcomes as their counterparts in organizations with a high level of such experience (Wang & Chen, 2013).

Accumulated experience in implementing HPWS not only helps an organization generate new information, but also enhances its ability to absorb available knowledge and information from the external environment to strengthen the performance impact of HPWS (Han et al., 2019). Absorptive capacity refers to 'the ability of a firm to recognize the value of new, external information, assimilate it, and apply it to commercial ends' (Cohen & Levinthal, 1990: 128). A high level of experience in implementing HPWS indicates a high level of capacity to absorb useful information from the external environment. HPWS and OP are connected by an open-loop mechanism (Shin & Konrad, 2017). It means that in developing and implementing HPWS, an organization has to respond to feedback from the external environment on the performance effect of HPWS. The backward-going feedback from the external environment need to be correctly understood, adequately assimilated, and properly applied in business operations to achieve commercial ends. A high level of absorptive capability strengthens the critical role of T&D in HPWS, resulting in an upward spiral of improvement in OP. Based on these prior arguments, we propose the following hypothesis.

Hypothesis 2: The positive HPWS–OP relationship is highly sensitive to the percentage change of the T&D component in HPWS in advanced countries rather than developing countries.

The role of industrial affiliation

Another contingency factor is industrial affiliation. Scholars have discussed the difference in the effect of HPWS on OP between manufacturing and service industries (Combs et al., 2006). To date, however, we know little about the difference in the degree to which T&D can serve as a leverage point to influence the functioning of HPWS between manufacturing and service industries. Service industries differ significantly from manufacturing industries. The differences between the two industrial sectors may affect the role of T&D as a leverage point in HPWS.

Some prior studies suggested that HPWS is better aligned with manufacturing industries than service industries, and that T&D is an effective approach to enhancing employee ability to work in manufacturing firms (Bowen, 1986). This is because employees in manufacturing firms need more practical skills in operating machinery and adapting to changes in physical infrastructure upgrading, which can be achieved through T&D relatively easily (Evans & Davis, 2005). Also,

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some elements of HPWS, such as teamwork, are better aligned with manufacturing industries than service industries, and T&D is an effective instrument to enhance employees' ability to work in a team (Jennings, Cyr, & Moore, 1995).

We argue, however, that the opposite might be true for two reasons. First, a key function of HPWS is to enhance employees' discretion over what and how they perform their roles (Liao, Toya, Lepak, & Hong, 2009). Employees in service industries need greater discretion than their counterparts in manufacturing industries because they often work individually on their posts (Rosenthal, Hill, & Peccei, 1997). T&D plays an important role in enhancing employees' ability to make correct and prompt decisions at their discretion (Darwish, Singh, & Wood, 2016). Second, HPWS influences not only employees, but also the interaction between employees with customers, and employees in service industries are closer to customers than their counterparts in manufacturing industries (Datta, Guthrie, & Wright, 2005). Appropriate T&D program provides employees with the abilities and skills to interact with customers, to understand feedback from customers, and to absorb the new information generated from customer feedback (Darwish, Singh, & Wood, 2016). Accordingly, T&D should be more likely to serve as a leverage point in service than manufacturing industries. We propose the following hypothesis.

Hypothesis 3: The positive HPWS–OP relationship is highly sensitive to the percentage change of the T&D component in HPWS in service industries rather than manufacturing industries.

Meta-analytical methods

Sample

We aimed to include all published and unpublished studies on the HPWS–OP relationship available by December 2021 to establish an unbiased and exhaustive sample pool for our meta-analysis (Card, 2012). Keywords used for sample search included 'high-performance work system,' 'organizational performance,' and their variations and combinations. We used multiple databases and search engines, screened major journals and leading conference programs in the HRM discipline for relevant articles. We further scanned the reference lists of previous meta-analyses (e.g., Rabl et al., 2014; Rauch & Hatak, 2016) for possible missing articles. We also contacted the corresponding authors for articles that are irretrievable or not downloadable online. Details of the sample search procedure are presented in Appendix 1.

To be included in our meta-analysis, a study must report (1) HPWS–OP correlations or other statistics that can be converted to an effect size; (2) measures of either financial or operational OP at the firm or establishment level, regardless of performance measured by objective (e.g., accounting figures from corporate annual reports or financial statements) or subjective indices (e.g., perceived OP or perceived market positioning over competitors); (3) the aggregate effect of HPWS or HR systems instead of individual HR practices; (4) composition of the practices included in HPWS; (5) at least one of the six practices of HPWS (i.e., the study was excluded if it did not include any of the six practices of HPWS which are of the interest of this meta-analysis); and (6) the country and industry from which data were collected (Combs et al., 2006; Rabl et al., 2014).

Following these criteria, we retrieved 236 studies, representing 240 independent samples of 59,207 firms and establishments from 35 countries and regions. A list of these studies is available in the Supplementary files of this study.

Effect size

We coded the effect size in each study by Pearson's correlation *r*. For studies that reported multiple dimensional correlations of HPWS and OP, or a particular HPWS and OP construct over several time slots (e.g., Chadwick, Super, & Kwon, 2015), a linear composite correlation was computed to estimate an aggregated effect size.

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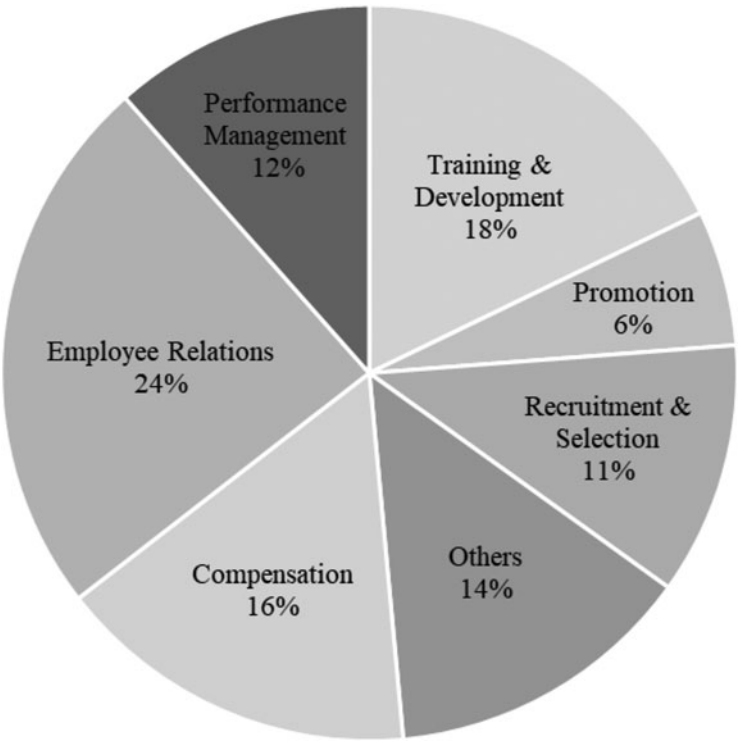

Figure 1. Average percentage of the HPWS components (whole sample).

We then used the sample size of each study to correct for sampling errors and inter-item reliability (Cronbach's α) to correct for measurement errors. As for inter-rater reliability of the coding task, one of the authors performed data coding tasks independently, and the other author crosschecked 33% of the coding outcomes. Since both authors have reached agreements in 95% of the coding outcomes and resolved all disagreements through subsequent discussions, the accuracy and internal consistency of the coding work were satisfactory (McHugh, 2012).

HPWS composition

As discussed earlier, we focus on the impact of a percentage change of each HPWS component in the common practice model on the HPWS–OP relationship. We thus need to calculate the percentage composition of the six components in HPWS. We followed Rabl et al. (2014) to decompose the HPWS construct. Specifically, we calculated the percentage of each HPWS component that fell into the six practices of interest according to the construct measurement reported in sample studies. The sum of these percentages does not necessarily equal to 100% since HPWS components were highly divergent and overlapping across sample studies, indicating a lack of consensus in measuring benchmark HPWS components among HRM scholars (Vazquez-Bustelo & Avella, 2019). Percentages of the six HPWS components in the sample studies are presented in Appendix 2 of this study. In the whole sample, as shown in Figure 1, the percentage was on average 16% for compensation, 24% for employee relations, 12% for performance management, 18% for T&D, 6% for promotion, and 11% for recruitment and selection.

Control variables

We included four control variables which were considered to influence the HPWS–OP relationship in HRM literature. The first was *country of origin*. We followed the World Economic

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Outlook's (International Monetary Fund, 2021) classification to construct a categorical variable with 1 denoting studies using samples from advanced countries and zero denoting studies using samples from developing countries. In the whole sample set, 179 studies were conducted in advanced countries and 61 in developing countries.

Another control variable is *performance measures*, which was categorical. This variable was coded as 1 when OP was measured in financial terms such as returns on asset ratio, Tobin's *Q*, and market shares, and zero when OP was measured in operational terms such as innovation capability, operational efficiency, and productivity. Among the 240 samples, 66 used financial performance measures whereas 174 used operational performance measures.

Firms and establishments included in sample studies fell into three industry categories: manufacturing, service, and mixed industries. We constructed two categorical variables to control for the *industrial affiliation* for sample studies. Of the 240 samples, 51 were in manufacturing industries, 56 in service industries, and the remaining133 were in mixed industries.

We also followed Combs et al.'s (2006) suggestion to control for the potential influence of *level of analysis*. The variable was coded as 1 if the analysis in a sample study was conducted at the entire firm or organizational level covering multiple establishments, and zero if the sample in a study was collected at the establishment level, such as a department, team, or branch in a single location within a large enterprise. Among the 240 samples, 185 were in the firm-level category and 55 were in the establishment-level category.

Estimation strategy

We performed empirical assessments mainly using the 'metafor' package of R program 3.3.3 (Viechtbauer, 2010). We normalized HPWS–OP effect sizes by Fisher's z (Lipsey & Wilson, 2001), and used the sample size weighting method to estimate the average HPWS-OP effect size. We used the average reliabilities of HPWS constructs $r_{xx} = .819$ and OP constructs $r_{yy} = .833$ for correcting measurement errors, and computed a weighted mean true score correlation ρ (Hunter & Schmidt, 2004).

As the six HPWS components, the core focus of our study, are calculated as percentages rather than dummies, we could not conduct heterogeneity test of subgroup analysis as was often undertaken in ordinary meta-analysis. Instead, we carried out meta-regressions.

Empirical results

Whole sample meta-analysis

Table 1 reports the descriptive statistics and correlation coefficients of the variables in the whole sample. The unweighted mean of observed HPWS–OP effect sizes, r, was .297. The coefficient of the correlation between the effect size r and T&D was positive and statistically significant ($R = .130$, $p < .05$) whereas the coefficients of the correlation between the effect size r and the rest five HPWS components were all statistically indifferent from zero. The results seemed to indicate that the HPWS–OP relationship is related to the percentage change of T&D, but not to that of other HPWS components.

As for control variables, the coefficient of the correlation between the effect size r and advanced country was negative and statistically significant ($R = -.244$, $p < .001$), as was the coefficient of the correlation between the effect size r and the financial performance ($R = -.236$, $p < .001$). However, the coefficients of the correlation between the effect size r and manufacturing industry, service industry, and firm-level analysis were all statistically indifferent from zero. The results seemed to indicate that the HPWS–OP relationship was likely influenced by country of origin and performance measures.

Table 2 reports the meta-regression analysis output. We first ran model 1 in which only control variables were included. The coefficient of advanced country was negative and statistically

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Table 1. Descriptive statistics and correlations of variables of the whole sample[a]

	k[b]	N[c]	Mean[d]	Standard deviation	1	2	3	4	5	6	7	8	9	10	11
1. Effect size *r*	240	59,207	.297	.186	1										
Country of origin															
2. Advanced country	240	59,207	.746	.436	−.244***	1									
Firm performance dimensions															
3. Financial performance	240	59,207	.275	.447	−.236***	.112	1								
HPWS composition:															
4. Compensation	209	53,380	.160	.098	−.028	.080	.123	1							
5. Employee relations	190	50,260	.240	.178	−.126	.114	−.070	−.197**	1						
6. Performance management	186	35,787	.115	.094	.088	−.152*	−.081	−.107	−.392***	1					
7. Training and development	231	57,659	.178	.093	.130*	.063	.041	−.178**	−.298***	−.010	1				
8. Promotion	118	27,425	.060	.075	−.052	−.069	−.057	−.232***	−.067	−.067	.004	1			
9. Recruitment and selection	166	39,505	.111	.099	.117	−.038	.000	.085	−.449***	.131*	−.002	0	1		
Industrial affiliation															
10. Manufacturing firm	240	59,207	.213	.410	−.061	.052	.099	−.034	.005	.102	.044	−.096	.020	1	
11. Service firm	240	59,207	.233	.424	.065	.096	−.211**	−.027	.199**	.012	−.073	−.075	−.221***	−.286***	1
Level of studies															
12. Firm-level analysis	240	59,207	.771	.421	.103	−.091	.184**	−.030	−.062	.059	.033	.079	.073	.066	−.311***

[a]Missing observations removed by pairwise deletion in correlation computation.
[b]k = number of studies.
[c]N = total sample size of the k studies.
[d]Unweighted mean (arithmetic average) of observed effect sizes.
*$p < .05$; **$p < .01$; ***$p < .001$.

Table 2. Results of meta-regression analyses of the whole sample[a]

	Model 1	Model 2
	β	β
Intercept	.350***	.316**
	(.045)[b]	(.097)
Manufacturing firm	−.008	−.008
	(.037)	(.038)
Service firm	.051	.070
	(.039)	(.040)
Firm-level analysis	.094*	.099**
	(.037)	(.037)
Advanced country	−.113***	−.117***
	(.034)	(.035)
Financial performance	−.115***	−.119***
	(.034)	(.034)
Compensation		.017
		(.168)
Employee relations		−.099
		(.118)
Performance management		−.053
		(.184)
Training and development		.302*
		(.153)
Promotion		−.294
		(.207)
Recruitment and selection		.189
		(.173)
K	240	240
T^{2c}	.043	.042
I^2 (residual)[d]	92.14%	90.73%
R^{2e}	12.22%	14.37%

[a]Weighted least square regression by inverse variance weighted variables in a random-effect model was applied following the meta-regression approach suggested by Lipsey and Wilson (2001).
[b]Standard errors are in parentheses.
[c]T^2: restricted maximum likelihood (REML) estimate of between-study variance.
[d]I^2: proportion of variation due to heterogeneity in residual.
[e]R^2: proportion of between-study variance explained.
*$p < .05$; **$p < .01$; ***$p < .001$.

significant (β = −.113; $p < .001$), as was the coefficient of financial performance (β = −.115; $p < .001$). However, the coefficients of manufacturing industry, service industry, and firm-level analysis were all statistically indifferent from zero. The results were consistent with correlation analysis, suggesting that country of origin and performance measures influenced the HPWS–

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OP relationship, but industrial affiliation and level of analysis did not have any significant impact on the relationship in the whole sample.

We then ran model 2 in which the percentages of the six HPWS components were introduced. The signs of all the control variables remained unchanged. The coefficient of T&D was positive and statistically significant ($\beta = .302$; $p < .05$) whereas the coefficients of all the remaining five HPWS components were statistically indifferent from zero. The results were consistent with correlation analysis, suggesting that among all the six HPWS components, only T&D moderated the HPWS relationship. The results fully supported hypothesis 1, indicating that the HPWS–OP relationship was highly sensitive to the percentage change of the T&D component in HPWS, but not on the percentage change of any of the other five HPWS components. T&D served as a leverage point in HPWS.

Subsample meta-analysis

Advanced versus developing countries

To test hypothesis 2, we divided the whole sample into two subsamples, the developing country subsample and the advanced country subsample, to examine how country of origin influences the functioning of T&D as a leverage point in HPWS. We ran meta-regressions for the two subsamples, respectively, and reported the output in Table 3.

The coefficient of T&D was positive and statistically significant ($\beta = .374$; $p < .05$) in model 4 in the advanced country subsample, but statistically indifferent from zero in model 6 in the developing country subsample. Moreover, the coefficients of all the remaining five HPWS components were statistically indifferent from zero in both subsamples. The results supported hypothesis 2, indicating that the positive HPWS–OP relationship is highly sensitive to the percentage change of the T&D component in HPWS in advanced countries rather than developing countries. T&D served as a leverage point in advanced countries, but not in developing countries.

As for control variables, in both subsamples, the coefficient of financial performance was negative and statistically significant ($\beta = -.121$; $p < .001$ in model 4, and $\beta = -.178$; $p < .05$ in model 6) whereas the coefficients of all the remaining control variables were statistically indifferent from zero after the six HPWS components were introduced in models 4 and 6. The results suggested that performance measures influenced the HPWS–OP relationship in both developing and advanced countries.

Manufacturing versus service industry

To test hypothesis 3, we divided the whole sample into two subsamples, the manufacturing industry subsample and the service industry subsample, to examine how industrial affiliation may influence the functioning of T&D as a leverage point in HPWS. We ran meta-regressions for the two subsamples, respectively, and reported the output in Table 4.

The coefficient of T&D was positive and statistically significant ($\beta = .971$; $p < .05$) in model 10 in the service industry subsample, but statistically indifferent from zero in model 8 in the manufacturing industry subsample. Moreover, the coefficients of all the remaining five HPWS components were statistically indifferent from zero in both subsamples. The results supported hypothesis 3, indicating that the positive HPWS–OP relationship is highly sensitive to the percentage change of the T&D component in HPWS in service industries rather than manufacturing industries. T&D served as a leverage point in HPWS in service industries, but not in manufacturing industries.

Regarding control variables, in the manufacturing industry subsample, the coefficient of financial performance was negative and statistically significant ($\beta = -.155$; $p < .01$) whereas the coefficients of all the remaining control variables were statistically indifferent from zero after the six HPWS components were introduced in model 8. The results suggested that

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Table 3. Results of meta-regression analyses in subgroup samples: country of origin[a]

	Advanced country		Developing country	
	Model 3	Model 4	Model 5	Model 6
	β	β	β	β
Intercept	.254***	.182	.284**	.358
	(.040)[b]	(.104)	(.096)	(.257)
Manufacturing firm	.007	.004	−.066	−.090
	(.040)	(.040)	(.091)	(.102)
Service firm	.029	.041	.141	.157
	(.041)	(.043)	(.098)	(.105)
Firm-level analysis	.071	.076	.183	.189
	(.039)	(.039)	(.096)	(.103)
Financial performance	−.108**	−.121***	−.174*	−.178*
	(.036)	(.036)	(.087)	(.091)
Compensation		.119		−.375
		(.179)		(.493)
Employee relations		−.074		−.167
		(.127)		(.310)
Performance management		.017		.024
		(.202)		(.521)
Training and development		.374*		−.026
		(.187)		(.626)
Promotion		−.352		−.283
		(.229)		(.512)
Recruitment and selection		.178		.274
		(.179)		(.516)
K	179	179	61	61
T^{2c}	.037	.037	.061	.067
I^2 (residual)[d]	91.70%	90.06%	91.21%	91.53%
R^{2e}	5.47%	8.79%	7.97%	6.00%

[a]Weighted least square regression by inverse variance weighted variables in a random-effect model was applied following the meta-regression approach suggested by Lipsey and Wilson (2001).
[b]Standard errors are in parentheses.
[c]T^2: restricted maximum likelihood (REML) estimate of between-study variance.
[d]I^2: proportion of variation due to heterogeneity in residual.
[e]R^2: proportion of between-study variance explained.
*$p < .05$; **$p < .01$; ***$p < .001$.

performance measures influenced the HPWS–OP relationship in manufacturing industries. In the service industry subsample, by contrast, the coefficients of all the control variables were statistically indifferent from zero after the six HPWS components were introduced in model 10, indicating that none of the control variables influenced the HPWS–OP relationship in service industries.

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Table 4. Results of meta-regression analyses in subgroup samples: industrial affiliation[a]

	Manufacturing firms		Service firms	
	Model 7	Model 8	Model 9	Model 10
	β	β	β	β
Intercept	.326***	.258	.428***	.261
	(.081)[b]	(.220)	(.100)	(.244)
Firm-level analysis	.035	.020	.131	.100
	(.072)	(.069)	(.073)	(.069)
Advanced country	−.026	−.023	−.180	−.150
	(.069)	(.071)	(.096)	(.091)
Financial performance	−.128*	−.155**	−.015	−.017
	(.059)	(.057)	(.124)	(.118)
Compensation		.543		−.264
		(.361)		(.437)
Employee relations		−.157		−.146
		(.255)		(.299)
Performance management		−.168		.035
		(.297)		(.426)
Training and development		.111		.971*
		(.325)		(.481)
Promotion		.275		.675
		(.437)		(.629)
Recruitment and selection		.306		
		(.387)		
K	51	51	56	56
T^{2c}	.028	.024	.063	.053
I^2 (residual)[d]	84.18%	81.12%	89.91%	87.51%
R^{2e}	5.03%	18.17%	9.74%	24.55%

[a]Weighted least square regression by inverse variance weighted variables in a random-effect model was applied following the meta-regression approach suggested by Lipsey and Wilson (2001).
[b]Standard errors are in parentheses.
[c]T^2: restricted maximum likelihood (REML) estimate of between-study variance.
[d]I^2: proportion of variation due to heterogeneity in residual.
[e]R^2: proportion of between-study variance explained.
*$p < .05$; **$p < .01$; ***$p < .001$.

Discussion

Contributions to theory

Extending systems theory to strategic HRM research, our meta-analysis reveals that the HPWS–OP relationship is particularly sensitive to the percentage change of T&D as compared to other components of HPWS. However, the leveraging effect of T&D is contingent on contextual conditions surrounding an organization. Specifically, the effect is significant in advanced countries rather than developing countries, and in service industries rather than manufacturing industries.

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The theoretical contribution of our study is two-folded. First, based on the core assumption of systems theory, we develop the construct of a leverage point in HPWS. Differing from conventional approaches that treat components of HPWS as being equally important, our conceptualization of HPWS takes into account the variation in importance among these components (Han et al., 2019; Pfeffer, 1998). We consider the component that has the most critical impact on the HPWS–OP relationship to be a leverage point and, therefore, the focus of strategic HRM research (Lepak & Snell, 2002; Senge, 1990). To the best of our knowledge, our study is the first to examine the presence of a leverage point in HPWS, throwing fresh light on the inherent mechanism by which components interact differentially with one another within HPWS to enhance OP. Our meta-analysis further suggests that T&D helps to enhance all the three subsystems of the AMO model, and can serve as a leverage point in HPWS.

Second, our study moves a step further to probe the contexts in which T&D can serve as a leverage point in HPWS. It is important to note that a leverage point may not be present in an organization where a structural equilibrium is reached in its HPWS. In this circumstance, components of the existing HPWS have reached a relatively stable balance which fits well with other forces in the firm such as its financial capacities and around the firm such as the cultural environment in which the firm operates (Kaufman, 2015)[1]. In such a configuration, a percentage change in any single component of HPWS does not significantly influence the performance effect of HPWS. This suggests that a leverage point is not ubiquitous, but contingent on many contextual factors. Specifically, our study shows that T&D serves as an effective leverage point in advanced countries where organizations have richer experiences and greater capacities to create value through HPWS than their counterparts in developing countries. Likewise, the leveraging effect is significant in service industries where the discretion and autonomy acquired through T&D are more beneficial for workers in these industries than their counterparts in manufacturing industries (Darwish, Singh, & Wood, 2016). In this regard, our study enhances our understanding of the boundary conditions of the HPWS–OP relationship.

Implications for managers

Our study offers important implications for managers aiming at improving OP through HRM strategies. First, our meta-analytic findings show a positive HPWS–OP effect aggregated from multiple prior studies, suggesting that investing in HPWS is beneficial for performance improvement. Therefore, this study provides a strong justification and empirical evidence for managers to adopt HPWS as a strategic instrument to achieve OP goals.

Second, while all component practices within HPWS work together to create synergy for performance improvement, their role, capacity, and importance in the system may vary. Our study finds that the HPWS–OP relationship is highly sensitive to the percentage change of T&D practice, indicating the leveraging role of T&D in optimizing HPWS functionality. The finding suggests that managers need to pay particular attention to T&D programs, which are instrumental to enhancing employees' ability, motivation, and opportunity, when confronted with performance issues. Even if firms can obtain highly capable employees through careful selection in the recruitment process, they should provide new recruits with well-designed T&D programs to enable them to enhance the performance of the whole organization in the firm-specific context (Tai, 2006).

Our findings also suggest that managers need to be attentive to the boundary conditions that shape the leveraging role of T&D in HPWS. The results indicate that organizations operating in advanced countries and service industries potentially derive greater benefits from leveraging T&D in HPWS. Therefore, managers in these organizations should confidently deploy more resources in T&D planning and implementation. They also may fine-tune their investment in HPWS

[1]For a detailed explanation of the equilibrium of HRM practices and HPWS, please refer to Kaufman (2010; 2015). We appreciate the constructive comments of an anonymous reviewer on this point.

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practices to identify an ideal ratio for T&D investment, thereby maximizing the performance effect of HPWS at minimum costs. However, given that the leveraging role of T&D is not significant in developing countries and manufacturing industries, managers should be cautious of making undue investment in T&D *vis-à-vis* other components of HPWS in these settings. Whenever simply adjusting the percentage of any single HPWS component does not substantially improve an organization's performance outcomes, managers need to pay equal attention to each of the components in HPWS to enhance their aggregated effectiveness. As situation changes, in the meantime, they need to try different combinations of these practices to keep pace with the dynamic business environments (Tian, Lo, & Zhai, 2021).

Limitations and directions for future research

As in all meta-analytical studies, a major limitation in our study comes from the generic nature of the meta-analysis methodology. That is, all the research defects embedded in the original studies in the sample are unavoidably transmitted to the meta-analysis results. These defects may occur in designing questionnaire, sampling, collecting data, processing data, analyzing data, and reporting research outcomes. All these defects may harm the precision of the meta-analytical outputs (Card, 2012).

Another methodological limitation is the restriction of the estimation scope that a meta-analyst can cover. Only the variables reported in the majority of sample studies can be included for meta-analysis. This hinders us from exploring additional possibilities and alternative mechanisms in the HPWS–OP relationship. Therefore, the results of this meta-analysis should be interpreted with caution as they are produced without taking into account many other variables. Future research needs to include other variables, such as detailed firm-level characteristics, in theoretical modeling and empirical investigation in order to draw a more comprehensive picture of the HPWS–OP relationship.

A further point is related to the uneven distribution of studies included in subsample analyses. In this study, around 75% of sample studies were conducted in advanced countries which, while reconfirming our observation of maturity and rich experience of HPWS implementation in advanced countries as compared to developing countries, indicates imbalance in research focus. Similarly, the distribution indicates that HPWS research tends to focus on operational performance measures than financial performance measures, and firm-level analysis than sub firm-level analysis. We suggest that HRM scholars turn attention to those under-investigated research settings, and enrich our insight into HPWS application in the increasingly globalized and diversified business environment.

Conclusion

Our study examines the variation in the leverage role between HPWS components and, based on data of 59,207 firms and establishments from 240 sample studies up to December 2021, demonstrates that T&D is likely a leverage point. However, T&D serves as a leverage point in advanced countries rather than developing countries, and in service industries rather than manufacturing industries. Managers need to search for a leverage point in HPWS contingent on the circumstances their organizations face, and, if there is one, make the best use of it to maximize the performance effect of HPWS at the minimal costs.

Supplementary material. The supplementary material for this article can be found at https://doi.org/10.1017/jmo.2022.53.

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References

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

Bell, S. T., Brown, S. G., & Weiss, J. A. (2018). A conceptual framework for leveraging team composition decisions to build human capital. *Human Resource Management Review*, *28*(4), 450–463.

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

Bowen, D. E. (1986). Managing customers as human resources in service organizations. *Human Resource Management*, *25*(3), 372–384.

Broedling, L. A. (1999). Applying a systems approach to human resource management. *Human Resource Management*, *38*(3), 269–277.

Card, N. A. (2012). *Applied meta-analysis for social science research*. New York: Guilford Publications.

Chadwick, C., Super, J. F., & Kwon, K. (2015). Resource orchestration in practice: CEO emphasis on SHRM, commitment-based HR systems, and firm performance. *Strategic Management Journal*, *36*(3), 360–376.

Chen, Y. L., & Chen, S. J. (2021). Looking at both sides of high-performance work systems and individual performance: A job demands-resources model. *Journal of Management & Organization*, 1–21. https://doi.org/10.1017/jmo.2021.40

Chowhan, J. (2016). Unpacking the black box: Understanding the relationship between strategy, HRM practices, innovation and organizational performance. *Human Resource Management Journal*, *26*(2), 112–133.

Chowhan, J., Pries, F., & Mann, S. (2017). Persistent innovation and the role of human resource management practices, work organization, and strategy. *Journal of Management & Organization*, *23*(3), 456–471.

Cohen, W. M., & Levinthal, D. A. (1990). Absorptive capacity: A new perspective on learning and innovation. *Administrative Science Quarterly*, *35*(1), 128–152.

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

Darwish, T. K., Singh, S., & Wood, G. (2016). The impact of human resource practices on actual and perceived organizational performance in a Middle Eastern emerging market. *Human Resource Management*, *55*(2), 261–281.

Datta, D. K., Guthrie, J. P., & Wright, P. M. (2005). Human resource management and labor productivity: Does industry matter? *Academy of Management Journal*, *48*(1), 135–145.

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

Demirbag, M., Collings, D. G., Tatoglu, E., Mellahi, K., & Wood, G. (2014). High-performance work systems and organizational performance in emerging economies: Evidence from MNEs in Turkey. *Management International Review*, *54*(3), 325–359.

Drucker, P. F. (1954). *The practice of management: A study of the most important function in America society*. New York: Harper & Brothers.

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

Fu, N., Bosak, J., Flood, P. C., & Ma, Q. (2019). Chinese and Irish professional service firms compared: Linking HPWS, organizational coordination, and firm performance. *Journal of Business Research*, *95*(C), 266–276.

Garavan, T., McCarthy, A., Lai, Y., Murphy, K., Sheehan, M., & Carbery, R. (2021). Training and organizational performance: A meta-analysis of temporal, institutional and organizational context moderators. *Human Resource Management Journal*, *31*(1), 93–119.

Han, J. H., Kang, S., Oh, I. S., Kehoe, R. R., & Lepak, D. (2019). The goldilocks effect of strategic human resource management? Optimizing the benefits of a high performance work system through the dual alignment of vertical and horizontal fit. *Academy of Management Journal*, *62*(5), 1388–1412.

Hong, Y., Jiang, Y., Liao, H., & Sturman, M. C. (2016). High performance work systems for service quality: Boundary conditions and influence processes. *Human Resource Management*, *56*(5), 747–767.

Hunter J. E., & Schmidt F. L. (2004). *Methods of meta-analysis: Correcting error and bias in research findings* (2nd ed.). Newbury Park, CA: Sage publications.

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

International Monetary Fund. (2021). World economic outlook: Recovery during a pandemic – health concerns, supply disruptions, and price pressures, Washington. Retrieved from: https://www.imf.org/en/Publications/WEO/Issues/2021/10/12/world-economic-outlook-october-2021.

Jennings, P. D., Cyr, D., & Moore, L. F. (1995). Human resource management on the Pacific Rim: An integration. In Moore, L. F. & Jennings, P. D. (Eds.), *Human resource management on the Pacific Rim: Institutions, practices, and attitudes* (pp. 351–379). Berlin: de Gruyter.

https://doi.org/10.1017/jmo.2022.53 Published online by Cambridge University Press

Jiang, K., Lepak, D. P., Hu, J., & Baer, J. C. (2012). How does human resource management influence organizational outcomes? A meta-analytic investigation of mediating mechanisms. *Academy of Management Journal*, *55*(6), 1264–1294.
Kast, F. E., & Rosenzweig, J. E. (1972). General systems theory: Applications for organization and management. *Academy of Management Journal*, *15*(4), 447–465.
Kaufman, B. E. (2010). A theory of the firm's demand for HRM practices. *The International Journal of Human Resource Management*, *21*(5), 615–636.
Kaufman, B. E. (2015). Market competition, HRM, and firm performance: The conventional paradigm critiqued and reformulated. *Human Resource Management Review*, *25*(1), 107–125.
Lepak, D. P., & Shaw, J. D. (2008). Strategic HRM in North America: Looking to the future. *The International Journal of Human Resource Management*, *19*(8), 1486–1499.
Lepak, D. P., & Snell, S. A. (2002). Examining the human resource architecture: The relationships among human capital, employment, and human resource configurations. *Journal of Management*, *28*(4), 517–543.
Liao, H., Toya, K., Lepak, D. P., & Hong, Y. (2009). Do they see eye to eye? Management and employee perspectives of high-performance work systems and influence processes on service quality. *Journal of Applied Psychology*, *94*(2), 371–391.
Lipsey, M. W., & Wilson, D. B. (2001). *Practical meta-analysis* (Vol. *49*). Thousand Oaks, CA: Sage publications.
McHugh, M. L. (2012). Interrater reliability: The Kappa statistic. *Biochemistry Medicine*, *22*(3), 276–282.
Mom, T. J., Chang, Y. Y., Cholakova, M., & Jansen, J. J. (2019). A multilevel integrated framework of firm HR practices, individual ambidexterity, and organizational ambidexterity. *Journal of Management*, *45*(7), 3009–3034.
Pfeffer, J. (1998). *The human equation: Building profits by putting people first*. Boston, MA: Harvard Business Press.
Rabl, T., Jayasinghe, M., Gerhart, B., & Kühlmann, T. M. (2014). A meta-analysis of country differences in the high-performance work system - business performance relationship: The roles of national culture and managerial discretion. *Journal of Applied Psychology*, *99*(6), 1011–1041.
Ramsay, H., Scholarios, D., & Harley, B. (2000). Employees and high-performance work systems: Testing inside the black box. *British Journal of Industrial Relations*, *38*(4), 501–531.
Rauch, A., & Hatak, I. (2016). A meta-analysis of different HR-enhancing practices and performance of small and medium sized firms. *Journal of Business Venturing*, *31*(5), 485–504.
Rosenthal, P., Hill, S., & Peccei, R. (1997). Checking out service: Evaluating excellence, HRM and TQM in retailing. *Work, Employment and Society*, *11*(2), 481–503.
Senge, P. M. (1990). *The fifth discipline: The art and practice of the learning organization*. New York: Doubleday/Currency.
Shin, D., & Konrad, A. M. (2017). Causality between high-performance work systems and organizational performance. *Journal of Management*, *43*(4), 973–997.
Singh, S., Darwish, T. K., & Potočnik, K. (2016). Measuring organizational performance: A case for subjective measures. *British Journal of Management*, *27*(1), 214–224.
Sum, V. (2009). *The impact of training and its integration in the firm's business strategies on the firm's competitiveness*. Carbondale, Illinois: Unpublished doctoral dissertation, Southern Illinois University.
Sun, L. Y., Aryee, S., & Law, K. S. (2007). High-performance human resource practices, citizenship behavior, and organizational performance: A relational perspective. *Academy of Management Journal*, *50*(3), 558–577.
Tai, W. T. (2006). Effects of training framing, general self-efficacy and training motivation on trainees' training effectiveness. *Personnel Review*, *35*(1), 51–65.
Tian, X., Lo, V. I., & Zhai, X. (2021). Combining efficiency and innovation to enhance performance: Evidence from firms in emerging economies. *Journal of Management & Organization*, *27*(2), 295–311.
Tzabbar, D., Tzafrir, S., & Baruch, Y. (2017). A bridge over troubled water: Replication, integration and extension of the relationship between HRM practices and organizational performance using moderating meta-analysis. *Human Resource Management Review*, *27*(1), 134–148.
Vazquez-Bustelo, D., & Avella, L. (2019). The effectiveness of high-involvement work practices in manufacturing firms: Does context matter? *Journal of Management and Organization*, *25*(2), 303–330.
Viechtbauer, W. (2010). Conducting meta-analyses in R with the metafor package. *Journal of Statistical Software*, *36*(3), 1–48.
Wang, D. X., & Chen, S. (2013). Does intellectual capital matter? High-performance work systems and bilateral innovative capabilities. *International Journal of Manpower*, *34*(8), 861–879.
Zhai, X., & Tian, X. (2020). Do performance measures matter in the relationship between high-performance work system and organizational performance? *International Journal of Manpower*, *41*(3), 241–257.
Zhao, S., & Du, J. (2012). Thirty-two years of development of human resource management in China: Review and prospects. *Human Resource Management Review*, *22*(3), 179–188.

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