**A Bridge Over Troubled Water: Replication, Integration and Extension of the Relationship between HRM Practices and ­­Organizational Performance Using Moderating Meta-Analysis**

**Daniel Tzabbar**

**LeBow College of Business**

**Drexel University, USA**

**Shay Tzafrir**

**University of Haifa, Israel**

**Yehuda Baruch**

**Southampton Business School, University of Southampton, UK**

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**Abstract**

Meta-analyses on the relationship between human resource management (HRM) practices, as an aggregate and individually, and organizational performance has yielded mixed results, further fueling the theoretical debate among HRM scholars. To resolve this tension, we conduct a moderating meta-analysis of 89 primary studies to replicate, integrate and extend prior work. Comparing the variance explained by differences in HRM practices versus those explained by contextual and empirical factors indicates that context and research design have a strong influence on the relationship between HRM practices and performance. Despite the voluminous research on this issue, the differences in the relationships of various HRM practices explains only 4% of the variance in performance, whereas, societal context, industry sector and firm size explain 33%, 12% and 8%, respectively. Empirical contingencies including four categories of performance outcomes and four types of participants explain 13% and 9% of the variance in the results, respectively. Thus, our findings provide strong support for the contingency theory. The theoretical and empirical implications for future research in the area are discussed.

**Keywords**: HRM practices, organizational performance, universalistic, configurational, contingency, meta-analysis

**Introduction**

In the past decades there has been a growing interest in examining the relationship between HRM practices and a firm’s performance (e.g. Delery & Doty, 1996; Jackson, Schuler, & Jiang, 2014; Wright, Gardner, & Moynihan 2005). While there is general agreement about a positive correlation between the two factors, inconsistencies in reports raise some doubts about our ability to reach strong conclusions about their relationship. For example, in showing that high performance work practices (HPWPs) have a stronger relations than individual practices, Combs, Liu, Hall, and Ketchen (2006) suggest that their results provide support for the configurational perspective. On the other hand, Tharenou, Saks and Moore (2007) find compelling evidence for the alternative universalistic perspective, documenting that training is related independently to organizational outcomes. In support of Combs et al (2006) and the configurational perspective, both Subramony (2009) and Jiang, Lepak, Hu and Baer (2012) establish that bundles of HRM practices have a stronger relation than individual practices. Still, in demonstrating that the relations between HRM practices on a firm’s performance are stronger in manufacturing than in the service sector, Combs et al. (2006) and Subramony (2009) provide some support for the contingency perspective.

Given these differences in empirical findings and theoretical stances, the first goal of this study is to re-evaluate the difference between the Relations between individual practices relative to those of HPWPs on performance. Doing so is particularly important given the theoretical implications associated with such differences. The second purpose of this study is to expand our understanding of the relationships between HRM practices and outcomes across other contextual factors (Johns, 2006). Specifically, while all studies argue that context matters, to date researchers have compared only the manufacturing and service industries, limiting our ability to fully answer the question: Are some HRM practices more sensitive or resilient than others to organizational and environmental characteristics? Researchers commonly agree that future research should examine other contextual factors. For instance, Combs et al. (2006) suggest that, “Future meta-analysis can go beyond simple distinction between service and manufacturers to determine which contextual variables warrant managerial attention” (p. 521), an idea that Jiang et al. (2012) echo. With the emergence and growth of the high-tech industry in the past two decades, examining the Relation between HRM practices in such a work environment can serve as a valuable extension of prior research.

Similarly, it is not clear how the effect size of HRM practices varies across different size companies. Furthermore, scholars have also speculated that societal differences might be an important moderator in testing the contingency argument (Rabel, Jayasinghe, Gerhart, & Kuehlmann, 2011). We seek to extend prior research by examining these additional contextual factors. In following up on these suggestions, we maintain that the relevance and saliency of various HRM practices on performance may also vary in different cultures and different size companies.

Finally, prior meta-analytical reviews attribute the variance in results to empirical moderators such as operational versus financial outcomes, subjective and objective measures, and single versus multiple sources. To extend this logic and provide a more nuanced view of prior results, we believe it is important to examine their joint relations. Furthermore, scholars note that, “Data source might be a true moderator” (Combs et al., 2006, p. 522). Consistent with this statement, Tharenou, Saks, and Moore (2007) argue that HRM managers and executives or CEOs are those typically rate outcomes, which might inflate the results. Accordingly, the third purpose of this study is to extend prior examinations by combining the type of outcome with assessments of the objectivity or subjectivity of the measures, and comparing the variance of the effect size of HRM practices within and between those categories. In addition, we compare the effect size within and between different types of participants: executives, HRM managers, middle managers and employees.

**Review of Prior Meta-Analyses**

The current four meta-analyses commonly agree that HRM practices have an overall positive and significant relation with on performance. Nevertheless, despite this general agreement, there is a great deal of theoretical and empirical disagreement between these studies. For instance, while Combs et al. (2006) report that systems of HPWPs have a stronger positive relation than individual HRM practices, both Subramony (2009) and Jiang et al. (2012) agree that bundles of HRM practices have a stronger relation than both individual practices and HPWPs[[1]](#footnote-1). Focusing on the relationships between training and various outcomes, Tharenou et al. (2007) find that it has a positive and significant relationship with all outcomes and that those relations are not significantly different from each other. In support of these findings, both Subramony (2009) and Jiang et al. (2012) report that enhancing skills has a positive and significant relation on financial and operational outcomes. Yet, Combs et al. (2006) document no significant differences between training and other HRM practices. Table 1 provides a summary of these meta-analyses.

----- Insert Table 1 around here ----

To delve deeper into the relationships between HRM practices and performance, scholars have examined the relation of HRM practices across operational and financial performance outcomes. Here too reports are mixed. Whereas Combs et al. (2006) and Tharenou et al. (2007) find no significant differences in the relations of HRM practices and training, respectively, on financial and operational outcomes, Jiang and colleagues (2012) and Subramony (2009) report more nuanced findings. For instance, Subramony (2009) notes that the effect of empowerment and skill enhancing bundles is not significantly different across performance categories, whereas motivational bundles have a stronger relation on operational outcomes. In contrast, however, Jiang et al. (2012) demonstrate that motivation enhancing HRM practices have a significant positive relation on financial outcomes, while opportunity enhancing HRM practices have positive relations with operational outcomes.

Based on these differences in findings, scholars have also reached different theoretical conclusions. In showing that HPWPs have a stronger relation than individual practices, Combs et al. (2006) maintain that their results provide support for the configurational perspective. In contrast, based on their findings that training is related independently to organizational outcomes, Tharenou et al. (2007) conclude that there is more support for the universalistic perspective. In showing that the relations between HRM practices and firm performance varies across industries, Combs et al. (2006) and Subramony (2009) provide some support for the contingency perspective.

In another line of investigation, prior research has tried to attribute some of the variance to contextual variables. For instance, in support of the contingency perspective, both Combs et al. (2006) and Subramony (2009) indicate that the relationships are stronger in manufacturing than in the service sector. They conclude that future research should align best practices to the type of work being conducted. Similarly, Tharenou et al. (2007, p. 270) suggest that future research should examine different types of employees whose jobs may vary rather than those in the sectors examined in prior research. Finally, scholars have noted that the research design might bias the findings about the relationship between HRM practices and the firm’s performance. Specifically, Tharenou et al. (2007) indicate that the effect of training on performance outcomes is stronger when perceptual outcomes rather than objective outcomes are used. Similarly, Subramony (2009) indicate that results are significantly higher when a single rating source rather than multiple rating sources are used.

**Our Study’s Plan: Replication, Integration and Extension of Previous Work**

To resolve these empirical and theoretical tensions, we first re-evaluate the relationships between individual practices and those of HPWPs and a firm’s performance. Doing so may offer new insights into the debate between the universalistic and configuration perspectives. To examine the contingency perspective, we compare the variance in the relationship between HRM practices and performance in the high-tech sector across different size companies and societal contexts.

Previous studies have also cited empirical factors as impacting the relationship between HRM practices and firm performance. To extend prior work, and in attempt to present a more nuanced view of prior results, we examine the differences between and within four outcome categories: objective and subjective operational outcomes, and objective and subjective financial outcomes. We also compare the variance of the effect size of HRM practices within and between different types of participants: executives, HRM managers, middle managers and employees. Table 2 outlines our plan for replicating and extending prior meta-analytical work.

----- Insert Table 2 around here ----

**Method**

**Sample and Inclusion Criteria**

We included all prior studies examining the relationship between HRM practices and a firm’s operational and financial performance. We established our list first by including the relevant papers included by prior meta-analysis. We then followed a common method of keyword searching similar to those of prior meta-analytical research. Subsequently, we conducted three manual searches (citations from previous studies, books, and review articles). We also manually searched each journal that had previously published papers on the performance outcomes of HRM practices. Using this list of papers, an author-based search was also conducted to determine whether an author had continued to publish studies in this area.

Papers included in our final sample had to *(a*) be published in a refereed journal to ensure data quality; *(b)* model the relationships between HRM policies and practices and operational or financial outcome; *(c)* report sample sizes, and *(d)* provide sufficient data to enable the calculation of a correlation coefficient. In cases where information was missing, the author was contacted to obtain it.

This process yielded 89 studies with 393 correlations drawn from an aggregate sample size of 18, 335 observations[[2]](#footnote-2). These correlations served as our unit of analysis. Multiple correlations from a study were included only if each correlation represented a unique combination of predictor and criterion variables. The relatively large sample-to-study ratio is a function of a common practice in HRM research to examine the relationships between various HRM practices and multiple outcome indicators. Two assistants entered the data, and the first two co-authors coded them independently. Inter-rater agreement was 93%. The third author considered cases of discrepancies in the coding (see Kirppendorff, 2004; Scandura & Williams, 2000).

**Measures of Key Constructs**

**HRM practices.** Following the universalistic perspective, research has identified seven HRM practices that are consistently related to an organization’s performance: internal career opportunities, training, performance appraisal, profit sharing, employment security, voice, and job descriptions. These practices were treated as individual predictors and as an aggregate. Primary studies varied in the way the operationally assessed those practices where some used a dummy variables while others used a scale measure. *Internal career opportunities* refers to an organization’s use of its internal labor market (ILM). Following Tharenou et al. (2007), we measured *training*, a combination of studies measuring the amount of training, percentage of workers trained and type of training. Performance appraisal as well as career and skill development were included as part of a larger category – employee *development*. The *profit sharing* category included profit sharing for performance and distributive justice practices associated with pay (Akhtar, Ding & De, 2008; Magnan & St-Onge, 2005). *Employment security* included both job security and organizational commitment practices. *Voice* included employee participation in decision making, power sharing, autonomy, and procedural justice. We found only one study that examined job descriptions as a predictor of performance, limiting our ability to investigate the relationship meta-analytically.

To compare our results to Combes et al. (2006) and test the configurational perspective, we also included high-performance work practices (HPWPs) as an independent predictor, reflecting the extent to which organizations used them. This factor included studies that examined the relationship between having a HPWPs system and an organization’s performance.

**Contextual moderators.** As Table 3 illustrates, we investigated the following contingency variables: industry sector, organizational size and societal context. The industry sector category contained four areas: low-technology (automotive assembly plant, machinery, manufacturing, petro-chemical refineries and textiles), high-technology (i.e., semiconductors), services (banking, hospitals, suppliers and sales) and general (studies containing multiple industries or not mentioning a specific industry).

We divided *organizational size* into three categories: small, medium, and large. Small firms are those that have fewer than 50 employees, medium size firms are those with 50 to 250 employees, and large firms are those with more than 250 employees. *Societal context* was represented by six categories, based on the primary samples in the literature from *(a)* Africa, *(b)* Europe, including Australia and New Zealand, *(c)* Asia (China and Korea), *(d)* Eastern Europe (Russia and Ukraine), *(e)* the Middle East (Israel), *(f)* North America (Canada and the US) and samples from multiple continents.

**Empirical moderators.** We examined the effect of two types of empirical moderators: type of outcome and type of participant. To extend Tharenou et al.’s (2007), Combes et al.’s (2006) and Subramony’s (2009) examination of variance in the relationships between HRM practices and operational and financial outcomes, we classified them as either objective or subjective. The result was four categories of organizational performance, *objective financial performance* (e.g., ROA, ROE, ROC, ROS), *subjective financial performance* (e.g., perceptions of the focal firm’s financial and market performance), *objective operational performance*, (e.g., organizational productivity, quality, operational effectiveness and efficiency/time performance), and *subjective operational performance* (e.g., perceptions of a firm’s operational performance including productivity and quality). We also examined four categories of participants: executives, HRM managers, managers and employees. Finally, we included two more categories of studies: multiple (studies that sampled multiple participants) and not available (studies not reporting the participants).

**Meta-Analytic Techniques**

**Calculating and combining estimates of effect sizes.** The original data (i.e., *Z, t, F, χ*2) were transformed into a product moment correlation, and we then calculated the effect sizes from the correlation coefficients. Next, we computed the weighted mean of each set of correlations by sample size. Hypothesis tests were based on the mean of the sample size’s weighted correlations. To avoid the slight bias associated with averaging correlations, we transformed each observed correlation using Fisher’s *z*-tranformation and calculated the weighted-*z* value. Then, we calculated a 95% confidence interval (CI) around each of the correlation means (Hedges & Olkin, 1985; Rosenthal, 1995). In cases of very small sample sizes, different levels of the confidence interval were used, as both Rosenthal (1995) and Hunter and Schmidt (1990) recommend. A confidence interval that does not include zero is an indicator of statistical significant (LePine, Piccolo, Jackson, Mathieu, & Saul, 2008; Quinones, Ford, & Teachout, 1995).

**Testing for moderating effects.** To assess whether there was significant heterogeneity in a sample, we tested *Qt* against a *χ*2 distribution with n-1 degrees of freedom. A significant *Q*tindicates that other explanatory variables should be investigated. In those instances, a categorical meta-analysis was conducted, as was an overall cumulative effect size, as well as the cumulative effect size for each group and its CIs.

Given the relatively small sizes of the sources, we should exercise caution when interpreting the results of the contingency analysis, because the likelihood that a second order sampling error is in operation increases. In addition, the statistical power to detect significant relationships decreases with a small sample. Second order sampling error exists if the observed studies are not representative of the population of all possible studies investigating the same relationship. Such an error could lead to an over or underestimate of the between-study variance (Schmidt, Hunter, Pearlman & Hirsh, 1985). To minimize this potential problem, we included studies with more than four correlations per contingency variable as long as those correlations did not source from the same study.

**Testing for significant differences between effect sizes.**To evaluate whether some practices have a significantly stronger relationship with performance than others, we investigated whether the individual CI levels overlap. Overlapping CI scores indicate a lack of significant differences among practices (LePine et al., 2008).

**Results**

**Overall effect.** Effect size estimates were calculated using Fisher’s r to z transformation. As Table 3 shows, the overall mean weighted effect size is .09. The 95% CI for this estimate does not include zero. Thus, while the aggregated relationship between HRM practices and organizational performance is positive and significant it is considered to be a small effect size. Note that while the results are consistent with prior research demonstrating a positive and significant relationship between HRM practices and organizational performance, the reported association is smaller than the effect size reported in prior meta-analyses.

**Testing the effect of contextual factors.** The contingency perspective maintains that the relationship of best practices with organizational performance depends upon both the organizational and environmental situations. To assess the validity of this perspective, we conducted a contingency analysis (*Qt* statistic) to determine whether the overall effect sizes (all samples) were homogenous. As Table 3 shows, the *Qt* for HRM practices is significant (*Qt* = 2136.4; *p* < .01). This result indicates that the variance in effect sizes among HRM practices is greater than would be expected due to sampling error. Overall, differences in HRM practices explain only 4% of the variance in the results.

Furthermore, Table 3 also illustrates that all of the contingency variables explain variance in the results. Specifically, *organizational industry, size, and societal context* explain 11%, 8%, and 33% of the variance, respectively. These findings suggest that the results are contingent on several contextual variables simultaneously. Empirical moderators also account for significant variance in the results. Most notably, differences in performance outcomes explain 13% of the variance, while type of participants explains 9%. Overall, comparing the variance explained by differences in HRM practices versus that explained by contextual and empirical factors indicates that context and research design have a stronger influence on the relationship between HRM practices and performance.

---- Insert Table 3 about here -----

**Universalistic vs.** **configurational perspectives.** The universalistic perspective states that HRM best practices have a positive relationship with organizational performance. As Table 4 shows, with the exception of internal labor market (ILM), all HRM practices have a positive and significant relationship with organizational performance. To determine whether the lack of significance for ILM was a result of sample size, we tested our model under different levels of confidence intervals (90%, and 85% CI) as Hunter and Schmidt (1990) recommend. We found no evidence of a significant relationship between ILM and organizational performance. Nevertheless, given that the relationship with most HRM practices is positive and significant, our findings provide general support for the universalistic perspective.

The configurational perspective states that the coordination and alignment functions of HPWPs have a significantly stronger relationship with organizational performance than do individual HRM best practices (Combs et al., 2006). Specifically, HPWPs have a significantly stronger relationship with organizational performance (*z* = .12; CI = .11: .14; *p* < .05) than bundled HRM practices such as profit sharing (*z* = .06; CI = .05 : .08; *p* < .05) and voice (*z* = .07; CI = .05 : .08; *p* < .05). However, HPWPs do not correlate significantly higher with organizational performance relative to development, training, and job security practices (*z* = .09; CI= .07: .10; *z* = .09; CI = .06: .12; *z* = .10; CI =.09: .12; *p* < .05; respectively). Thus, these results provide only limited support for the configurational theory and do not support recent conclusions that bundled HRM practices have a stronger relationship than HPWPs (Jiang et al., 2012; Subramony, 2009).

---- Insert Table 4 about here -----

**Moderating Meta-Analysis**

As Table 3 illustrates, the Qt for all of the contextual and empirical moderators is significant, suggesting that additional moderating analysis is required.

**Industry sector***.* In Table 5, we present the results of the moderating analysis for the impact of industry sector. As prior work indicates, the relationship between HRM and performance is highest in low-technology firms where employees are less self-sufficient (*z* =.11, CI = .09 : .13), followed by service firms (*z* = .06, CI =.07 : .10). However, given that the CI scores overlap, the differences are not significant. As such, our results are not consistent with those of Combs et al. (2006) and Subramony (2009). These differences may be due to the fact that prior meta-analyses have focused on differences in effect size without examining the extent to which the CI scores overlap. To extend prior work, we also examined the correlation between HRM practices and organizational performance, which we found to be positive, but not significant in the high-technology industry (*z* = .04, CI -.09 : .17).

To extend prior work, in Table 5 we provide a deeper look into the variance in the relationships between HRM practices and outcomes within each sector. In low-technology industries, all HRM practices have a positive and significant relationship with organizational performance. Development has a significantly stronger relationship with organizational performance than other HRM practices (*z* = .25, CI = .15 : .36). In the service industry, on the other hand, HPWPs (*z* = .24, CI = .20 : .27), followed by training (*z* = .11, CI = .09 : .14) have a significantly stronger relationship with organizational performance than other HRM practices. Interestingly, development does not have a significant relationship with performance (*z* = .04, CI = -.06 : .14). With regard to high-technology industries, we find no relationships between any HRM practices and organizational performance. Overall, the variance explained in low-tech industries is 3.5%, while the variance explained in the service industry is 29.65% and 17.99% in the high-tech sector.

---Insert Table 5 about here----

**Organizational size.** As Table 6 reports, the relationship between the aggregated relationships between HRM practices and organizational performance is highest among large organizations (*z* = .19, CI = .16 : .22), relative to medium (*z* = .13, CI = .11 : .15) and small size firms (*z* =.08, CI = .06 : .09). As none of the CIs overlaps, and the *Qb* is significant (*Qb*=176.65, *p* < .001), we conclude that the relationship between HRM practices and performance differs significantly across the three groups. Overall, firm size explains 8.29% percent of the variance in the relationship between HRM practices and performance. Therefore, we conclude that the effect size of HRM practices varies depending on the size of the company.

We also examine the variance in the relationships between HRM practices and outcomes within each category of firm size in Table 4. Interestingly, in the small firm category, ILM is negatively related to performance (*z* = -.05, CI = -.10 : -.01). All other practices are positively and significantly related to performance. There are no significant differences among them, as there is a high degree of overlap among the CI scores. In medium size firms, profit sharing (*z* = .25, CI = .18 : .32) has a significantly stronger relationship with organizational performance than does voice (*z* = .09, CI = .04 : .15) and job security (*z* = .07, CI = .02 : .12). In large firms, with the exception of voice (z = .24, CI = .02 : .66), profit sharing (*z* = .39, CI = .30 : .48) has a significantly stronger relationship with organizational performance than the other HRM practices. Differences in HRM practices explain 31.34% percent of the variance in the relationship between HRM practices and performance. Therefore, we conclude that the effect size varies not only across firm sizes, but also that different practices seem to have different degrees of importance in different organizational contexts as reflected in the size of the company.

Contrary to the configurational perspective, HPWPs do not have a significantly stronger relationship with organizational performance than other HRM bundles in any of the firm size categories. These null findings provide additional support for the contingency hypothesis. To examine the universalistic argument, we compared the independent relations of each HRM practice across size categories. As Table 6 indicates, training and development have a significantly stronger relationship with organizational performance in large companies rather than in small firms (*z* = .18, CI = .12 : .25; *z* =. 08, CI = .05 : .011, respectively). HPWPs have a significantly weaker relationship with organizational performance in small firms than in medium size firms (*z* = .11, CI = .09 : .12; *z* = .20, CI = .15 : .25, respectively). Interestingly, the larger the firm size the stronger the relationship profit sharing has with organizational performance (small firm, *z* = .09, CI = .07 : .11; medium size firm, *z* = .25, CI = .18 : .32; large firm, *z* = .39, CI = .30 : .48). The remaining HRM practices are not significantly different across organizational size categories. While these results indicate that some HRM practices vary depending on the size of the firm, with the exception of ILM, all HRM practices are significantly related to organizational performance, providing additional support for the universalistic perspective.

---Insert Table 6 about here----

**Societal context.** As Table 7 shows, the explained variance of the sample origin is the highest among the moderators (33%). Overall, the aggregated relations of HRM practices has the strongest relationship with organizational performance in Asia, Eastern Europe and the Middle East (*z* = .25, CI = .21 : .29; *z* =.24, CI = .20 : .28; *z* = .27, CI = 18 : 57, respectively). HRM practices has significantly weaker relationships with organizational performance in Australia, Europe and North America (*z* =.04, CI = .00; .07; *z* =.06, CI = .05; .08; *z* = .08, CI =.07; .09, respectively). These two general groups are significantly different from one another, as the CIs within each group have a high degree of overlap, and the CIs between groups do not.

In Table 7 we provide a deeper look at the variance in the effect sizes that HRM practices have within each societal context category. Our analysis includes only regions with more than 30 effect sizes. In North America, profit sharing has the least effect (*z* = .02, CI = .00 : .04), while HPWPs and training have the strongest relationship with organizational performance (*z* = .12, CI = .10 : .14; *z* = .12, CI = .11 : .14, respectively). Nevertheless, these effects are not significantly stronger than those of development and training (*z* = .09, CI = .07 : .12; *z* = .09, CI = .07 : .10, respectively). In Europe, however, with the exception of profit sharing, HPWPs have a significantly stronger relationship with performance than other HRM practices (*z* = . 09, CI = .08 : .11). In Eastern Europe, development has the strongest relationship with performance (*z* = .36, CI = .26 : .45). Yet, this relationship is only significantly stronger than job security (*z* = .19, CI = .15 : .24). Finally, in Asia, HPWPs have a significantly stronger relationship with organizational performance than bundled HRM practices (*z* = .40, CI = .35 : .46).

Overall, the results reported in Table 7 indicate that all HRM practices have a significantly stronger relationship with organizational performance in Eastern Europe and Asia than in North America and Europe. In addition, the relationship with organizational performance in North America tends to be higher than in Europe. For example, development has a significantly stronger relationship with performance in Eastern Europe (*z* = .36, CI = .26 : .45) than in North America and Europe (*z* = .11, CI = .08 : .13; *z* = .04, CI = .01 : .06, respectively). Surprisingly, despite the fact that profit sharing is practiced more often in North America, the relationship between profit sharing and performance is stronger in Eastern European than North American firms (*z* = .29, CI = .21 : .38; *z* = .02, CI = .00 : .04, respectively). Furthermore, with the exception of training, which has a significantly stronger relationship with organizational performance in North America than in Europe (*z* = .12, CI = .11 : .14; *z* = .06, CI = .04 : .07; respectively), no significant differences emerge among the other practices.

---Insert Table 7 about here----

**Moderating Analysis For Empirical Contingencies**

Our review of the literature reveals that researchers use different organizational performance measures, as well as different sources of people to report the data.

***Organizational performance*.** As Table 8 demonstrates, the results are mixed and contingent upon the performance measure that is used. Consistent with Tharenou et al. (2007), we find that all HRM practices have a significantly stronger positive relationship when subjective rather than objective performance measures are employed. HRM practices also demonstrate a significantly stronger relationship with *subjective operational* performance measures than *subjective financial measures*. However, the relationship between HRM practices and *objective operational* outcomes is only marginally stronger relative to their relationship with *objective financial* outcomes. Overall, the types of measures explain 13% of the variance in the relationship.

Surprisingly, examining the specific relationships between HRM practices and *objective financial* performance shows that profit sharing has a significant negative effect (*z* = -.03, CI = -.05 : -.00). These findings go counter to existing conventions and practice. Job security and training are reported to have the highest positive relationship relative to other practices (*z* = .11, CI = .09: .13; *z* = .09, CI = .08 : .11; respectively). These differences account for 30% of the variance. Profit sharing and voice have the strongest relationships with *objective operational* outcomes (*z* = .13, CI = .11: .16; *z* = .13, CI = .10 : .16), while HPWPs and job security have the weakest, yet positive, relationship (*z* = .06, CI = .04: .08; *z* = .05, CI = .08 : .12).

Job security and HPWPs also have the strongest significant positive relationships with *subjective financial* outcomes (*z* = .13, CI = .02: .16; *z* = .12, CI = .10 : .14), whereas development and training have the weakest significant positive effect (*z* = .01, CI = .08 : .13; *z* = .03, CI = .01 : .06). Comparing the variance in the effect sizes of HRM practices on subjective operational outcomes reveals that HPWPs have the strongest positive relationships with *subjection outcomes* relative to other practices (*z*  = .47, CI = .43 : .50), and voice has the weakest significant positive relation (*z* = .09, CI = .06 : .12). These differences account for almost 34% of the variance in the relationship between HRM practices and the firm’s performance.

---Insert Table 8 about here----

**Type of participants**. The extant research has typically targeted four types of respondents: upper managers, middle managers, HRM managers, and employees. To date, no study has examined differences among these sources when evaluating the relationship between HRM practices and organizational performance. As Table 9 demonstrates, such an analysis is warranted as *Qb* is significant. Data source accounts for 11% of the variance in our results. Upper managers and HRM managers believe that there is a significantly stronger relationship between HRM practices and organizational performance (*z* = .14, CI = .13 : .16; *z* = .12, CI = .11 : .14, respectively) than do either middle level managers or employees (*z* = .05, CI = .04 : .06; *z* = .07, CI = .06 : .08).

*Executives* rate HPWPs, job security and development as having the strongest relationship with organizational performance (*z* = .25, .24, .22, respectively), relative to other HRM practices. Interestingly, they regard profit sharing as having little significant association with the firm’s performance. *HRM managers*, on the other hand, think profit sharing has the strongest impact on performance (*z* = .34), relative to all other HRM practices. These differences are significant. Among *middle managers*, job security is also perceived as having the strongest relationships with performance (*z* = .14). Interestingly, development practices are perceived to be insignificant in affecting performance (*z* = .03, CI = -.00 : .06). Finally, among *employees,* training is considered to have the strongest relationships with performance (*z* = .12), while profit sharing has the least impact (*z* = .01). Based on these results, clearly there are significant differences in opinions with regard to the practices that each category of participants highlights. Interestingly, both executives and employees view profit sharing as having the weakest associated with performance, whereas executives and middle managers rate job security as most critical to firm performance.

---- Insert Table 9 about here -----

**Discussion**

The existence of three major frameworks to explain the relationship between HRM practices and organizational performance, and the conflicting evidence supporting each set of arguments creates a complex puzzle for researchers and practitioners alike. In an attempt to resolve the conflicting findings and advance knowledge about the relationship between HRM practices and organizational performance taking into account the specific and universal contexts (Johns, 2006; Tzafrir, 2005), we conducted a meta-analysis to replicate, integrate and extend prior work. In Table 10 we provide a short summary comparing the results of prior research with those in this study. Overall, the results provide a more nuanced view of the conclusions drawn in previous research.

First, following Combs et al.’s (2006) investigation, we compare the relationships between HPWPs with individual practices and HRM bundles. Contrary to their conclusion that HPWPs have a stronger relationship with performance than individual practices, we find that HPWPs have a stronger relationship than profit sharing and voice but not than development and job security. Furthermore, extending prior work, we examine the relative relations of HPWPs in different work environments. Compared to other HRM practices HPWPs have significantly stronger relationships with performance in the service industry (Table 5), in Asian countries (Table 7), and when the measure of performance is subjective operational activities (Table 8). In any other context or measure, HPWPs do not have a significantly stronger relationship than individual or bundled HRM practices. Whether HPWPS have a strong relationship with performance depends on the source of data. Executives report that HPWPS do have a significant relationship with performance. Since top executives are responsible for setting organizational strategy (Habrick & Mason, 1984), it is not surprising that this group values the planning and coordination involved in HPWPS. Based on these nuanced comparisons and in line with the contextual theory (Johns, 2006), we conclude that the relationship of HRM practices and HPWPs are very sensitive to the research context and the measures used.

Second, consistent Tharenou et al. (2007), we found that training has significant positive relationships with organizational performance. A deeper examination suggests that training has a positive relationship with performance across industry sectors (with the exception of the high-tech industry), firm size, societal contexts, performance measurements and participants, supporting the universalistic perspective (Harel & Tzafrir, 1999). Training emerges as particularly important in large and medium size firms and in Eastern Europe, and is particularly valued by employees relative to other participants. Nevertheless, the effect size of training on objective performance is small. Similarly, many of the measures of other HRM practices and HPWPs demonstrate consistent and significant relationships with performance across contexts. This finding provides additional support for the universalistic perspective (Delery & Doty, 1996; Pfeffer, 1994, 1998). As such, our results offer scholars and managers alike a better understanding of when some practices have stronger relationships than others. For instance, development bundles have a stronger relationship in low-tech sectors than in the service industry. Profit sharing has a strong positive relationship in large and medium size firms, but correlates negatively with objective and financial measures, and positively with objective operational measures.

Third, in support of the contingency perspective, our results show that contextual and empirical design factors explain a significant amount of variance in the findings. Nevertheless, our results contradict those of Combs et al. (2006) and Subramony (2009) that the relationships between HRM practices and outcomes are stronger in low-tech companies (manufacturing) than in the service sector. Specifically, our results indicate that there is no significant difference between the sectors with regard to the relations of HRM practices. Extending prior research’s examination of the relationships with other contextual factors, our results indicate that the relations of HRM practices are the strongest among large companies relative to medium size and small firms. In large firms voice and job security have the greatest relationships, while in medium size companies, profit sharing and training have the strongest relationships on performance. Furthermore, our results reveal there are significant differences in the relationships of HRM practices across cultures, with the relations being strongest in Asia, Eastern Europe and the Middle East. Interestingly, the effect sizes of profit sharing and voice correlate weakly with performance among North American firms relative to Eastern European firms.

The fact that the relationship between HRM practices and performance is strongest among large companies may be due to the "cafeteria effect" in which large organizations create and offer a large "menu" of HRM practices to their employees. For example, large organizations invest more in development experiences for their employees, which likely helps them improve their company’s performance. This effect, combined with less formal HRM practices, may explain the negative relationship between ILM and organizational performance in small organizations. For instance, less formal employee appraisals could have a negative effect on their perceptions about the company’s justice (Colquitt et al., 2001; Sitkin & George, 2005), which in turn might reduce their performance.

The mixed findings with regard to ILM are also interesting. ILM is negatively related to organizational performance in small firms but positively related to performance in large firms. The justice theory (Lind & Tyler, 1988) provides one explanation for this discrepancy. In small firms, more than in large firms, informal procedures shape the decisions about promotions. This informality violates Leventhal's (1980) rules for procedural justice. For example, in small, family-owned companies promoting from within might reflect nepotism rather than the selection of the best person for the job. In large organizations, ILM may reflect commitment to employees, recognition of service, and internal knowledge. In addition, psychologically, the inherent lack of choices about possible positions in a small firm might impede the employees’ motivation and increase their perceptions of injustice. In contrast, in large firms employees have more possibilities for mobility horizontally and vertically, thus increasing their perceptions of justice.

Finally, in support of Tharenou et al.’s (2007) findings, the overall relationship with objective outcomes is weaker than on perceptual outcomes. Contrary to Combs et al. (2006) we find significant differences between operational and financial outcomes. Our analysis also points to differences between objective financial and operational outcomes. Specifically, the relationships between HRM practices and outcomes are significantly stronger on objective operational outcomes than objective financial outcomes.

Arguably, the most intriguing finding in the present study is the negative relationship between profit sharing and objective financial performance compared to the strong positive relationship it has with operational performance. There are at least two explanations for these results. First, financial performance is affected by contaminating factors that do not influence operational performance (e.g., fluctuations in monetary currency). Second, the results might be attributed to the small number of studies (*n* = 8) examining the relationship between profit sharing and financial performance. Sample size is a particular concern when interpreting the results, because the negative effect is small (*r* = -.03) and the CI’s higher bound is zero (CI = -.05 : -.0).

Furthermore, the relationships between HRM practices and outcomes have a stronger positive magnitude on subjective operational outcomes than subjective financial outcomes. Interestingly, executives and HRM managers think there is a stronger relationship between HRM practices and performance than the employees do. Nevertheless, there is significant variance between executives and HRM managers in their perceptions about the relationship between these two factors. Whereas executives believe profit sharing has the least effect and HPWPs and development the strongest effects, HRM managers attribute the strongest effect to profit sharing. Employees value job training very highly, whereas middle managers value job security the most. Contrary to Subramony (2009), we find that multiple sources rather than single sources attribute a stronger effect to HRM practices.

Given that the relations of HRM practices remain positive and significant across situations, practitioners should not ignore the universalistic theory. Based on these findings, we believe that the universalistic and contingency theories are more complementary than conflicting in nature. The contextual theory (Johns, 2006) suggests that a proper analysis of organizational behavior should be conducted within the context it operates, in order to avoid biased or skewed findings, and – along these very lines - we argue that analyzing the evolution paths between HRM practices and organizational performance should be conducted while considering the context in which they were incepted and they operate, rather than looking at this relationship as a monolithic category. We found that context matters but does not change the direction of the relationship between HRM practices and performance. Our results provide the least support for the configurational perspective.

**Limitations**

Despite the comprehensive nature of our meta-analysis, both analytically and theoretically, caution is still required when interpreting these results. In many cases, examining the moderating effect of organizational and environmental factors results in a small number of correlations for each HRM practice, increasing the likelihood of a second order sampling error as well as a reduction in statistical power. Furthermore, our meta-analytic design does not allow us to fully test the theories presented above, because we are limited to the information provided in the data. Moreover, most studies investigating the relationship between HPWPS and performance use the existence of HPWPS as a proxy for its intended roles: coordination and the alignment of HRM practices. Hence, future research should rely on direct measures of coordination and alignment to fully test the configurational perspective. Consistency is also required in the construction of organizational performance measures (Baruch & Ramalho, 2006).

**Recommended Future Research**

Our review of the literature reveals significant weaknesses in the reporting of effect sizes and sample characteristics including industry, firm size, source of data, and the need to use objective as well as subjective measures of performance. Furthermore, most studies use a cross sectional design, limiting the ability to infer causality. Future research should involve a longitudinal design. Given that contextual variables explain the most variance, we recommend developing theoretical models that recognize the importance of contextual factors. Such tools will allow us to create more accurate models and deepen our understanding of the findings (Rousseau & Fried, 2001). The present study will hopefully stimulate further exploration of the interaction between the context and HRM practices with regard to organizational performance. Research is also needed on the quality with which HRM is practiced in order to identify variations in this area and test its relationship with organizational performance (Paauwe & Boselie, 2005). We further suggest investigating factors such as work attitudes that might mediate the relationship (see Gong, Law, Chang & Xin, 2009 for an example). Likewise, we need research on a variety of industries with multiple respondents for a 360° view of HRM.

**Conclusions**

Consistent with the universalistic perspective, our findings demonstrate that, with the exception of ILM, all HRM practices have a positive and significant relationship with organizational performance across contexts. We also find some mixed support for configurational arguments. Specifically, while HPWPS have a significantly stronger relationship with organizational performance than some individual HRM practices (such as training, profit sharing and voice), they do not correlate with performance more than other practices (such as training and development, staffing or job security practices).

Our findings also show that all of the contingency variables provide significant explanations of the variance in the results, providing strong support for the contingency theory. Specifically, the relationship between HRM practices and performance differs significantly depending on the size of the organization. In addition, HRM practices have the strongest relationship with organizational performance in Asia, Eastern Europe and the Middle East. Finally, the relationship between HRM practices and performance are the strongest in low-technology firms where employees are less self-sufficient. All of the HRM practices have a significantly stronger positive relationship with performance when subjective rather than objective performance measures are used. In terms of methodology, data sources account for 11% of the variance in the relationship. Upper managers and HRM managers contend that there is a significantly stronger relationship between HRM and organizational performance than either middle level managers or employees.

**References**

Akhtar, S. Ding, D. Z. Ge, G. L. (2008). Strategic HRM practices and their impact on company performance in Chinese enterprises. *Human Resource Management,* *47*, 15-32.

Baruch, Y. & Ramalho, N. (2006). Communalities and distinctions in the measurement of organizational performance and effectiveness across for-profit and nonprofit sectors. *Nonprofit & Voluntary Sector Quarterly*, *35*, 39-65.

Begg, C. B., & Berlin, J. A. (1988). Publication bias: A problem in interpreting medical data. *Journal of the Royal Statistical Society*, Series A, *151*, 419-463.

Colquitt, J. A. Conlon, D. E. Wesson, M. J. Porter, C. & Ng, K. Y. (2001). Justice at the Millennium: A Meta-Analysis review of 25 years of Organizational Justice Research,*Journal of Applied Psychology*, *86*, 425-444.

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*, 501-528.

Delery, J. E. & Doty, D. H. (1996). Modes of theorizing in strategic human resource management: Tests of universalistic, contingency, and configurational perspectives. *Academy of Management Journal, 39*, 802-805.

Gerhart, B. & Milkovich, G. T.(1990). Organizational Differences in Managerial Compensation and Financial Performance, *Academy of Management Journal*, *33*, 663-691.

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

Harel, G. & Tzafrir, S. S. (1999). The effect of human resource management practices on the perceptions of organizational and market performance of the firm. *Human Resource Management,**38*, 185-199.

Hedges, L. V. & Olkin, I. (1985). *Statistical methods for meta-analysis*. New York: Academic Press.

Hunter, J. E. & Schmidt, F. L. (1990). Methods of meta-analysis: Correcting error and bias in research findings. Newbury Park, CA: Sage.

Jackson, S. E., Schuler, R. S., & Jiang, K. (2014). An Aspirational Framework for Strategic Human Resource Management. *The Academy of Management Annals*, *8*, 1-56.

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*, 1264-1294.‏

Johns, G. (2006). The essential impact of context on Organizational behavior. *Academy of Management Journal, 31,* 396-408.

Kirppendorff, K. (2004). *Content analysis: An introduction to its methodology*, 2nd Ed. Beverley Hills: Sage.

Lepine, J. A., Piccolo, R. F., Jackson, C. L., Mathieu, J. E., & Saul, J. R. (2008). A meta-analysis of teamwork processes: Tests of a multidimensional model and relationships with team effectiveness criteria. *Personnel Psychology, 61*, 273-307.

Leventhal, G. S., (1980). What should be done with equity theory? New approaches to the study of fairness in social relationships. In K. Gergen, M. Greenberg & R. Willis (Eds.). *Social exchange: Advances in theory and research* (pp. 27-55). New York: Plenum.

Lind, E. A. & Tyler, T. R., (1988). The Social Psychology of Procedural Justice. New York: Plenum.

Magnan, M. & St-Onge, S. (2005). The impact of profit sharing on the performance of financial services firms. *The Journal of Management Studies,* *42*, 761-791.

[Paauwe, J. & Boselie, P. (2005). 'Best practices … in spite of performance': just a matter of imitation? *International Journal of Human Resource Management*, *16*, 987-1003.](http://www.informaworld.com/smpp/title~content=t713702518~db=all~tab=issueslist~branches=16#v16)

Pfeffer, J. (1994). *Competitive advantage through people:* *Unleashing the power of the work force.* Boston: Harvard Business School Press.

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

Quinones, M. A., Ford, J. K., & Teachout, M. S. (1995). The relationship between work experience and job performance: A conceptual and meta-analytic review. *Personnel Psychology,* *48*, 887-910.

Rosenthal, R. (1979). The "file- drawer problem" and tolerance for null results. *Psychological Bulletin*, *86*, 638-641.

Rosenthal, R. (1995). Writing meta-analytic reviews. *Psychological Bulletin*, *118*, 183-192.

Scandura, T. A. & Williams, E. A. (2000). **Research Methodology in Management: Current Practices, Trends, and Implications for Future Research**. Academy of Management Journal**,** *43*, 1248-1264.

Schmidt, F. L., Hunter, J. L., Pearlman, K., & Hirsh, H., R. (1985). Forty questions about validity generalization and meta-analysis. *Personnel Psychology*, *38*, 697-798.

Sitkin, S. B. & George, E. (2005). Managerial trust – building trough the use of legitimating formal and informal control mechanism, *International Sociology***,** *20*, 307-338.

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

Tharenou, P., Saks, A. M., & Moore, C. 2007. A review and critique of research on training and organizational-level outcomes. *Human Resource Management Review*, *17*, 251-273.

Tzafrir, S. S. (2005). The relationship between trust, HRM practices and firm performance. *The International Journal of Human Resource Management*,16(9), 1600-1622.

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

**Table 1: Review of prior meta-analyses**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | **Combs et al., 2006** | **Tharenou et al., 2007** | **Subramony, 2009b** | **Jiang et al., 2012** |
| **HRM practices** | *Individual practices*: Incentives, compensation, training, compensation level, participation, selectivity, internal promotion, HR planning, flexible work, performance appraisal, grievance procedures, teams, information sharing, and employment security.  *HPWP*. Range between 2-13 practices. | *Training*: Combination of studies measuring amount of training, percentage of workers trained, type of training and perceived importance of training. | Practices were divided into three categories:  *Empowerment* (e.g., teams, voice, autonomy)  *Motivation* (e.g., compensation, benefits, and performance appraisal)  *Skill enhancing* (staffing and training) | *Skill enhancing*: Recruitment, selection, and training  *Motivation enhancing*: Performance appraisal, compensation, incentives, benefits, promotion, career development and job security.  *Opportunity enhancing*: Job design, work teams, employee involvement, formal grievance and compliant process and information sharing. |
| **Outcome measures** | *Operational performance:* Productivity and retention  *Financial performance:* Accounting returns, growth, market returns, and multidimensional measures. | *HRM outcomes*: Absenteeism, turnover, motivation, job performance, skills acquisition, employee attitudes.  *Organizational performance*: Productivity, quality of service, customer satisfaction  *Financial performance*: Profit, return on investment, stock value | *Turnover;*  *Operating performance*: Productivity, sales, quality and customer loyalty  *Financial performance*: Profit, return on assets and Tobin’s q  *Overall performance* | *Human capital*: Org.’s human capital and education level.  *Motivation outcomes*: Job satisfaction, commitment, climate of perceived support and citizenship.  *Voluntary turnover*  *Operational performance*: Productivity, quality of service, innovation and overall performance  *Financial outcomes*: Return on assets, return on equity, market returns, sale growth, and overall financial performance. |
| **Contextual moderators** | Manufacturing/service | Objective/subjective measures | Manufacturing/service;  Same source/different source |  |
| **Analytical technique** | Mean of sample size weighted correlation | Qualitative and quantitative analysis. Mean samples and weighted by sample size. | Sample weighted and measurement error correction. | SEM |
| **Results** | 1. Overall correlation estimate at .20. 2. The relationship is stronger when researchers examine systems of HPWPs (.28) relative to individual measures (.14). 3. No difference between operation and financial performance 4. The relationship is stronger among manufacturers (.30) relative to the service industry (.17).   **Additional results**:   1. HR planning has the strongest positive relation (.21) but is not significantly different from others. Flextime has the least relation (.11). 2. Performance appraisal, teams and info sharing have no significant relations with performance. 3. HPWPs have the strongest relation (.24) on multidimensional measures relative to other measures, and the least relation on market return (.14). Those relations are not significantly different. | 1. The overall effect size on training on HRM, performance and financial outcomes are .20, .21, .15, respectivelya.  2. Objective outcomes are lower than perceptual outcomesa.  3. Training weakly related to objective financial outcomesa.  4. In support of the contingency perspective, qualitative analysis suggests that training is more strongly related to organizational outcomes when it is matched with key contextual factors such as intensity of organization capital and business strategy.  5. Training is related independently to organizational outcomes, supporting the universalistic perspective of strategic human resource management rather than the configurational perspective. | 1. Empowerment bundles are positively related to outcomes across all categories. The relations are not significantly different.  2. Motivational bundles are positively related to outcomes across all categories. The relations are stronger for retention and overall performance.  3. Skill enhancing bundles are positively related to outcomes across all categories except retention.  4. Bundle practices have a stronger relation than individual practices.  5. HPWSs’ relations are smaller than HRM bundles  6. The relations of HRM practices are significantly stronger in manufacturing than the service industry.  7. Relative to different rating sources, single source ratings are significantly higher. | 1. The relations of skill-enhancing HRM practices are significantly larger than the coefficient of motivation and opportunity enhancing HRM on human capital and employee motivation.  2. Skill enhancing HRM practices have a positive and significant relation with both financial and operational outcomes.  3. Motivation enhancing HRM practices have significant positive relations with financial outcomes.  4. Opportunity enhancing HRM has positive relations with operational outcomes.  5. Mediated by human capital, employee motivation, voluntary turnover, and operational outcomes, all three HRM dimensions are positively and significantly related to financial performance.  6. The three-dimensional model fit the data better than the uni-dimensional model (HPWPs). |
| **Theoretical implications** | Support for the contingency and configurational perspectives. | Finds partial support for both the contingency and universalistic perspective over the configurational perspective. | Finds support for both the configurational and contingency perspectives. | Supports the configurational perspective. |

a The analytical report does not allow us to determine the extent to which the relations are significantly different.

b Specific practices in each bundle are not specified.

**Table 2: The study’s plan for replication and extension of prior meta-analyses**

|  |  |  |
| --- | --- | --- |
|  | **Prior studies** | **This study’s replications and extensions** |
| ***Theory*** | Individual HRM practices vs. HPWPs (Combs et al., 2006; Jiang et al., 2012 )  Universalistic, contingency & configurational perspectives (Tharenou et al., 2007) | 1. Individual HRM practices vs. HPWPs 2. Universalistic, contingency & configurational perspectives |
| ***Contextual factors*** | Manufacturing/service (Combs et al., 2006; Subramony, 2009) | 1. Add high-tech industry and examine the differences between all three sectors. 2. Examine the differences in the relationships of various HRM practices have within and between *industry sectors.* 3. Examine the variance in effect sizes of HRM practices within and across different *firm sizes*. 4. Examine the variance in effect sizes of HRM practices within and across different *societal contexts*. |
| ***Empirical factors*** | Operation vs. financial outcomes (Combs et al., 2006)  Objective / subjective measures (Tharenou et al., 2007)  Same source/different source (Subramony, 2009) | 1. Differentiate between *objective and subjective* financial and operational outcomes. 2. Examine the variance in effect sizes of HRM practices within and between *outcome categories*. 3. Examine the variance in effect sizes across different *types of participants*: executives, HRM managers, managers, employees, and multiple sources. |

**Table 3: Estimating overall effect sizes**

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Variables** | ***N*** | ***K*** | ***z*** | **95% CI** | ***Ot*** | ***Ob*** | **Variance explained** | **Effect direction** |
| **HRM practices** | 117478 | 393 | .09 | (.08,.09) | 2136.4\* | 85.5\*\* | 4% | + |
| Industry sector | 117478 | 393 | .09 | (.08,.10) | 2164.42\*\* | 248.2\*\* | 11.46% | + |
| Firm size | 117478 | 393 | .09 | (.08,.10) | 2132.23\*\* | 176.7\*\* | 8.28% | + |
| Societal context | 117478 | 393 | .09 | (.08,.09) | 2171.53\*\* | 712.1\*\* | 32.79% | + |
| Performance outcome | 117478 | 393 | .09 | (.08,.09) | 2260.09\*\* | 293.66\*\* | 12.99% | + |
| Type of participants | 117478 | 393 | .09 | (.08,.09) | 2260.09\*\* | 205.82\*\* | 9.1% | + |

**Table 4: Differences in effect size across HRM practices**

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Variables** | ***N*** | ***K*** | ***z*** | **95% CI** | ***Ot*** | ***Ob*** | **Variance explained** | **Effect direction** |
| **HRM practices** | 117478 | 393 | .09 | (.08,.09) | 2136.4\* | 85.5\*\* | 4% | + |
| HPWPs | 20802 | 85 | .12 | (.10,.14) |  |  |  | + |
| Development | 11420 | 49 | .09 | (.07,.12) |  |  |  | + |
| Profit sharing | 18278 | 54 | .06 | (.04,.08) |  |  |  | + |
| Training | 28753 | 99 | .09 | (.07,.10) |  |  |  | + |
| ILM | 3615 | 10 | -.02 | (-.07,.04) |  |  |  | n.s. |
| Voice | 17179 | 70 | .10 | (.05,.09) |  |  |  | + |
| Job Security | 17431 | 22 | .09 | (.08,.12) |  |  |  | + |

HPWPs = high performance work practices; ILM = Internal labor market

**Table 5: Moderator analysis for the impact of industry sector**

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Variables** | ***N*** | ***K*** | ***z*** | **95% CI** | ***Ot*** | ***Ob*** | **Variance explained** | **Effect direction** |
| **Industry sector** | 117478 | 393 | .09 | (.08,.10) | 2164.42\*\* | 248.2\*\* | 11.47% | + |
| Low-tech | 16499 | 67 | .11 | (.08,.13) |  |  |  | + |
| Services | 43581 | 97 | .08 | (.07,.09) |  |  |  | + |
| High-tech | 534 | 18 | .04 | (-.09,.17) |  |  |  | n.s. |
| Various | 56272 | 207 | .07 | (.01,.01 |  |  |  | + |
| **Low-technology** | 16499 | 63 | .11 | (.09,.12) | 685.4\*\* | 24.0\*\* | 3.5% | + |
| HPWPs | 8754 | 19 | .12 | (.10,.12) |  |  |  | + |
| Development | 464 | 8 | .25 | (.15,.36) |  |  |  | + |
| Profit sharing | 2408 | 9 | .06 | (.01,.10) |  |  |  | + |
| Training | 1481 | 8 | .07 | (.01,.13) |  |  |  | + |
| ILM | - | - | - | - |  |  |  | n.a. |
| Voice | 1869 | 14 | .10 | (.05,.15) |  |  |  | + |
| Job Security | 1523 | 6 | .11 | (.04,.17) |  |  |  | + |
| **Service** | 42461 | 95 | .07 | (.03,.11) | 616.8\*\* | 182.9\*\* | 29.65% | + |
| HPWPs | 3019 | 24 | .24 | (.20,.27) |  |  |  | + |
| Development | 1061 | 4 | .04 | (-.06,.14) |  |  |  | n.s. |
| Profit sharing | 9048 | 8 | -.00 | (-.03,.02) |  |  |  | n.s. |
| Training | 9926 | 22 | .11 | (.09,.14) |  |  |  | + |
| ILM | 1380 | 6 | -.05 | (-.10,.00) |  |  |  | n.s. |
| Voice | 9047 | 26 | .07 | (.04,.09) |  |  |  | + |
| Job Security | 8980 | 6 | .07 | (.05,.10) |  |  |  | n.s. |
| **High-technology** | 534 | 17 | .04 | (-.05,.14) | 20.68 | 3.72 | 17.99% | n.s. |
| HPWPs | 76 | 2 | -.14 | (-.66,.38) |  |  |  | n.s. |
| Development | - | - | - | - |  |  |  | n.a. |
| Profit sharing | 76 | 2 | .09 | -(.43,.61) |  |  |  | n.s. |
| Training | 290 | 10 | .09 | (-.05,.23) |  |  |  | n.s. |
| ILM | - | - | - | - |  |  |  | n.a. |
| Voice | 92 | 4 | .01 | (-.35,.36) |  |  |  | n.s. |
| Job Security | - | - | - | - |  |  |  | n.a. |

HPWPs = high performance work practices; ILM = Internal labor market

**Table 6: Moderator analysis for the impact of firm size**

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Variables** | ***N*** | ***K*** | ***z*** | **95% CI** | ***Ot*** | ***Ob*** | **Variance explained** | **Effect direction** |
| **Firm size** | 117478 | 387 | .09 | (.08,.10) | 2132.23\* | 176.7\*\* | 8.29% | + |
| Small | 32020 | 93 | .08 | (.06,.09) |  |  |  | + |
| Medium | 12386 | 56 | .13 | (.11,.15) |  |  |  | + |
| Large | 7503 | 44 | .20 | (.16,.22) |  |  |  | + |
| Not available | 67316 | 195 | .08 | (.07,.09) |  |  |  | + |
| **Small firms** | 32020 | 92 | .08 | (.07,.09) | 756.6\*\* | 45.9\*\* | 6.06% | + |
| HPWPs | 10531 | 27 | .11 | (.09,.12) |  |  |  | + |
| Development | 2936 | 11 | .08 | (.05,.11) |  |  |  | + |
| Profit sharing | 6116 | 18 | .09 | (.07,.11) |  |  |  | + |
| Training | 4557 | 17 | .07 | (.04,.09) |  |  |  | + |
| ILM | 1840 | 4 | -.05 | (-.10,-.01) |  |  |  | - |
| Voice | 3033 | 9 | .06 | (.03,.09) |  |  |  | + |
| Job Security | 3007 | 7 | .08 | (.04,.11) |  |  |  | + |
| **Medium size firms** | 12386 | 57 | .13 | (.11,.15) | 294.8\*\* | 45.1\*\* | 15.30% | + |
| HPWPs | 2122 | 13 | .20 | (.15,.25) |  |  |  | + |
| Development | 3868 | 6 | .13 | (.08,.17) |  |  |  | + |
| Profit sharing | 1079 | 10 | .25 | (.18,.32) |  |  |  | + |
| Training | 296 | 5 | .25 | (.09,.42) |  |  |  | + |
| ILM | 152 | 4 | .19 | (-.86,.24) |  |  |  | n.s. |
| Voice | 1337 | 16 | .09 | (.04,.15) |  |  |  | + |
| Job Security | 3532 | 4 | .07 | (.02,.12) |  |  |  | + |
| **Large firms** | 7503 | 44 | .19 | (.16,.24) | 120.3\*\* | 37.7\*\* | 31.34% | + |
| HPWPs | 1234 | 5 | .14 | (.16,.22) |  |  |  | + |
| Development | 1190 | 11 | .18 | (.12,.25) |  |  |  | + |
| Profit sharing | 604 | 4 | .44 | (-.06,.93) |  |  |  | n.s. |
| Training | 1464 | 12 | .39 | (.30,.48) |  |  |  | + |
| ILM | 820 | 8 | .14 | (.08,.21) |  |  |  | + |
| Voice | 191 | 3 | .34 | (.02,.66) |  |  |  | + |
| Job Security | 20000 | 3 | .19 | (.11,.27) |  |  |  | + |

HPWPs = high performance work practices; ILM = Internal labor market

**Table 7: Moderator analysis for the impact of societal context**

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Variables** | ***N*** | ***K*** | ***z*** | **95% CI** | ***Ot*** | ***Ob*** | **Variance explained** | **Effect direction** |
| **Societal context** | 117478 | 393 | .09 | (.08,.09) | 2171.53\*\* | 712.1\*\* | 32.8% | + |
| Africa | 328 | 5 | .01 | (-.22,.25) |  |  |  | n.s. |
| Asia | 4153 | 37 | .25 | (.21,.29) |  |  |  | + |
| Australia | 6741 | 16 | .04 | (.00,.07) |  |  |  | + |
| Eastern Europe | 5303 | 27 | .24 | (.20,.28) |  |  |  | + |
| Europe | 39416 | 104 | .06 | (.05,.08) |  |  |  | + |
| Middle East | 760 | 14 | .27 | (.18,.37) |  |  |  | + |
| Multiple | 1041 | 18 | .23 | (.14,.32) |  |  |  | + |
| North America | 59736 | 168 | .08 | (.07,.39) |  |  |  |  |
| **North America** | 59736 | 168 | .08 | (.07,.08) | 562.2\*\* | 85.9\*\* | 15.28% | + |
| HPWPs | 6902 | 37 | .12 | (.10,.14) |  |  |  | + |
| Development | 5859 | 18 | .11 | (.08,.13) |  |  |  | + |
| Profit sharing | 10978 | 26 | .02 | (.00,.04) |  |  |  | + |
| Training | 11257 | 29 | .12 | (.11,.14) |  |  |  | + |
| ILM | 1623 | 4 | .01 | (-.05,.07) |  |  |  | n.s. |
| Voice | 12445 | 38 | .06 | (.04,.07) |  |  |  | + |
| Job Security | 10672 | 6 | .07 | (.05,.09) |  |  |  | + |
| **Europe** | 39416 | 104 | .06 | (.06,.07) | 697.1\*\* | 17.1\*\* | 2.45% | + |
| HPWPs | 12153 | 26 | .09 | (.08,.11) |  |  |  | + |
| Development | 4760 | 17 | .04 | (.01,.06) |  |  |  | + |
| Profit sharing | 3594 | 6 | .06 | (.03,.10) |  |  |  | + |
| Training | 15189 | 45 | .06 | (.04,.07) |  |  |  | + |
| ILM | - | - | - | - |  |  |  | n.a. |
| Voice | 2713 | 7 | .04 | (.00,.08) |  |  |  | + |
| Job Security | 1007 | 2 | .04 | (-.16,.24) |  |  |  | n.s. |
| **Eastern Europe** | 5303 | 27 | .24 | (.21,.26) | 48.9\*\* | 17.3\*\* | 35.38% | + |
| HPWPs | 303 | 3 | .29 | (.12,.46) |  |  |  | + |
| Development | 505 | 5 | .36 | (.26,.45) |  |  |  | + |
| Profit sharing | 606 | 6 | .29 | (.21,.38) |  |  |  | + |
| Training | 505 | 5 | .30 | (.20,.39) |  |  |  | + |
| ILM | - | - | - | - |  |  |  | n.a. |
| Voice | 404 | 4 | .21 | (.10,.33) |  |  |  | + |
| Job Security | 2980 | 4 | .19 | (.15,.24) |  |  |  | + |
| **Asia** | 4153 | 37 | .25 | (.22,.28) | 346.3\*\* | 70.6\*\* | 20.39% | + |
| HPWPs | 1300 | 7 | .40 | (.35,.46) |  |  |  | + |
| Development | - | - | - | - |  |  |  | n.a. |
| Profit sharing | 812 | 7 | .23 | (.16,.30) |  |  |  | + |
| Training | 296 | 7 | .05 | (-.07,.17) |  |  |  | n.s. |
| ILM | - | - | - | - |  |  |  | n.a. |
| Voice | 813 | 10 | .06 | (-.01,.12) |  |  |  | n.s. |
| Job Security | 932 | 6 | .27 | (.21,.34) |  |  |  | + |

HPWPs = high performance work practices; ILM = Internal labor market

**Table 8: Moderator analysis for the impact of performance measures**

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Variables** | ***N*** | ***K*** | ***z*** | **95% CI** | ***Ot*** | | ***Ob*** | **Variance explained** | **Effect direction** |
| **Overall** | 117478 | 393 | .09 | (.08,.09) | | 2260.09\* | 293.66\* | 12.99% | + |
| Objective financial | 53861 | 93 | .06 | (.05,.07) | |  |  |  | + |
| Objective operational | 28873 | 134 | .08 | (.07,.09) | |  |  |  | + |
| Subjective financial | 26467 | 83 | .10 | (.09,.11) | |  |  |  | + |
| Subjective operational | 8277 | 75 | .25 | (.23,.27) | |  |  |  | + |
| **Objective financial** | 53861 | 93 | .06 | (.05,.07) | | 394.6\*\* | 119.6\*\* | 30.31% | + |
| HPWPs | 4077 | 14 | .04 | (.01,.06) | |  |  |  | + |
| Development | 3376 | 10 | .03 | (.00,.06) | |  |  |  | + |
| Profit sharing | 8150 | 8 | -.03 | (-.05,-.00) | |  |  |  | - |
| Training | 18196 | 39 | .09 | (.08,.11) | |  |  |  | + |
| ILM | 660 | 2 | -.34 | (-.28,.21) | |  |  |  | n.s. |
| Voice | 9226 | 15 | .04 | (.02,.05) | |  |  |  | + |
| Job Security | 10176 | 6 | .11 | (.09,.13) | |  |  |  | + |
| **Objective operational** | 28873 | 134 | .08 | (.07,.08) | | 451.2\*\* | 61.7\*\* | 13.67% | + |
| HPWPs | 8209 | 29 | .06 | (.04,.08) | |  |  |  | + |
| Development | 2856 | 16 | .09 | (.05,.12) | |  |  |  | + |
| Profit sharing | 5011 | 17 | .13 | (.11,.16) | |  |  |  | + |
| Training | 4056 | 32 | .09 | (.06,.11) | |  |  |  | + |
| ILM | 1840 | 4 | -.05 | (-.11,.00) | |  |  |  | n.s. |
| Voice | 3218 | 31 | .13 | (.10,.16) | |  |  |  | + |
| Job Security | 3773 | 6 | .05 | (.08,.12) | |  |  |  | + |
| **Subjective financial** | 29783 | 83 | .10 | (.08,.11) | | 279.7\*\* | 31.2\*\* | 11.15% | + |
| HPWPS | 6555 | 19 | .12 | (.10,.14) | |  |  |  | + |
| Development | 4183 | 13 | .01 | (.08,.13) | |  |  |  | + |
| Profit sharing | 3845 | 19 | .10 | (.07,.14) | |  |  |  | + |
| Training | 5330 | 19 | .03 | (.01,.06) | |  |  |  | + |
| ILM | - | - | - | - | |  |  |  | n.a. |
| Voice | 3316 | 7 | .06 | (.01,.11) | |  |  |  | + |
| Job Security | 3238 | 7 | .13 | (.02,.16) | |  |  |  | + |
| **Subjective operational** | 8277 | 75 | .20 | (.19,.21) | | 815.5\*\* | 275.8\*\* | 33.82% | + |
| HPWPs | 1961 | 20 | .47 | (.43,.50) | |  |  |  | + |
| Development | 1005 | 9 | .29 | (.23,.35) | |  |  |  | + |
| Profit sharing | 1272 | 14 | .16 | (.12,.19) | |  |  |  | + |
| Training | 1171 | 9 | .21 | (.16,.26) | |  |  |  | + |
| ILM | 666 | 4 | .06 | (-.01,.13) | |  |  |  | n.s. |
| Voice | 1958 | 17 | .09 | (.06,.12) | |  |  |  | + |
| Job Security | 244 | 3 | .38 | (.19,.57) | |  |  |  | + |

HPWPs = high performance work practices; ILM = Internal labor market

**Table 9: Moderator analysis for the moderating impact of type of participants**

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Variables** | ***N*** | ***K*** | ***z*** | **95% CI** | ***Ot*** | ***Ob*** | **Variance explained** | **Effect direction** |
| **Overall** | 117478 | 393 | .09 | (.08,.09) | 2260.09\*\* | 205.82\* | 9.11% | + |
| Executives | 12311 | 106 | .14 | (.13,.16) |  |  |  | + |
| HRM Managers | 19439 | 109 | .12 | (.11,.14) |  |  |  | + |
| Managers | 40856 | 103 | .05 | (.04,.06) |  |  |  | + |
| Employees | 41819 | 46 | .07 | (.06,.08) |  |  |  | + |
| Multiple | 979 | 12 | .30 | (.22,.37) |  |  |  | + |
| Not Available | 2706 | 12 | .18 | (.14,.22) |  |  |  | + |
| **Executives** | 12311 | 106 | .14 | (.13,.16) | 615.20\*\* | 96.13\*\* | 15.63% | + |
| HPWPs | 3919 | 29 | .25 | (.21,.28) |  |  |  | + |
| Development | 1048 | 7 | .22 | (.13,.30) |  |  |  | + |
| Profit sharing | 2523 | 12 | .03 | (-.01,.08) |  |  |  | n.s. |
| Training | 999 | 18 | .12 | (.05,.19) |  |  |  | + |
| ILM | - | - | - | - |  |  |  | n.a. |
| Voice | 3306 | 37 | .08 | (.04,.11) |  |  |  | + |
| Job Security | 516 | 4 | .24 | (.10,.38) |  |  |  | + |
| **HRM Managers** | 19439 | 109 | .13 | (.11,.14) | 340.31\*\* | 72.71\*\* | 21.37% | + |
| HPWPs | 4301 | 29 | .11 | (.08,.15) |  |  |  | + |
| Development | 5394 | 20 | .11 | (.08,.14) |  |  |  | + |
| Profit sharing | 1306 | 21 | .34 | (.28,.40) |  |  |  | + |
| Training | 3152 | 21 | .13 | (.10,.17) |  |  |  | + |
| ILM | 812 | 4 | .01 | (-.11,.12) |  |  |  | n.s. |
| Voice | 1368 | 10 | .14 | (.07,.20) |  |  |  | + |
| Job Security | 3106 | 5 | .10 | (.05,.15) |  |  |  | + |
| **Managers** | 40856 | 103 | .06 | (.05 ,.07) | 337.79\*\* | 32.58\*\* | 9.65% | + |
| HPWPs | 10656 | 25 | .04 | (.02,.06) |  |  |  | + |
| Development | 4630 | 14 | .03 | (-.00,.06) |  |  |  | n.s. |
| Profit sharing | 3632 | 7 | .06 | (.02,.10) |  |  |  | + |
| Training | 15227 | 46 | .05 | (.04,.07) |  |  |  | + |
| ILM | - | - | - | - |  |  |  | n.a. |
| Voice | 2968 | 8 | .05 | (.01,.09) |  |  |  | + |
| Job Security | 3743 | 4 | .14 | (.07,.21) |  |  |  | + |
| **Employees** | 40679 | 46 | .06 | (.05,.07) | 308.29\*\* | 79.22\*\* | 25.70% | + |
| HPWPs | - | - | - | - |  |  |  | + |
| Development | 134 | 5 | .07 | (-.32,.45) |  |  |  | n.s. |
| Profit sharing | 9943 | 8 | .01 | (.01,.04) |  |  |  | + |
| Training | 9023 | 6 | .12 | (.09,.15) |  |  |  | + |
| ILM | 2803 | 6 | -.02 | (-.07,.03) |  |  |  | n.s. |
| Voice | 9338 | 10 | .05 | (.03,.08) |  |  |  | + |
| Job Security | 9438 | 9 | .09 | (.06,.11) |  |  |  | + |

HPWPs = high performance work practices; ILM = Internal labor market

**Table 10: Comparison of prior results and current findings**

|  |  |  |
| --- | --- | --- |
|  | **Prior studies’ results and conclusions** | **Current study’s results and conclusions** |
| ***Theory*** | 1. HPWPs have a stronger relations with performance than individual practices (Combs et al., 2006) 2. HRM bundles have stronger relations than HPWPs (Subramony, 2009) 3. Three separate HRM bundles provide a stronger fit relative to when examined as one construct (Jiang et al., 2012) 4. Training has strong positive relations with performance (Tharenou et al., 2007) 5. Found support for the contingency perspective, suggesting that training is more strongly related to organizational outcomes when it is matched with key contextual factors (Tharenou et al., 2007) 6. Training is related independently to organizational outcomes, supporting the universalistic perspective rather than the configurational perspective (Tharenou et al., 2007) | 1. HPWPs are stronger than some HRM bundles (profit sharing and voice) but not others (development and job security), which is different than the findings reported in prior research 2. Supporting Tharenou et al.’s (2007) findings we find a significant positive relations between training and overall performance 3. The magnitude of the variance explained by our contingency factors provides strong support for the contingency perspective. 4. Several HRM practices are consistently significant across various contextual and empirical moderators, providing strong support for the universalistic perspective |
| ***Contextual factors*** | 1. Relationship is stronger in manufacturing than the service industry (Combs et al., 2006; Subramony, 2009) | 1. While the relations of HRM practices are stronger in low-tech contexts, those relations are not significantly different than in the service industry, contradicting prior research findings. 2. There is significant variance in the relationships each HRM practice has with performance across industry sectors. For instance, development has the strongest relations in low technology industries while HPWPs have the strongest relations in the service industry. 3. The relations of HRM practices are the strongest in large firms relative to medium size and small firms. In large firms voice and job security have the greatest relations. Profit sharing and training have the strongest relations in medium size firms. 4. There are significant differences in the relations of HRM practices across societal contexts, with the relations being strongest in Asia, Eastern Europe and the Middle East. |
| ***Empirical factors*** | 1. No differences between operation and financial outcomes (Combs et al., 2006). 2. Objective outcomes are lower than perceptual outcomes (Tharenou et al., 2007). 3. Single source ratings are significantly higher than multiple source assessments (Subramony, 2009) | 1. The relationship of subjective operational outcomes is significantly higher than every other outcome category. 2. Job security has the strongest relationship with objective financial outcomes, while profit sharing and voice have the strongest relations with objective operational outcomes. HPWPs have the highest correlation with subjective operational outcomes. 3. The correlations between HRM practices and outcomes are significantly stronger when executives and HRM managers are the respondents. There are significant differences in the practices each participant group deems most important for the firm’s performance. |

1. It is important to note, however, that there are some critical differences between the HR practices included in the Subramony (2009) bundles and those examined in Jiang et al. (2012). For instance, whereas Subramony includes staffing and training in the skill-enhancing bundle, Jiang et al. add selection as part of this bundle. [↑](#footnote-ref-1)
2. A table of all of the included studies is available upon request. [↑](#footnote-ref-2)