

HOW DOES HUMAN RESOURCE MANAGEMENT INFLUENCE ORGANIZATIONAL OUTCOMES? A META-ANALYTIC INVESTIGATION OF MEDIATING MECHANISMS

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Drawing on the ability-motivation-opportunity model, this meta-analysis examined the effects of three dimensions of HR systems—skills-enhancing, motivation-enhancing, and opportunity-enhancing—on proximal organizational outcomes (human capital and motivation) and distal organizational outcomes (voluntary turnover, operational outcomes, and financial outcomes). The results indicate that skill-enhancing practices were more positively related to human capital and less positively related to employee motivation than motivation-enhancing practices and opportunity-enhancing practices. Moreover, the three dimensions of HR systems were related to financial outcomes both directly and indirectly by influencing human capital and employee motivation as well as voluntary turnover and operational outcomes in sequence.

In the past two decades, researchers in strategic human resource management (HRM) have examined why and how organizations achieve their goals through the use of human resource (HR) practices. Although traditional HRM research has focused on the impact of individual HR practices, the strategic perspective on HRM research emphasizes bundles of HR practices, often referred to as high-performance work systems (HPWS), high-involvement work systems, and high-commitment work systems, in examinations of the effects of HRM on employee and organizational outcomes (Wright & McMahan, 1992). A burgeoning body of strategic HRM research has shown that the use of systems of HR practices intended to enhance employees' knowledge, skills, and abilities, motivation, and opportunity to contribute is associated with positive outcomes such as greater commitment (Gong, Law, Chang, & Xin, 2009), lower turnover (Batt,

2002), higher productivity and quality (MacDuffie, 1995), better service performance (Chuang & Liao, 2010), enhanced safety performance (Zacharatos, Barling, & Iverson, 2005), and better financial performance (Huselid, 1995).

Despite the robust evidence for the positive relationships between HRM and various organizational outcomes (Combs, Liu, Hall, & Ketchen, 2006), important issues remain regarding the mechanisms through which HRM is associated with different organizational outcomes. First, the theoretical logic underlying the mechanisms linking HRM and organizational outcomes remains fragmented (Huselid & Becker, 2011; Wright & Gardner, 2003). Specifically, some researchers have adopted a behavioral perspective to suggest that HR practices affect organizational outcomes by influencing employee role behaviors; if employees act in ways that are consistent with company goals, performance should improve. Other researchers have adopted more of a human capital and resource-based perspective, focusing on the potential contributions of employees' competencies—that is, their knowledge, skills, and abilities. Interestingly, although employees contribute through both their competencies and their actions, researchers have typically focused on one perspective to understand how HR

We thank the action editor for this article, Jason Shaw, and three anonymous reviewers, Patrick McKay, Rebecca Kehoe, and Mark Huselid for helpful comments and suggestions. We acknowledge financial support from the SHRM Foundation (Project No. 143). The interpretations, conclusions, and recommendations are those of the authors and do not necessarily represent those of the SHRM Foundation.

systems impact organizational outcomes (exceptions include Takeuchi, Lepak, Wang, and Takeuchi [2007]). Considering multiple perspectives simultaneously provides a broader and more complete picture of the relationship between HRM and organizational outcomes.

Second, although prior research has demonstrated the mechanism through which HRM relates to some organizational outcomes, it remains unclear as to how HRM relates to different organizational outcomes that range from very proximal (i.e., HR outcomes) to more distal (i.e., financial outcomes). This lack of integration is problematic given the different perspectives adopted in the literature, perspectives that might highlight the importance of different but potentially related outcomes. Exploring the possible paths between HRM and financial outcomes will likely provide a more integrative model of how HR systems operate to impact a multitude of related and important outcomes (e.g., Becker & Huselid, 1998; Delery & Shaw, 2001; Guest, 1997).

Third, it is assumed in existing research that the components of HR systems have identical impacts on outcomes. For example, when scholars adopt an additive approach to measure HR systems, each component of the system is treated as if it exerts an equal influence on the outcomes under investigation. Although this is a possible reflection of how HR systems operate, scholars have recently challenged this assumption and argued that different sets of HR practices may impact the same outcomes in a heterogeneous way (e.g., Batt & Colvin, 2011; Gardner, Wright, & Moynihan, 2011; Gong et al., 2009; Shaw, Dineen, Fang, & Vellella, 2009; Subramony, 2009). As these studies have suggested, it is important to explore the differential effects of the different components of HR systems.

Given these issues, the primary objective of this study is to develop an integrative model of the mechanisms mediating between HRM and organizational outcomes through a meta-analytic approach. Drawing on the behavioral perspective on HRM, human capital theory, and the resource-based view of the firm, we aim to extend and refine existing HRM-organizational outcomes models by exploring multiple mediating paths and differentiating among the effects of subdimensions of HR systems.

THEORETICAL BACKGROUND AND HYPOTHESES

Existing Theories and Research on Relationships between HRM and Organizational Outcomes

Understanding the relationship between HRM and organizational outcomes is one of the long-

standing goals of macro HRM research. Indeed, Becker and Huselid (1998) considered this relationship as one of the essential pursuits of strategic HRM research. This stream of research has several key components. First, organizational outcomes are viewed as multidimensional. Drawing on Dyer and Reeves's (1995) work, researchers in strategic HRM have categorized organizational outcomes into three primary groups related to HRM: HR outcomes, operational outcomes, and financial outcomes. *HR outcomes* refer to those most directly related to HRM in an organization, such as employee skills and abilities, employee attitudes and behaviors, and turnover. *Operational outcomes* are those related to the goals of an organizational operation, including productivity, product quality, quality of service, and innovation. *Financial outcomes* reflect the fulfillment of the economic goals of organizations. Typical financial outcomes include sales growth, return on invested capital, and return on assets. In this study, we use "organizational outcomes" to refer to all three categories of outcomes at the organizational level.

Second, strategic HRM research suggests that different types of outcomes may not necessarily have equivalent relationships with HR practices (Becker & Huselid, 1998; Delery & Shaw, 2001; Guest, 1997; Lepak, Liao, Chung, & Harden, 2006; Ostroff & Bowen, 2000). Moreover, it is commonly asserted that HRM may influence the three types of organizational outcomes in sequence. For example, HR practices are expected to first influence HR outcomes (e.g., employee skills and motivation), which are proximal and the least likely to be contaminated by factors beyond HR practices. HR outcomes, in turn, may mediate the influence of HR practices on productivity, quality, service, safety, innovation, and other operational outcomes, which further affect financial outcomes.

Although existing HR research often implies that HR outcomes serve as a key mediator between HR systems and key outcomes, the specific natures of models of this mediation depend on the theoretical perspective researchers have adopted when examining this relationship. On the one hand, several researchers have adopted the behavioral perspective of HRM (Jackson, Schuler, & Rivero, 1989). According to this perspective, organizations do not perform themselves, but instead use HR practices to encourage productive behaviors from employees and thus to achieve desirable operational and financial objectives (Becker & Huselid, 1998). If an organization requires efficient employees, for example, its chosen HR practices and their effectiveness would likely differ from those of an organization that requires employees to be cooperative, to

focus on service, or to engage in some other critical role behavior. The effectiveness of HR practices is realized when employees act in ways that are needed for implementing strategies and achieving various business objectives.

On the other hand, some macro HRM researchers have focused less on the behaviors of employees and more on their competencies within organizations. Researchers taking on this perspective often invoke human capital theory and the resource-based view of the firm. Human capital theory emphasizes that human capital—the composition of employee skills, knowledge, and abilities—is a central driver of organizational performance when the return on investment in human capital exceeds labor costs (Becker, 1964; Lepak & Snell, 1999; Ployhart & Moliterno, 2011). The resource-based view provides additional insights as to why human capital can help firms to outpace competitors and proposes that organizations obtain a competitive advantage from resources that are rare, valuable, inimitable, and nonsubstitutable (Barney, 1991; Mahoney & Pandian, 1992). Researchers have argued that human capital, especially high-quality and/or organization-specific human capital, has the potential to serve as a source of competitive advantage (Wright, McMahan, & McWilliams, 1994). Organizations may use HR practices to create and maintain valuable human capital, including both generic and organization-specific human capital, which in turn drives high operational and financial performance (Becker & Huselid, 1998; Delery & Shaw, 2001; Ployhart & Moliterno, 2011; Snell & Dean, 1992).

Although the behavioral perspective of HRM, human capital theory, and the resource-based view of the firm let researchers adopt different angles to look at the relationships between HR practices and more distal outcomes, under all three perspectives HR outcomes are viewed as a critical path from HRM to operational and financial outcomes. Even with this agreement, however, researchers have not successfully combined multiple approaches to delineate an overarching picture of how this path unfolds. For example, most of the extant empirical research has examined the influence of HR systems on operational or financial performance either through motivation-related variables (e.g., Chuang & Liao, 2010; Collins & Smith, 2006; Gelade & Ivery, 2003; Gong et al., 2009; McClean & Collins, 2011; Sun, Aryee, & Law, 2007) or through human capital variables (e.g., Cabello-Medina, Lopez-Cabrales, & Valle-Cabrera, 2011; Yang & Lin, 2009; Youndt & Snell, 2004). Insights into each type of variable are important yet insufficient to fully capture the process linking HRM to outcomes. Thus, research is

needed to explore how HRM can help organizations achieve financial goals through multiple paths (Takeuchi et al., 2007).

Decomposing HR Systems into Three HR Dimensions

Scholars have recently argued that although employees are exposed to HR systems rather than individual practices, the parts of these systems are not necessarily equivalent in their impact. Most research has portrayed an HR system as an additive index of a set of individual HR practices (Combs et al., 2006); there are reasons to believe, however, that the highly varied set of HR practices can be categorized into several subdimensions. Indeed, dividing HR systems into subdimensions is not new in strategic HRM research. For example, drawing on an employee-organization relationship framework (Tsui, Pearce, Porter, & Tripoli, 1997), researchers have argued that HR practices may be categorized as falling into HRM inducement and investment practices, and HRM expectation-enhancing practices (e.g., Batt & Colvin, 2011; Gong et al., 2009; Shaw et al., 2009; Shaw, Delery, Jenkins, & Gupta, 1998; Shaw, Gupta, & Delery, 2005). The first two types are designed to improve employees' expected outcomes, whereas the third type reflects organizations' expectations about employees' contributions.

Taking a different approach, some researchers have drawn upon the ability-motivation-opportunity (AMO) model of HRM and suggested that employee performance is a function of three essential components: ability, motivation, and opportunity to perform. Extending this logic, HR systems designed to maximize employee performance can be viewed as a composition of three dimensions intended to enhance employee skills, motivation, and opportunity to contribute, respectively (Appelbaum, Bailey, Berg, & Kalleberg, 2000; Bailey, 1993; Boxall & Purcell, 2008; Delery & Shaw, 2001; Gerhart, 2007; Katz, Kochan, & Weber, 1985; Lepak et al., 2006). Recently, several empirical studies have adopted and validated this conceptual framework (e.g., Bailey, Berg, & Sandy, 2001; Batt, 2002; Gardner et al., 2011; Huselid, 1995; Kehoe & Wright, in press; Liao, Toya, Lepak, & Hong, 2009; MacDuffie, 1995; Subramony, 2009).

In keeping with these studies, Lepak and colleagues (2006) suggested that it might be fruitful to conceptualize HR practices as falling into one of three primary dimensions: skill-enhancing HR practices, motivation-enhancing HR practices, and opportunity-enhancing HR practices. *Skill-enhancing HR practices* are designed to ensure ap-

appropriately skilled employees; they include comprehensive recruitment, rigorous selection, and extensive training. *Motivation-enhancing HR practices* are implemented to enhance employee motivation. Typical ones include developmental performance management, competitive compensation, incentives and rewards, extensive benefits, promotion and career development, and job security. *Opportunity-enhancing HR practices* are designed to empower employees to use their skills and motivation to achieve organizational objectives. Practices such as flexible job design, work teams, employee involvement, and information sharing are generally used to offer these opportunities. The use of the three dimensions of HR systems instead of a unidimensional or two-dimensional framework is based on an examination of differential effects of the three dimensions of HR systems on different types of HR outcomes.

Linking HR Dimensions to Multiple Outcomes

According to the ability-motivation-opportunity model of HRM, HR outcomes can conceptually be divided into human capital, motivation, and opportunity to contribute (Becker & Huselid, 1998; Delery & Shaw, 2001; Guest, 1997), and human capital and employee motivation are two of the most critical mediating factors that have been examined in the literature (e.g., Gardner et al., 2011; Gong et al., 2009; Liao et al., 2009; Sun et al., 2007; Takeuchi et al., 2007; Youndt & Snell, 2004). In line with the literature, we focus on the mediating roles of human capital and employee motivation. As previous research suggests, human capital can be viewed as a composition of employees' knowledge, skills, and abilities (Coff, 2002), and employee motivation refers to the direction, intensity, and duration of employees' effort (Campbell, McCloy, Oppler, & Sager, 1993), as manifested by positive work attitudes (e.g., collective job satisfaction, commitment, perceived organizational support) and work behaviors (e.g., organizational citizenship behavior).

Although we anticipate that all three HR dimensions are positively related to both human capital and employee motivation, we also anticipate that the three HR dimensions may play different roles in building human capital and enhancing employee motivation. We expect that, compared with motivation-enhancing and opportunity-enhancing HR practices, skill-enhancing HR practices will likely have a stronger impact on human capital and a weaker impact on employee motivation.

According to the ability-motivation-opportunity framework, skill-enhancing HR practices can directly help to optimize the levels or types of em-

ployees' skills and abilities. For example, recruitment and selection practices are intended to insure that employees have the skills needed for task performance, and training and development may further provide employees with organization-specific skills with which to perform their work. Indeed, Delaney and Huselid (1996) indicated that organizations can enhance the skills of their workforces both by hiring high-quality individuals and by improving the level of skills in their current workforces. Relatedly, prior research shows that the use of comprehensive selection and training practices fostered employees' collective human capital (e.g., Cabello-Medina et al., 2011; Takeuchi et al., 2007; Yang & Lin, 2009; Youndt & Snell, 2004). Furthermore, research suggests that practices such as competitive compensation, extensive benefits, and job security may help attract capable employees and retain them in organizations, and practices such as work teams, employee involvement, and flexible job design may provide employees with opportunities to share knowledge and to learn new skills. However, the relationships between the other two HR dimensions and human capital are seen as less direct. Research has shown that practices from these two dimensions were less positively related to human capital than skill-enhancing HR practices (Cabello-Medina et al., 2011; Yang & Lin, 2009). Therefore, we propose the following:

Hypothesis 1a. Skill-enhancing HR practices are positively related to human capital.

Hypothesis 1b. Motivation-enhancing HR practices are positively related to human capital.

Hypothesis 1c. Opportunity-enhancing HR practices are positively related to human capital.

Hypothesis 2a. Skill-enhancing HR practices are more positively related to human capital than motivation-enhancing HR practices.

Hypothesis 2b. Skill-enhancing HR practices are more positively related to human capital than opportunity-enhancing HR practices.

We also posit that the three dimensions of HR systems are positively related to employee motivation to different degrees. First, investment in all three HR dimensions generally indicates that organizations value and support employees' contributions. According to social exchange theory (Blau, 1964) and the norm of reciprocity (Gouldner, 1960), employees who perceive an organization's actions toward them as beneficial may feel obligated to reciprocate and be motivated to exert more effort at work. More specifically, motivation-enhancing HR

practices (e.g., performance-based compensation, incentives and benefit, promotion opportunities, and job security) are more likely to provide employees with extrinsic motivation that links their work efforts to external rewards. Practices such as work teams, employee involvement, and flexible job design help to generate employees' intrinsic motivation, which encourages them to seek out challenges at work (Ryan & Deci, 2000). In addition, skill-enhancing HR practices can enhance employees' skills and abilities, which may help career development and induce promotion opportunities in their organizations (Tharenou, Saks, & Moore, 2007). However, the effect of skill-enhancing HR practices on employee motivation is relatively indirect and likely to be contingent on the practices in the other two HR dimensions. For example, even though training can improve employees' skills at work, the increased skills may not necessarily lead to promotion in their organization. Therefore, we expect all three HR dimensions to be positively associated with employee motivation and, compared with the other two dimensions, skill-enhancing HR practices are less positively related to employee motivation. Recent empirical research that examined the influence of three HR dimensions on employee affective commitment (Gardner et al., 2011) has also supported this reasoning. Therefore, we hypothesize:

Hypothesis 3a. Skill-enhancing HR practices are positively related to employee motivation.

Hypothesis 3b. Motivation-enhancing HR practices are positively related to employee motivation.

Hypothesis 3c. Opportunity-enhancing HR practices are positively related to employee motivation.

Hypothesis 4a. Skill-enhancing HR practices are less positively related to employee motivation than motivation-enhancing HR practices.

Hypothesis 4b. Skill-enhancing HR practices are less positively related to employee motivation than opportunity-enhancing HR practices.

In addition to the direct effects of the three HR dimensions on human capital and employee motivation, we propose that human capital and employee motivation mediate the relationships between the three HR dimensions and more distal outcomes related to voluntary turnover (voluntary organizational exit), operational outcomes, and subsequent financial outcomes.

Several researchers have viewed voluntary turnover as a critical intermediate outcome that is dis-

tinct from human capital and employee motivation (e.g., Batt, 2002; Batt & Colvin, 2011; Gardner et al., 2011; Guthrie, 2001; Shaw et al., 1998, 2005, 2009; Sun et al., 2007). Research has consistently demonstrated that HR practices designed to enhance employee skills and motivation are significantly and negatively associated with voluntary turnover (e.g., Arthur, 1994; Batt, 2002; Guthrie, 2001; Huselid, 1995). Some researchers attribute the negative relationships to the emotional bond between employees and organizations formed by HR practices. In other words, because HR practices enhance employees' motivation at work, these employees are reluctant to leave their organizations (e.g., Gardner et al., 2011; Sun et al., 2007). Investment in the three aspects of HR systems implies that organizations value employees' contribution and expect to establish long-term employment relationships with their employees. As a result, employees are encouraged to work harder to reciprocate and thus are less prone to quit their jobs.

Human capital theory and the resource-based view of the firm indicate that employees with appropriate human capital resulting from HR investments may be less likely to leave their organizations. First, researchers have suggested that employees with high levels of human capital are more capable of meeting job demands, receiving positive performance appraisals, obtaining promotions, and participating in decision making (Batt & Colvin, 2011; Shaw et al., 2009). Therefore, compared with those with less human capital, employees with higher levels of human capital will be less likely to leave their organizations. In addition, employees with high levels of human capital are better able to learn at work, which facilitates the development of specific human capital (Ployhart & Moliterno, 2011). The accumulated specific human capital may in turn reduce the likelihood employees leave, because the specific human capital that is unique and valuable for their current organization may not provide value to other organizations (Barney, 1991; Lepak & Snell, 1999). Employees are unable to obtain return on their input in developing the specific human capital if they quit (Shaw et al., 2005). Therefore, we hypothesize:

Hypothesis 5a. Human capital mediates the negative relationships between the three dimensions of HR systems and voluntary turnover.

Hypothesis 5b. Employee motivation mediates the negative relationships between the three dimensions of HR systems and voluntary turnover.

Human capital and employee motivation are also expected to mediate the influence of the three HR dimensions on operational outcomes. Researchers have widely recognized the potential impact of human capital on organizational effectiveness (Barney, 1991; Coff, 1997; Snell, Youndt, & Wright, 1996; Wright et al., 1994; Wright, Dunford, & Snell, 2001). According to human capital theory and the resource-based view, human capital is the primary determinant of productivity (Dess & Shaw, 2001) and can be a source of competitive advantage when it is valuable and unique for an organization, hard to replace without significant costs, and not easily imitated by rivals (Coff, 1997; Wright et al., 1994). Therefore, with high-quality human capital pools, organizations are more likely to achieve operational goals such as high productivity and quality, great service, and innovation. Research has provided support for the positive effect of human capital on operational performance (Crook, Todd, Combs, Woehr, & Ketchen, 2011).

Moreover, researchers taking a behavioral perspective suggest that the value of employees' human capital cannot be realized unless they are willing to use their capabilities (Jackson & Schuler, 1995). To encourage employees to do so, organizations need to utilize HR practices to enhance their intrinsic and extrinsic motivation at work, which can further lead to desired work behaviors and discretionary efforts contributing to operational outcomes (Deci, Connell, & Ryan, 1989). A number of empirical studies have shown that positive work attitudes (e.g., collective commitment) and positive perceptions of a work environment (e.g., perceived organizational support) mediate the relationships between high-performance work systems and operational outcomes (e.g., Chuang & Liao, 2010; Gelade & Ivery, 2003; Rogg, Schmidt, Shull, & Schmitt, 2001; Sun et al., 2007). Therefore, we hypothesize:

Hypothesis 6a. Human capital mediates the positive relationships between the three dimensions of HR systems and operational outcomes.

Hypothesis 6b. Employee motivation mediates the positive relationships between the three dimensions of HR systems and operational outcomes.

Finally, we propose mediating effects of voluntary turnover and operational outcomes on the relationships between the three HR dimensions and financial outcomes. The relationship between voluntary turnover and financial performance is complex, depending on what kinds of employees leave and whether they have been replaced appropri-

ately. According to human capital theory, when capable employees leave, an organization loses the human capital embodied in those departing and also loses the chance to realize a return on its investment in developing the human capital (Dess & Shaw, 2001). Especially when employees possess organization-specific human capital, the loss will be detrimental for organizations' financial performance, and organizations need to take a long time to regain their competitive advantage (Osterman, 1987; Strober, 1990). On the other hand, research has also suggested that organizations need some level of voluntary turnover. This is because employees who do not fit their jobs will self-select out of organizations, which also need new employees to provide fresh stimulus (Dalton & Todor, 1979; Jovanovic, 1979; Schneider, 1978). However, no matter which kinds of employees leave, organizations also incur additional costs related to turnover (Dess & Shaw, 2001). For example, administrative resources used in recruitment, selection, and training would have been in vain, and the organizations need to invest additional resources to search for and train new employees to replace the leavers. At the same time, operational outcomes will suffer during the vacant and training period. Further, a high turnover rate can corrupt the morale of organizations and trigger more employees to leave their jobs, thereby negatively affecting financial outcomes (Hausknecht & Trevor, 2011). In keeping these arguments, empirical studies have consistently demonstrated the existence of a negative relationship between voluntary turnover and financial performance (e.g., Batt, 2002; Glebbeek & Bax, 2004; Huselid, 1995; Kacmar, Andrews, Van Rooy, Steilberg, & Cerrone, 2006; Morrow & McElroy, 2007; Shaw et al., 2005). Therefore, we propose a negative relationship between voluntary turnover and financial performance.

The rationale for the positive relationship between operational outcomes and financial outcomes is clear in the literature. The financial outcomes of an organization are a function of a variety of factors, including industry environment, organizational strategy, and organizational characteristics (White & Hamermesh, 1981). Among these explanatory factors, business operations within an organization may be a salient determinant of financial outcomes because outcomes such as productivity, quality, and service are directly related to profitability (Curtis, Hefley, & Miller, 1995). In a meta-analytic review, Capon, Farley, and Hoenig (1990) found that quality of product and service were positively associated with financial outcomes. Likewise, Crook and colleagues (2011) also reported a positive relationship between operational out-

comes and financial outcomes. In view of these findings, we propose a positive relationship between operational and financial outcomes.

In sum, drawing upon the behavioral perspective of HRM, human capital theory, and the resource-based view of the firm, we propose a mediating model in which the three dimensions of HR systems are indirectly related to financial outcomes through human capital, employee motivation, voluntary turnover, and operational outcomes in sequence. In building this framework, we focus on the mediating role of employees in the link of HRM with financial performance. However, our model does not exclude other paths through which HRM can help increase financial outcomes. In fact, both theoretical and empirical research has suggested that HRM can provide firms with organizational capital reflected by internal fit and flexibility (Evans & Davis, 2005; Wright & Snell, 1998) and social capital (Collins & Clark, 2003; Delery & Shaw, 2001; Gittell, Seidner, & Wimbush, 2010), both of which can be sources of competitive advantage for organizations. Given these alternative possibilities, we hypothesize that the intermediate outcomes proposed in our model partially mediate the positive relationships between the three HR dimensions and financial outcomes.

Hypothesis 7. Human capital, employee motivation, voluntary turnover, and operational outcomes partially mediate the positive relationships between the three dimensions of HR systems and financial outcomes.

METHODS

Data Collection

We tested the mediating hypotheses with the help of meta-analytic structural equation modeling (SEM) techniques (Cheung & Chan, 2005, 2009; Viswesvaran & Ones, 1995). To identify studies that could be used in the meta-analysis, we first searched the PsycINFO, Web of Science, and ProQuest Digital Dissertations databases for studies published before May 2011. We used multiple keywords. For HRM, we used the keywords “human resource work practice/system,” “high-performance work practice/system,” “high-involvement work practice/system,” or “high-commitment work practice/system,” whereas for organizational outcomes, we searched for studies that also included the keywords “performance,” “outcome,” “attitudes,” “satisfaction,” “commitment,” “motivation,” “human capital,” “turnover,” “productivity,” “quality,” “service,” “safety,” “growth,” or “profitability.” Moreover, we used the same search terms

to search conference programs from the Academy of Management (AOM) and the Society of Industrial and Organizational Psychology from 2000 to 2010. Second, we referred to the reference lists of the prior reviews on this topic, including theoretical reviews (e.g., Becker & Gerhart, 1996; Becker & Huselid, 1998; Lengnick-Hall, Lengnick-Hall, Andrade, & Drake, 2009; Lepak et al., 2006; Wright & Boswell, 2002) and meta-analytic reviews (Combs et al., 2006; Subramony, 2009). Third, we made an effort to identify unpublished studies through the listservs of the AOM’s Human Resources and Organizational Behavior Divisions.

Four inclusion criteria were used to select studies. First, we focused only on studies that examined the relationships between HR practices and organizational outcomes at the organizational level (e.g., establishment, business unit, or firm). We did not include studies that investigated individual-level relationships between employee-perceived HR practices/systems and individual outcomes (e.g., Agarwala, 2003; Barling, Kelloway, & Iverson, 2003) or cross-level relationships between organization-level HR practices and individual-level outcomes (e.g., Liao et al., 2009; Takeuchi, Chen, & Lepak, 2009). Second, we only included studies that emphasized the use of HR practices/systems in organizations but not the effectiveness or the value of these practices or systems (e.g., Huselid, Jackson, & Schuler, 1997; Richard & Johnson, 2004). Third, we included studies in the meta-analysis if they reported at least one correlation among individual HR practices and various organizational outcomes. We excluded the studies that only presented the correlations of HR systems rather than those of individual HR practices with organizational outcomes (e.g., Bae & Lawler, 2000). Studies without the statistical information (e.g., sample sizes, correlation coefficients) necessary to calculate effect sizes were also excluded (e.g., Cappelli & Neumark, 2001; Ichniowski, Shaw, & Prennushi, 1997). Finally, when the same sample was used in two or more articles, we considered only the one that provided more information. In contrast, when a study used two or more independent samples, we coded these independent samples separately. The inclusion criteria yielded a final set of 116 articles representing 120 independent samples that included a total of 31,463 organizations.

We first developed the coding sheet and instructions as recommended by Lipsey and Wilson (2001). The first author and the third author then independently coded a random selection of 15 articles to assess the level of agreement regarding sample sizes, effect sizes, and reliability. After both coders checked data entry and resolved errors, they

independently coded the rest of studies. The consensus rate was 96 percent, and disagreements were solved through discussion between the two coders.

Operationalization of Variables

Three dimensions of HR systems. We identified 14 HR practices frequently examined in the literature. By following previous research using the ability-motivation-opportunity framework (e.g., Appelbaum et al., 2000; Batt, 2002; Gardner et al., 2011; Guest, 1997; Lepak et al., 2006; Subramony, 2009), we categorized these practices into three dimensions. Skill-enhancing HR practices included recruitment, selection, and training. Motivation-enhancing HR practices consisted of performance appraisal, compensation, incentive, benefit, promotion and career development, and job security. In addition, opportunity-enhancing HR practices covered job design, work teams, employee involvement, formal grievance and complaint processes, and information sharing.

Organizational outcomes. We summarized various organizational outcomes into five categories. Human capital included overall organizational human capital measured via established scales (e.g., Subramaniam & Youndt, 2005; Youndt, Subramaniam, & Snell, 2004) and the education level of a workforce. Employee motivation was reflected by collective job satisfaction, organizational commitment, organizational climate, perceived organizational support, and organizational citizenship behavior. Voluntary turnover only represented the percentage of employees who quit or voluntarily left the organizations. Dismissal rate and overall turnover rate were not included. In addition, we viewed productivity, quality, service, innovation, and overall operational performance as operational outcomes, and we viewed return on assets, return on equity, market return, sale growth, and overall financial performance as financial outcomes.

As suggested by Aguinis, Pierce, Bosco, Dalton, and Dalton (2011), we provide a table, in Appendix A, that lists all the included studies and our categorizations of the three HR dimensions and different types of outcomes. This information is important to allow future research to replicate and extend this study.

Meta-analytic and Model-Testing Procedures

To test the mediating model through meta-analytic SEM, we needed to calculate meta-analytic correlations among three dimensions of HR systems and different types of organizational out-

comes by correcting for measurement error and sampling error (Hunter & Schmidt, 2004). We first performed reliability corrections for informant-reported measures of HR practices and organizational outcomes to correct for measurement error. For those studies that did not report the reliabilities of the informant-reported measures, we imputed the reliabilities using the weighted mean of the available reliabilities estimated from the other studies (Lipsey & Wilson, 2001). Regarding the variables that were measured with archival data (e.g., return on assets), we adopted a more conservative .80 reliability estimate, which has been used in previous meta-analyses in management (e.g., Dalton, Daily, Certo, & Roengpitya, 2003; Dalton, Daily, Ellstrand, & Johnson, 1998; Dalton, Daily, Johnson, & Ellstrand, 1999). For example, if training practices were measured by reflective items (e.g., "This firm invests considerable time and money in training") in a study that reported the reliability of these items, we would correct for the reliability for training. In contrast, if training practices were measured by archival data (e.g., "On average how many hours of formal training do employees in this firm receive each year?"), we would correct for a reliability of .80 for this measure. For comparison purposes, we also calculated the reliability-corrected correlation by using a reliability of 1.00 for archival measures and did not find changes in the main findings of this study.

Second, to calculate the composites of HR practices (i.e., HR dimensions) and the composites of outcome variables (i.e., organizational outcomes categories), we combined the correlations among individual HR practices and outcomes using the formula provided by Hunter and Schmidt (2004: 435–439):

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

If it is assumed that x represents a dimension of HR systems (e.g., skill-enhancing HR practices) and y represents a category of organizational outcomes (e.g., employee motivation), $\sum r_{xij}y_j$ is the sum of the correlations between HR practices (e.g., recruitment, selection, and training) and outcome variables (e.g., collective satisfaction and commitment); n and m are the numbers of HR practices and outcome variables respectively; \bar{r}_{xixj} is the average correlation among HR practices; and \bar{r}_{yiyj} is the average correlation among outcome variables. By using this formula, we created a single effect size for each relationship within each study.

Third, we used a random-effects model to correct for the sampling error by weighting each study's effect size by its sample size (Hunter & Schmidt,

2004). We also computed the 95% confidence interval (CI) around the sample-weighted mean correlation and Q homogeneity statistic. Confidence intervals provide an estimate of the variability around the estimated average correlation; a 95% CI excluding zero indicates that one can be 95 percent confident that the confidence interval includes the average mean true score. The Q statistic indicates the variance in the sample-weighted mean correlation; a significant Q suggests the heterogeneity of a given relationship. Research has suggested that a random-effects model provides a more accurate estimate than a fixed-effects model when relationships are heterogeneous (Cheung & Chan, 2005; Erez, Bloom, & Wells, 1996; Overton, 1998).

Finally, we used the created correlation matrices in SEM computed in LISREL 8.72 (Jöreskog & Sörbom, 2005). Because the sample sizes for different correlations were not identical, we imputed the sample size for the SEM analyses by calculating the harmonic mean of the correlation sample sizes (Viswesaran & Ones, 1995). Compared with the arithmetic mean, the harmonic mean gives much less weight to large sample sizes and thus results in a more conservative parameter estimate. Four established model fit statistics—chi-square (χ^2), the root-mean-square error of approximation (RMSEA), the comparative fit index (CFI), and the standardized root-mean-square residual (SRMR)—were used to examine the viability of the structural models (Kline, 2005). Acceptable model fit is associated with nonsignificant chi-square values and with a CFI greater than .90, an RMSEA less than or equal to .08, and an SRMR less than .10 (Kline, 2005). We used two statistics to test the hypotheses predicting relative effects of three HR dimensions on human capital and employee motivation. One was the Z -test, which shows the significance of the difference between regression coefficients (Clogg, Petkova, & Haritou, 1995), and the other was the epsilon statistic, which has been commonly used to determine the relative weight of each predictor in explaining the variance of dependent variables (Johnson, 2000; Johnson & LeBreton, 2004). The results of relative weights represent the proportion of total variance (R^2) explained by each HR dimension. To analyze mediation, we used Sobel's (1982) test to examine the statistical significance of indirect effects.

RESULTS

Differential Effects of HR Dimensions

Table 1 summarizes the correlation results of the relationships among HR dimensions and organizational outcomes categories. To test Hypotheses 1, 2,

3, and 4, we included all three dimensions of HR systems in regressions examining their effects on human capital and employee motivation. As shown in Table 2, all three HR dimensions had significant and positive effects on human capital. The results of Z -tests show that the regression coefficient of skill-enhancing HR practices ($\beta = .29, p < .01$) was significantly larger than the coefficients of motivation-enhancing HR practices ($\beta = .22, p < .01, Z = 2.74, p < .01$) and opportunity-enhancing HR practices ($\beta = .07, p < .01, Z = 8.68, p < .01$). Moreover, the analyses of relative weights indicate that skill-enhancing HR practices explained the largest percentage of variance in human capital (48%), followed by motivation-enhancing HR practices (36%) and opportunity-enhancing HR practices (16%).

Similarly, we found significantly positive effects of three HR dimensions on employee motivation. Consistently with our prediction, the influences of motivation-enhancing HR practices ($\beta = .29, p < .01, Z = -8.64, p < .01$) and opportunity-enhancing HR practices ($\beta = .25, p < .01, Z = -7.07, p < .01$) were significantly stronger than that of skill-enhancing HR practices ($\beta = .07, p < .01$). Motivation-enhancing HR practices and opportunity-enhancing HR practices respectively explained 45 and 38 percent of the variance of employee motivation, whereas skill-enhancing HR practices explained 17 percent. In sum, Hypotheses 1 through 4 were supported.

Mediation Results

Hypotheses 5 through 7 predict that the three HR dimensions have both direct effects and indirect effects through human capital, employee motivation, voluntary turnover, and operational outcomes on financial outcomes. We tested the proposed model (Figure 1) by inputting correlation matrices (Table 1) into LISREL 8.72 (Jöreskog & Sörbom, 2005). As shown in Table 3, the model fit of the proposed model was acceptable ($\chi^2[9] = 264.82$, RMSEA = .09, CFI = .98, SRMR = .04). All the proposed relationships among HR dimensions and organizational outcomes categories were significant and consistent with our prediction except for the direct relationship between opportunity-enhancing HR practices and financial outcomes ($\beta = -.03, n.s.$). Thus, we dropped this direct path from the model, which only marginally impacted fit (model 1: $\Delta\chi^2[1] = 4.65, p < .05$). We also tested the direct relationships between three HR dimensions and voluntary turnover and operational outcomes. As presented in Table 3, adding paths from skill-enhancing HR practices to both outcomes sig-

TABLE 1
Meta-analytic Correlations between HR Dimensions and Organizational Outcomes^a

Variables	1	2	3	4	5	6	7
1. Skill-enhancing practices							
2. Motivation-enhancing practices (r , r_c)	.38, 46						
k (N)	55 (14,670)						
95% CI	.40: .53						
Q	822.75**						
3. Opportunity-enhancing practices (r , r_c)	.38, 47	.37, 44					
k (N)	49 (13,079)	50 (13,740)					
95% CI	.40: .53	.37: .52					
Q	557.95**	855.49**					
4. Human capital (r , r_c)	.35, 42	.36, 38	.25, 30				
k (N)	13 (2,013)	19 (3,249)	13 (2,068)				
95% CI	.27: .57	.26: .49	.24: .37				
Q	133.88**	175.97**	23.58*				
5. Employee motivation (r , r_c)	.25, 32	.33, 43	.32, 41	.37, 42			
k (N)	20 (4,915)	22 (4,591)	19 (4,647)	12 (1,165)			
95% CI	.26: .37	.34: .51	.31: .51	.23: .61			
Q	63.23**	148.79**	183.61**	111.91**			
6. Voluntary turnover (r , r_c)	-.19, -.21	-.15, -.17	-.17, -.22	-.22, -.26	-.31, -.37		
k (N)	19 (6,181)	24 (6,674)	19 (8,092)	7 (1,363)	11 (2,879)		
95% CI	-.14: -.29	-.09: -.25	-.10: -.33	-.01: -.53	-.18: -.56		
Q	142.39**	213.38**	384.16**	130.46**	208.62**		
7. Operational outcomes (r , r_c)	.25, 32	.19, 25	.25, 32	.25, 29	.32, 38	-.15, -.19	
k (N)	36 (10,224)	37 (11,041)	35 (9,576)	8 (1,198)	23 (4,618)	22 (6,002)	
95% CI	.25: .39	.17: .33	.25: .39	.06: .53	.30: .47	-.10: -.27	
Q	436.07**	626.61**	354.35**	108.92**	142.24**	189.14**	
8. Financial outcomes (r , r_c)	.22, 26	.22, 27	.15, 20	.19, 24	.32, 38	-.15, -.19	.38, 48
k (N)	41 (9,966)	41 (12,219)	27 (5,610)	12 (2,028)	17 (3,354)	17 (4,055)	33 (8,863)
95% CI	.21: .32	.21: .33	.13: .26	.16: .32	.25: .51	-.08: -.30	.39: .57
Q	247.07**	384.70**	130.73**	32.04**	206.61**	181.60**	547.24**

^a The mean sample-size-weighted correlation (r) and mean sample-size-weighted correlation corrected for attenuation due to unreliability (r_c) are presented. A “ k ” indicates the number of independent samples, and “ N ” is the total sample size. The 95% CI is the 95% confidence interval around the mean sample-size-weighted corrected correlation (r_c). Q is the chi-square-test for the homogeneity of corrected correlations (r_c) across studies.

* $p < .05$

** $p < .01$

nificantly improved fit over that of model 1 (model 2: $\Delta\chi^2[2] = 80.71$, $p < .01$). However, the path from skill-enhancing HR practices to voluntary turnover was not significant ($\beta = -.02$, $p > .05$). Dropping this path did not impact fit (model 3: $\Delta\chi^2[1] = 1.56$,

n.s.). Furthermore, we added the direct paths from motivation-enhancing HR practices to voluntary turnover and operational outcomes and found a significant improvement in the fit over that of model 3 (model 4: $\Delta\chi^2[2] = 10.54$, $p < .01$). The

TABLE 2
Results of Differential Effects of HR Dimensions on Human Capital and Motivation-Related Attitudes^a

Predictors	Human Capital			Employee Motivation		
	β	t	% R^2	β	t	% R^2
Skill-enhancing HR practices (A)	.29	15.76**	48%	.07	3.90**	17%
Motivation-enhancing HR practices (M)	.22	12.12**	36%	.29	16.30**	45%
Opportunity-enhancing HR practices (O)	.07	3.84**	16%	.25	14.12**	38%
Total R^2	.22			.25		
Z, A–M	2.74**			–8.64**		
Z, A–O	8.68**			–7.07**		

^a Standardized coefficients are presented. Z is the test for the significance of the difference between the regression coefficients.

* $p < .05$

** $p < .01$

FIGURE 1
Theoretical Model of Effects of HR Dimensions on Organizational Outcomes

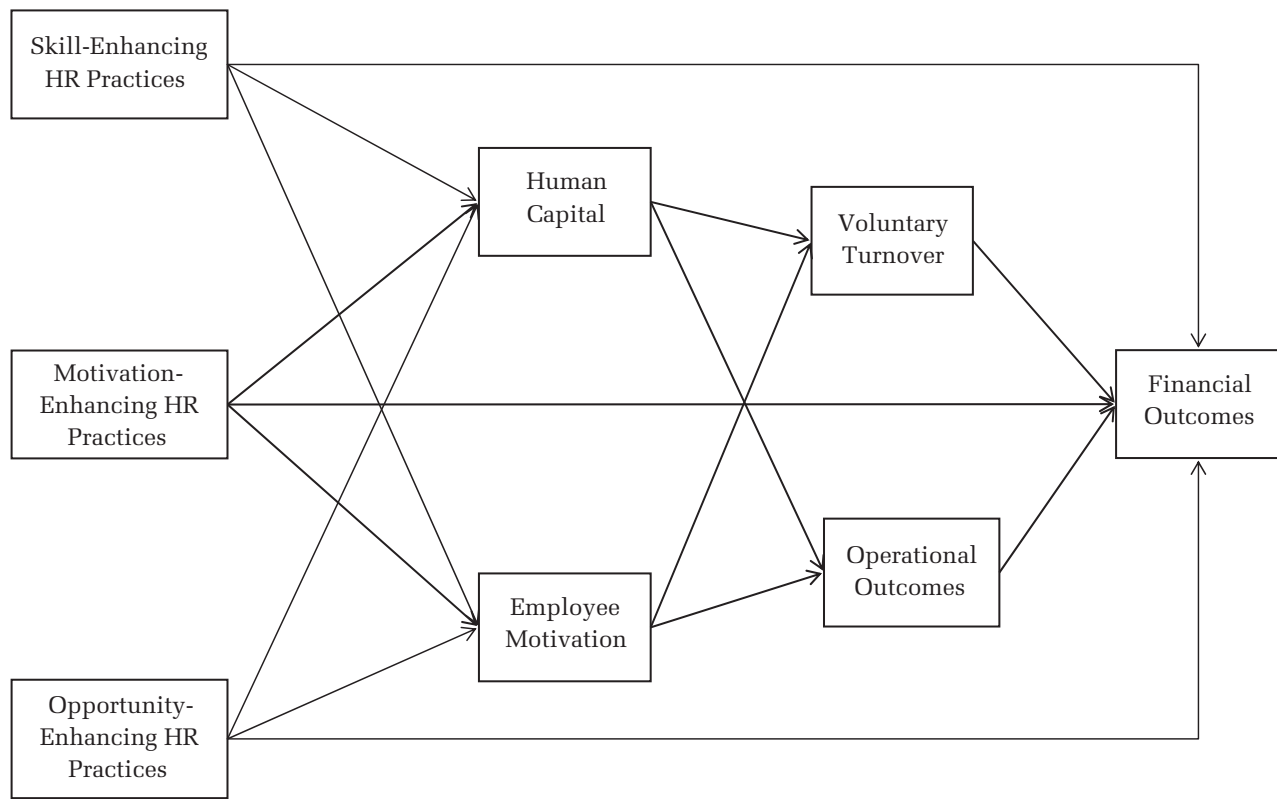


TABLE 3
Fit Statistics for Alternative Models^a

Models	χ^2	<i>df</i>	$\Delta\chi^2$	CFI	RMSEA	SRMR	AIC
<i>Three HR dimensions</i>							
Theoretical model (Figure 1)	264.82	9		.98	.09	.04	318.32
Alternative model 1 ^b	269.47	10	4.65 ^{*c}	.98	.08	.05	321.47
Alternative model 2 ^d	188.76	8	80.71 ^{**e}	.98	.08	.03	244.76
Alternative model 3 ^f	190.32	9	1.56 ^g	.98	.07	.03	244.32
Alternative model 4 ^g	179.78	7	10.54 ^{**e}	.99	.08	.03	237.78
Alternative model 5 ^h	180.54	8	0.76 ^g	.99	.08	.03	236.54
Alternative model 6 ⁱ (Figure 2)	130.32	6	50.22 ^{**e}	.99	.08	.02	190.32
<i>Latent high performance work systems (HPWS)</i>							
Theoretical model (Figure 3)	570.74	16		.95	.10	.05	610.74
Alternative model 7 ^j (Figure 4)	406.51	14	147.72 ^{**k}	.96	.09	.03	450.51

^a $n = 3,724$.

^b Deletes the direct paths from opportunity-enhancing HR practices to financial outcomes.

^c Model fit compared with the theoretical model of the effects of three HR dimensions on organizational outcomes (Figure 1).

^d Adds the direct paths from skill-enhancing HR practices to voluntary turnover and operational outcomes.

^e Model fit compared with the previous model.

^f Deletes the direct paths from skill-enhancing HR practices to voluntary turnover.

^g Adds the direct paths from motivation-enhancing HR practices to both voluntary turnover and operational outcomes.

^h Deletes the direct path from motivation-enhancing HR practices to operational outcomes.

ⁱ Adds the direct path from opportunity-enhancing HR practices to voluntary turnover and operational outcomes.

^j Adds the direct path from HPWS to both voluntary turnover and operational outcomes.

^k Model fit compared with the theoretical model of the effects of HPWS on organizational outcomes (Figure 3).

* $p < .05$

** $p < .01$

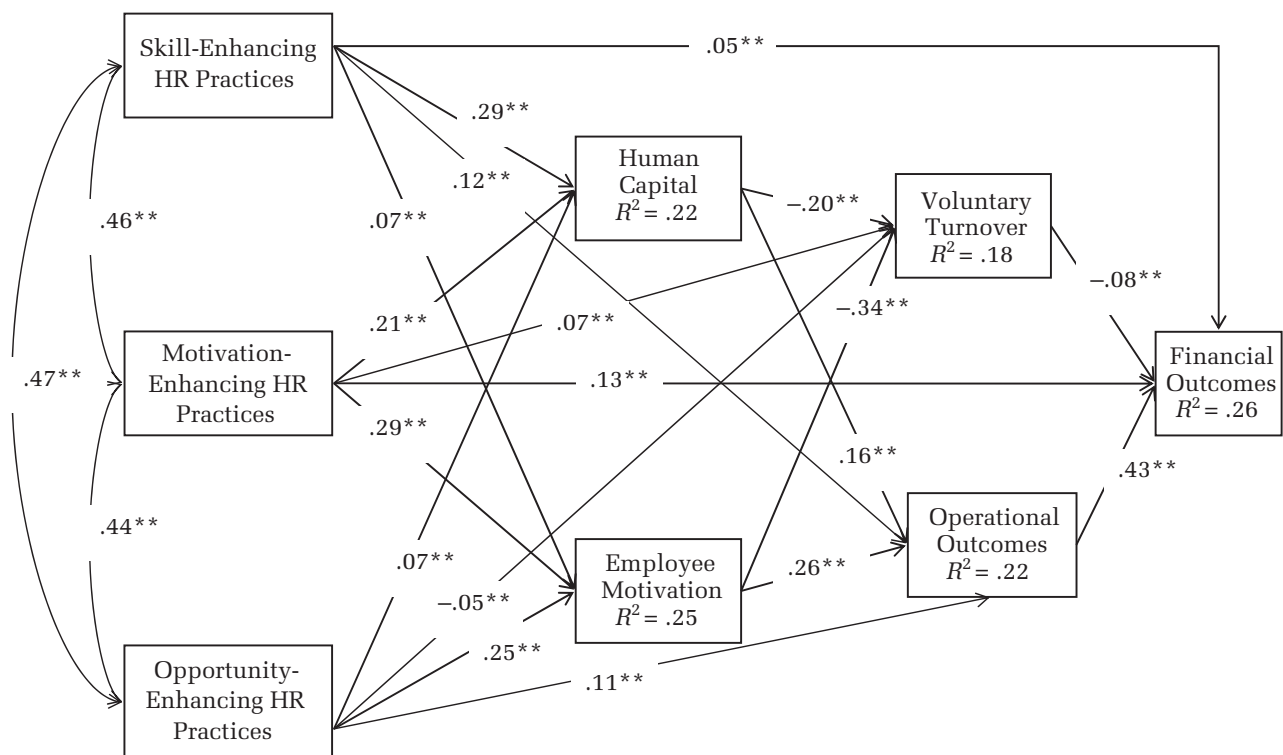
path from motivation-enhancing HR practices and operational outcomes was not significant ($\beta = -.02$, n.s.), and we dropped it without impacting fit (model 5: $\Delta\chi^2[1] = 0.76$, n.s.). Finally, we added the direct paths from opportunity-enhancing HR practices to voluntary turnover and operational outcomes, and both paths were significant (model 6: $\Delta\chi^2[2] = 50.22$, $p < .01$). Therefore, we kept model 6 as the final model for the mediation analyses.

Figure 2 presents the standardized path estimates for the final mediating model. Both human capital and employee motivation were negatively related to voluntary turnover ($\beta = -.20$, $p < .01$ for human capital; $\beta = -.34$, $p < .01$ for employee motivation) and were positively related to operational outcomes ($\beta = .15$, $p < .01$ for human capital; $\beta = .26$, $p < .01$ for employee motivation). In turn, voluntary turnover was negatively related to financial outcomes ($\beta = -.08$, $p < .01$), whereas operational outcomes were positively associated with financial outcomes ($\beta = .42$, $p < .01$). Sobel (1982) tests showed that the indirect relationships between all three HR dimensions and voluntary turnover, operational outcomes, and financial outcomes were significant (Z varied from 8.05 to 13.89, all p -values were less than .01). In sum, these results suggest

that human capital, employee motivation, voluntary turnover, and operational outcomes partially mediated the relationships between skill-enhancing and motivation-enhancing HR dimensions and financial outcomes and fully mediated the relationship between opportunity-enhancing HR practices and financial outcomes. Hypotheses 5 through 7 were generally supported.

We obtained the indirect effects and total effects of the three HR dimensions on financial outcomes from the estimates in SEM. The total effects of skill-enhancing, motivation-enhancing, and opportunity-enhancing HR dimensions on financial outcomes were .13, .18, and .09 respectively (all p 's $< .01$). The indirect effects mediated by human capital, employee motivation, voluntary turnover, and operational outcomes were .08, .05, and .09 for the three HR dimensions respectively. We also calculated the squared multiple correlations (i.e., R^2 s) for structural equations predicting human capital (.22), employee motivation (.25), voluntary turnover (.18), operational outcomes (.22), and financial outcomes (.26). The results indicate that the final model explained a moderate amount of variance in these variables.

FIGURE 2
Final Model of Effects of HR Dimensions on Organizational Outcomes^a



^a Standardized coefficients are presented; $n = 3,714$.

** $p < .01$

In addition, we conducted a post hoc analysis to examine whether the three-dimensional model (model 6) fit the data better than a unidimensional model that treats the three HR dimensions as indicators of high-performance work systems (HPWS; Figure 3). As shown in Table 3, the partial mediating model (model 7), in which HPWS has direct impact on voluntary turnover, operational outcomes, and financial outcomes, fit the data well ($\chi^2[14] = 406.51$, RMSEA = .09, CFI = .96, SRMR = .03). Because the two models (6 and 7) were not nested, we relied on indexes other than chi-square change to compare them. In general, the three-dimensional model (model 6: RMSEA = .08, CFI = .99, SRMR = .02) fit better than unidimensional model 7, but the differences in fit indexes were not great. Then we used an additional fit index, Akaike's information criterion (AIC; Akaike, 1974), which is generally used in SEM to compare non-nested models estimated with the same data (Henson, Reise, & Kim, 2007; Kline, 2005). The value of AIC itself does not indicate the quality of a model; only the AIC relative to that of another model is meaningful. Lower values indicate a better fit, and so the model with the lowest AIC is the best fitting one. As shown in Table 3, the AIC for model 6 (190.32) was lower than that for model 7 (450.51), which indicates the three-dimensional model fit the data better than the unidimensional model.

DISCUSSION

Our aim in this meta-analytic review is to contribute to strategic HRM research by exploring the

mediating mechanisms through which HR practices influence organizational outcomes. Drawing upon the ability-motivation-opportunity model of HRM, the behavioral perspective of HRM, human capital theory, and the resource-based view of the firm, we proposed and found that the three dimensions of HR systems had differential relationships with human capital and employee motivation, which were in turn related to voluntary turnover and operational outcomes, and were further associated with financial outcomes. In addition, our findings demonstrated the direct relationships between skill-enhancing HR practices and motivation-enhancing HR practices and financial outcomes. Below we discuss the research and practical implications of our findings.

Research Implications

This research offers a number of important theoretical contributions. First, we adopt multiple theoretical perspectives on HRM to extend previous mediating models of HRM's influence on organizational outcomes (e.g., Becker & Huselid, 1998; Delery & Shaw, 2001; Guest, 1997). Drawing upon the behavioral perspective on HRM, human capital theory, and the resource-based view, the current study demonstrates that HRM positively relates to financial performance both by encouraging desired employee behaviors and by building a valuable human capital pool. It also suggests that future research should simultaneously address the mediating roles of human capital and employee motivation so that it can provide a clearer understanding of the link-

FIGURE 3
Theoretical Model of Effects of HPWS on Organizational Outcomes

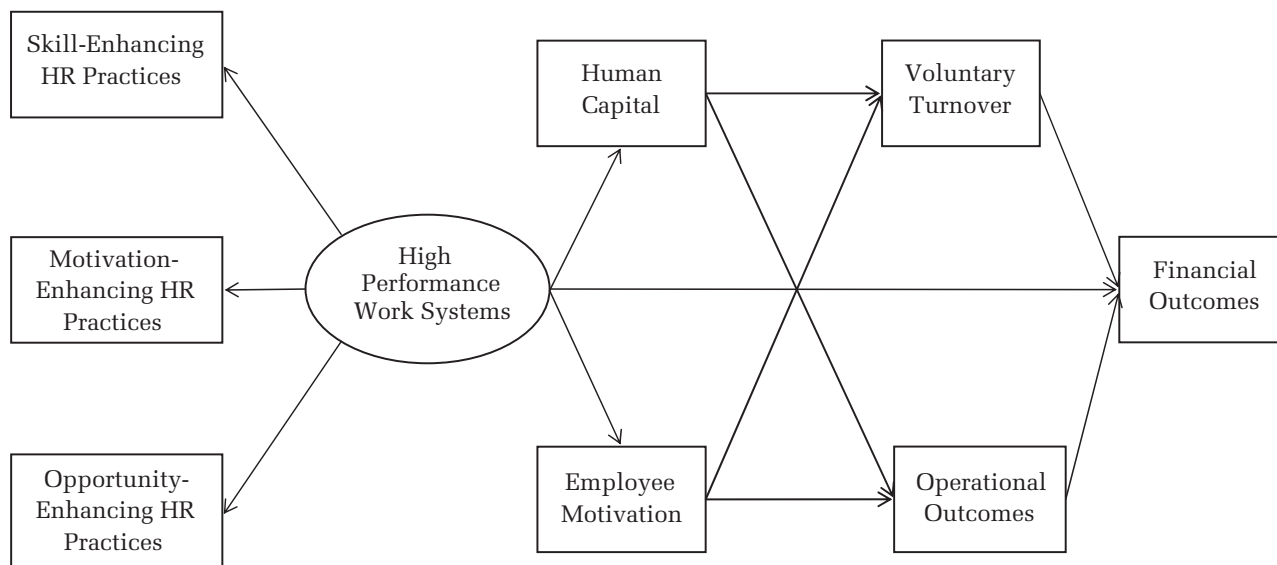
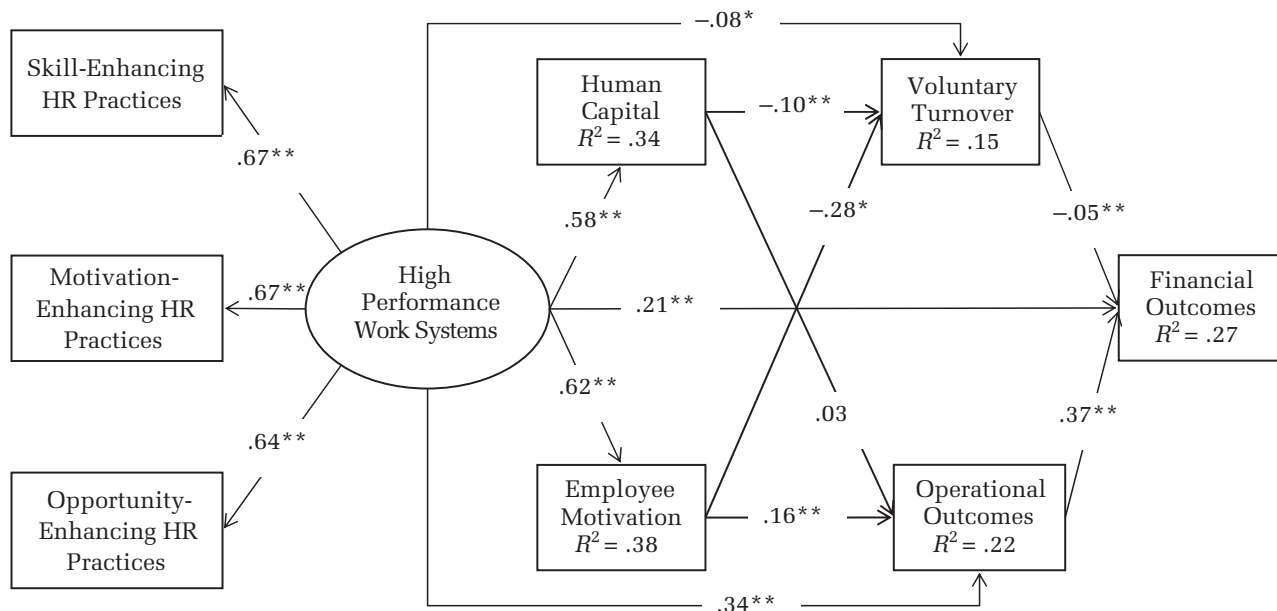


FIGURE 4
Effects of HPWS on Organizational Outcomes^a



^a Standardized coefficients are presented; $n = 3,714$.

* $p < .05$

** $p < .01$

age between HRM and operational and financial outcomes.

Moreover, this study embraced the multidimensionality of performance as well as the potential for different relationships with proximal and distal outcomes. Researchers have recently called for studies to simultaneously examine multiple outcome variables that have only been studied independently before (Lengnick-Hall et al., 2009). With the help of meta-analytic techniques, we tested a comprehensive mediating model and provided empirical support for the theoretical proposition that HRM first relates to proximal outcomes, which further relate to distal outcomes (Becker & Huselid, 1998; Delery & Shaw, 2001; Dyer & Reeves, 1995; Guest, 1997) and revealed that the relationships between HRM and distal outcomes (e.g., operational and financial outcomes) could be mediated through multiple pathways (e.g., through human capital and employee motivation). Moreover, as we expected, there were direct relationships between skill-enhancing HR practices and motivation-enhancing HR practices and financial outcomes that could not be explained by the mediating process. This is consistent with prior research suggesting that HRM can improve organizational effectiveness through alternative approaches such as affecting internal interaction within organizations (Evans &

Davis, 2005; Gittell et al., 2010) and enhancing the social capital of organizations (Collins & Clark, 2003). The findings of the current study and others suggest that it is meaningful for future research to further explore other mediators of the relationship between HRM and organizational outcomes.

One major contribution of this study to the strategic HRM literature is that the results suggest differential effects of the three dimensions of HR systems. This finding is important both in theory and in the methodology of measuring HR systems. Theoretically, this finding challenges previous research, in which the assumption has been that all HR practices in an HR system function in the same pattern. Our findings remind researchers that different dimensions of HR systems may have unique relationships with specific organizational outcomes. For example, skill-enhancing HR practices were more effective in enhancing human capital, whereas motivation-enhancing HR practices and opportunity-enhancing HR practices were more likely to improve employee motivation. This result is also consistent with recent research suggesting the heterogeneous effects of the components of HR systems on organizational outcomes (e.g., Batt & Colvin, 2011; Gardner et al., 2011; Gong et al., 2009; Liao et al., 2009; Shaw et al., 2009; Subramony, 2009). HR practices are not only distinct, but also

operate via different pathways. Therefore, we encourage additional research to explore the influence of these components of HR systems to advance knowledge of the relationship between HRM and organizational outcomes.

The findings of the differential relationships between the dimensions of HR systems and organizational outcomes also offer methodological implications for strategic HRM research. First, if all three dimensions of HR systems have unique effects on organizational outcomes, failure to include any dimension may compromise the overall impact of HR systems on organizational outcomes or at least lead to inaccurate results. Moving forward, we encourage researchers to include all three HR dimensions in their measures of HR systems. Moreover, the results show that the three HR dimensions have differential relationships with human capital and employee motivation. Relatedly, the results indicate that the three-dimensional model fit the data slightly better than the model combining the three HR dimensions into a unidimensional HPWS element. Combined, these findings offer preliminary evidence that the three HR dimensions are better viewed as three distinct but related components of HR systems rather than interchangeable indicators of HR systems. This suggestion is consistent with previous research that argued that the measure of HR systems should be formative rather than reflective (e.g., Jiang, et al., 2012; Shaw et al., 2005, 2009), and it encourages researchers to reconsider whether it is appropriate to utilize addition of HR practices to represent HR systems. As an alternative approach, researchers might categorize HR practices into the three HR dimensions and explore their main effects and interactions on organizational outcomes (e.g., Gardner et al., 2011). In addition, we encourage future research to compare the use of multidimensional and unidimensional models of HR systems and their effects on organizational outcomes. This stream of research can further verify the findings of this study and offer implications for the measurement of HR systems.

Practical Implications

Our study also offers implications for managerial practices. First of all, our finding indicates that the investment in three HR dimensions was associated with the increase in financial outcomes. Specifically, we found that given no change in other conditions, a one standard deviation increase in skill-enhancing, motivation-enhancing, or opportunity-enhancing HR practices was related to a .13, .18, or .09 standard deviation increase in financial outcomes. For example, Huselid (1995) examined the

relationship between motivation-enhancing HR practices and financial performance and reported a mean and standard deviation of 0.46 and 1.64 for Tobin's *Q*. If we apply our finding to this study, one standard deviation increase in motivation-enhancing HR practices is associated with 64 percent improvement in Tobin's *Q*. This result suggests that organizations can obtain substantial financial benefits from investing in the three HR dimensions considered here.

In addition, the results of this study shed light on the ways through which managers can increase the benefits of investing in HRM. The results indicate that to retain talented employees and realize operational and financial objectives, organizations need to use HR practices to enhance both employee skills and motivation at work. More specifically, we suggest that organizations focus more on practices, such as recruitment, selection, and training when enhancing employee skills. In contrast, when organizations aim to improve employee motivation, they should consider how to appraise employees' performance, how to compensate for their work, how to make jobs meaningful and interesting, and how to involve employees in work teams and decision making. With these suggestions, however, we do not deny the potential effects of recruitment, selection, and training in enhancing employee motivation or the positive impact of performance appraisal, compensation, job design, or employee involvement in developing employees' human capital. Instead, we encourage organizations to maximize the return on their investment in HRM by using appropriate HR practices. For example, in order to improve employee motivation, it may be wise to check whether performance appraisal and compensation systems appropriately reflect employees' contribution at work rather than training employees how to complete their work.

Our study also indicates that organizations' investment in HRM leads to financial outcomes through a mediating process. Any other factors that can impact the intermediate variables may affect the effects of HRM on the distal financial outcomes. This reminds managers of attending to whether their HR practices improve employee skills and motivation effectively and whether other managerial initiatives can boost or undermine the effects of HR practices. For example, researchers have reported that leadership and organizational culture have an important impact on employee motivation (Hartnell, Ou, & Kinicki, 2011; Ilies, Nahrgang, & Morgeson, 2007). Therefore, managers may consider how these factors can complement the effects of HR practices in enhancing employee motivation.

Limitations and Future Research

Several limitations should be noted in the current study. First, some studies included in this meta-analysis used informant-reported measures to evaluate HR practices and organizational outcomes from the same source. This may lead to common method bias, which might inflate the correlations between HR practices and organizational outcomes. Relatedly, most of the studies included in the analysis had cross-sectional designs, which may limit conclusions regarding the direction of the mediating mechanism. The results from the current investigation should be interpreted with these limitations in mind. We encourage more longitudinal studies that collect information on HR practices and organizational outcomes from different sources. Future meta-analysis can explore if a longitudinal research design may influence the estimates of effect sizes and the mediating mechanisms examined in this study.

Second, potential moderators may exist in the relationships among HR dimensions and organizational outcome categories. For example, recent meta-analytic reviews have reported that industry type (manufacturing industry vs. service industry) and country moderated the relationship between HPWS and organizational outcomes (Combs et al., 2006; Rabl, Jayasinghe, Gerhart, & Kuehlmann, 2011; Subramony, 2009). Researchers have also suggested that HR practices applied to a specific group of employees, or used for employees in general, may influence their effects on organizational outcomes (Gerhart, Wright, McMahan, & Snell, 2000). However, owing to the relatively few studies in the subgroups divided by the potential moderators, we were not able to test the mediating model separately in each subgroup. Future research can examine this mediating model by using samples from different industries, different countries, and different job groups.

A third limitation of this study is that we were unable to explore synergy among the three HR dimensions by examining their interactions, even though the synergies within HR systems have been suggested in the literature (e.g., Delery, 1998; Gerhart, 2007; Jiang et al., 2012). Operationally, this was impossible owing to how existing studies were measured. However, moving forward, if a good amount of research includes all three HR dimensions while reporting the correlations of HR dimensions and organizational outcomes with interaction terms comprised of the three HR dimensions, future meta-analytic review will be able to examine this.

Fourth, in the current study we examined voluntary turnover as an intermediate outcome mediating the relationships between the three HR dimensions as well as employee human capital and motivation and financial outcomes. However, a growing literature indicates that voluntary turnover may moderate the relationship between HRM and financial outcomes (e.g., Guthrie, 2001; Hausknecht & Trevor, 2011; Shaw, 2011; Shaw et al., 2005). However, we were not able to test the interactions between the three HR dimensions and voluntary turnover because very few studies reported the correlations between the interaction terms and the variables examined. We encourage scholars to explore this issue in future research. In addition, recent turnover research suggests that involuntary turnover or dismissal is also influenced by HR practices and negatively related to operational and financial outcomes (Batt & Colvin, 2011; Hausknecht & Trevor, 2011). It is worth considering the roles of both types of turnover in the mediating process rather than just focusing on voluntary turnover.

Fifth, like other meta-analyses testing mediating process (e.g., Chang, Rosen, & Levy, 2009; Colquitt, Scott, & LePine, 2007; Robbins, Oh, Le, & Button, 2009), the current meta-analysis did not include control variables in the regression models (e.g., industry, size, unionization, strategy) because many studies did not provide correlations with these variables.

Finally, our study only focused on the relationships between HRM and organizational outcomes at the organizational level, even though there is a growing research focus on cross-level influences of organization-level HRM on individual-level outcomes (e.g., Liao et al., 2009; Snape & Redman, 2010; Takeuchi et al., 2009) and on the influence of employee-perceived HR systems on individual outcomes (e.g., Butts, Vandenberg, DeJoy, Schaffer, & Wilson, 2009; Kehoe & Wright, *in press*). We encourage more empirical studies on the effects of organization-level HR systems and employee-perceived HR systems on individual outcomes. Over time, there may be enough studies for a future meta-analysis summarizing these effects on individual outcomes.

Conclusions

This meta-analysis examined and extended the theoretical model linking human resource management with organizational outcomes (e.g., Becker & Huselid, 1998; Delery & Shaw, 2001; Guest, 1997). We found that three dimensions of HR systems (i.e., skill-enhancing, motivation-enhancing, and oppor-

tunity-enhancing HR practices) were positively related to human capital and employee motivation in different patterns in such a way that, compared with the other two HR dimensions, skill-enhancing HR practices were more positively related to human capital and less positively related to employee motivation. In addition, human capital and employee motivation mediated the relationships between three HR dimensions and voluntary turnover and operational outcomes, which in turn related to financial outcomes. We also found direct relationships between the three dimensions of HR systems and voluntary turnover, operational outcomes, and financial outcomes and thus encourage future research exploration of additional mediators in the relationships between HRM and organizational outcomes.

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This article continues with an appendix.

APPENDIX

Coding of Studies Included in the Meta-analysis

Study	Skill-Enhancing HR Practices	Motivation-Enhancing HR Practices	Opportunity-Enhancing HR Practices	Human Capital	Employee Motivation	Turnover	Operational Outcomes	Financial Outcomes
Ahmad and Schroeder (2003)	Selective hiring, extensive training	Compensation contingent on performance, employment security	Team and decentralization, sharing information		Organizational commitment		Overall operational performance	
Akhtar, Ding and Ge (2008)	Training	Employment security, results-oriented appraisal, internal career opportunities, profit sharing	Participation, job description				Product/service performance	Overall financial performance
Appleyard and Brown (2001)	Training		Team participation				Labor productivity	
Armstrong, Flood, Guthrie, Liu, MacCurtain, and Mkamwa (2010)						Voluntary turnover	Productivity, innovation	
Arthur (1994)						Voluntary turnover	Productivity	
Audea, Teo, and Crawford (2005)	Staffing, training	Appraisal, compensation, industrial relations	Job function	Technological skills, managerial and operational skills				
Barksdale (1994)		Career-enhancement practices	Work-family assistance practices		Organizational climate	Voluntary turnover		Return on invested assets, return on equity
Bartram, Stanton, Leggat, Casimir, and Fraser (2007)	Recruitment, training	Performance management	HR planning, participation			Voluntary turnover		
Batt (2002)		HR incentive index	Work design index	Job skill level		Quit rate		Percent change in sales
Batt, Colvin, and Keefe (2002)	Training	Variable pay, pay to cost of living	Problem-solving groups, self-directed teams			Quit rate		
Batt and Colvin (2011)	Initial training, selection ratio, systemic selection procedures	Internal mobility opportunities, relative pay, pensions	Problem-solving groups, self-directed teams	Average education		Quit rate	Customer satisfaction	
Beltran-Martin, Roca-Puig, Escrig-Tena, and Bou-Llusar (2008)	Selective staffing, comprehensive training	Developmental performance appraisal, equitable rewards system		Skills			Customer service	
Brown, Sturman, and Simmering (2003)		Compensation						Return on assets
Cabello-Medina, Lopez-Cabrales, & Valle-Cabrera (2011)	Selection	Incentives on compensation, career development	Empowerment	Human capital			Innovative performance	
Chan, Shaffer, and Snape (2004)	HR skill index	HR motivation index					Overall operational performance	Market performance
Chandler and McEvoy (2000)	Training hours	Outcome based pay	Total quality management					Firm earnings
Chen and Huang (2009)	Staffing, training	Performance appraisal, compensation	Participation				Innovation	
Chuang and Liao (2010)	Staffing, training	performance, compensation, caring	Involvement	Customer knowledge	Helping behavior		Service performance	Market performance
Collins and Smith (2006)					Climate for trust, cooperation			Sale growth, revenue
Collins, Smith, and Stevens (2001)	Acquisition practices, development practices	Commitment-building practices	Networking practices	Years of education and experience	Employee motivation			Sales growth

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APPENDIX

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Study	Skill-Enhancing HR Practices	Motivation-Enhancing HR Practices	Opportunity-Enhancing HR Practices	Human Capital	Employee Motivation	Turnover	Operational Outcomes	Financial Outcomes
Colvin, Batt, and Keefe (2005)	Variable pay, internal promotion, average pay	Problem-solving groups, self-directed teams	Average education		Quit rate	Discipline rate		
Datta, Guthrie, and Wright (2005)							Productivity	Sales growth
De Winne and Sels (2010)	Selection, training	Group-based appraisal and performance	Participation	Percentage of highly educated employees			Innovation	
Delaney and Huselid (1996)	Staffing selectivity, training	Incentive compensation, internal labor market	Grievance procedure, decentralized decision making					Perceived market performance
Delery and Doty (1996)	Training	Appraisals, job security, career opportunities, profit sharing	Participation				Innovation	Return on assets, return on equity
Delery, Gupta, Shaw, Jenkins, and Ganster (2000)		Pay and benefits	Voice mechanisms			Quit rate		
Den Hartog and Verborg (2004)	Employee skills and direction	Pay-for-performance, profit sharing, profit sharing, performance evaluation	Autonomy, information sharing meetings			Voluntary turnover	Overall operational performance	Economic outcome
Ericksen (2006)			Workforce alignment			Voluntary turnover		Sales growth
Faems, Sels, De Winne, and Maes (2005)	Selection, training	Career management, compensation, performance management	Participation			Voluntary turnover	Productivity	Value added
Fey and Björkman (2001)	Training and development	Pay and performance appraisal	Information sharing and complaint resolution					Overall financial performance
Fey, Björkman, and Pavlovskaya (2000)	Training	Performance based compensation, job security, career planning, salary level	Decentralization, complaint resolution					Overall financial performance
Gardner, Wright, and Moynihan, (2011)	Skill HR practices	Motivation HR practices	Empowerment HR practices	Education level	Affective commitment	Voluntary turnover		
Gelade and Ivery (2003)	Staffing, professional development		Job design		General climate	Staff retention	Customer satisfaction, clerical accuracy	Overall financial performance
Gerhart and Milkovich (1990)		Pay and incentive		Education, experience				Return on assets, sale
Ghebreorgis and Karsten (2007)	Recruitment, selection, training, development	Compensation				Voluntary turnover	Productivity	
Gibson, Porath, Benson, and Lawler (2007)			Team, information sharing, boundary setting				Customer service, quality	Overall financial performance
Gong, Chang, and Chueng (2010)	Selective hiring, extensive training	Pay contingent on performance, career planning, performance appraisal	Participation in decision making		Collective affective commitment, collective organizational citizenship behavior			
Gong, Law, Chang, and Xin (2009)	Selective hiring, extensive training	Employment security, pay contingent on performance, career development, performance appraisal	Participation in decision making		Affective commitment			Overall financial performance

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APPENDIX

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Study	Skill-Enhancing HR Practices	Motivation-Enhancing HR Practices	Opportunity-Enhancing HR Practices	Human Capital	Employee Motivation	Turnover	Operational Outcomes	Financial Outcomes
Guerrero and Barraud-Didier (2004)	Training	Performance-based compensation, stock, benefit	Teamwork, information sharing		Work climate		Productivity and service quality	Profitability
Guest, Michie, Conway, and Sheehan (2003)						Voluntary turnover	Labor productivity, quality of goods and service	Profitability, Tobin's Q, return on investment
Guest, Conway, and Dewe (2004)	Selection tests, recruitment, training and development	Performance appraisal, performance-related pay, employee security	Employee involvement, information, equal opportunities, job design, teamwork		Employment relations	Voluntary turnover	Innovation	
Guthrie (2000)	Selection	Pay, incentive, profit sharing				Voluntary turnover		
Guthrie (2001)						Retention rate	Productivity	
Harel and Tzafir (1999)	Recruitment, selection, training	Incentive compensation, internal labor market	Participation, grievance procedure				Overall operational performance	Market performance
Harrell-Cook (1999)						Voluntary turnover	Productivity	Return on assets, return on equity, return on sales
Hatch and Dyer (2004)	Screening test, training		Team involvement			Voluntary turnover		
Heffernan, Harney, Cafferkey, and Dundon (2009)					Organizational climate,	Volunteer turnover	Innovation	Overall financial performance
Hong (2009)				Human capital			Room occupancy	Revenue, gross operating profit
Huselid (1995)	Employee skills practices	Employee motivation practices				Voluntary turnover	Productivity	Tobin's Q, return on assets, sales growth
Iverson and Zatzick (2011)					Employee morale		Labor productivity	
Kalleberg and Moody (1994)	Training	Compensation	Decentralization		Employee relations	Employee retention	Product, service	Market
Katou and Budhwar (2006)	Recruitment, selection, training and development	Reward and relations		Skills	Attitudes	Voluntary turnover		Overall financial performance
Katz, Kochan, and Weber (1985)			Participation in suggestion programs		Employee attitudes		Labor efficiency, quality of product	
Kepes, Delery, and Gupta (2009)		Performance-based pay, pay level					Accident frequency ratio, out-of-service-percentage, operating ratio	Return on equity
Khatri (2000)	Structured interviews, employment tests, training	Benefits, performance-based compensation, performance appraisal	Employee participation, HR planning				Non-financial performance	Profitability, sales growth
Kim and Gong (2009)		Group-based pay		Tacit knowledge	Organizational citizenship behavior			Tobin's Q, return on assets
Kintana, Alonso, and Olaverri (2006)	Staffing, training	Pay level, security, incentive	Job rotation, team, communication				Overall operational performance	
Kirkman and Rosen (1999)					Job satisfaction, organizational commitment		Productivity, customer service	
Lee and Chee (1996)	Selection, training	Incentive pay, pay contingent upon performance	Information flow, information change, involvement					Return on equity, return on assets, value added, sales growth rate
Lee and Miller (1999)	Training and education	Compensation, profit sharing						Return on assets

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APPENDIX

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Study	Skill-Enhancing HR Practices	Motivation-Enhancing HR Practices	Opportunity-Enhancing HR Practices	Human Capital	Employee Motivation	Turnover	Operational Outcomes	Financial Outcomes
J. Li (2003)	Staffing, training	Group incentive, internal labor market	Job enrichment, grievance procedure				Overall operational performance	Market performance
Y. Li (2003)		Average salary		Proportion of university graduates		Voluntary turnover		Return on assets, sale per employee
Liao (2005)	Staffing, training and development	Performance appraisal, rewards contingent upon performance						Overall financial performance
Liao and Chuang (2004)	Training	Performance incentives	Employee involvement		Service climate		Service performance, service quality, customer satisfaction and loyalty	
Liao, Toya, Lepak, and Hong (2009)				Human capital	Empowerment, extrinsic motivation, POS		Customer satisfaction	
Liouville and Bayad (1998)					Social performance		Overall operational performance	Economic performance
Litz and Stewart (2000)	Training						Productivity	
Lopez-Cabrales, Perez-Luno, and Cabrera (2009)	Knowledge-based practices		Collaborative practices				Innovation	
Lui, Lau, and Ngo (2004)	Selective hiring, development	Career development, performance-based compensation						
MacDuffie (1995)			Work systems index				Labor productivity, quality	
Mavondo, Chimhanzi, and Stewart (2005)							Innovation, operating efficiency	Marketing effectiveness, financial performance
McClean and Collins (2011)					Employee effort		Overall operational performance	
Miah and Bird (2007)	Hiring, training and development				Organizational climate	Voluntary turnover		Growth rate
Minbaeva, Pedersen, Björkman, Fey, and Park (2003)	Training	Performance appraisal, promotion, performance-based compensation	Communication	Employees' ability	Employees' motivation			
Neal, West, and Patterson (2005)					Organizational climate		Productivity	
Ngo, Lau, and Foley (2008)					Employee relations climate		Overall operational performance	Overall financial performance
Ngo, Turban, Lau, and Lui (1998)	Structural training and development	Compensation			Employee satisfaction	Employee retention		Sales, net profit
Noble (2000)		Performance-based pay, job security	Teams, consultation		Commitment		Productivity	
Nowicki (2001)		Pay and benefit, performance evaluation	Communication, suggestions for improvement		Job satisfaction	Voluntary turnover		Revenue
Park, Mitsuhashi, Fey, and Björkman (2003)				Employee skill	Attitudes, motivation			
Patterson, West, and Wall (2004)	Skill enhancement		Job enrichment				Productivity	Profit
Paul and Anantharaman (2003)	Selection, training	Performance appraisal, compensation, career development, employee ownership	Job design, teamwork	Competence	Organizational commitment	Employee retention	Productivity, quality, speed of delivery	Financial performance

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APPENDIX

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Study	Skill-Enhancing HR Practices	Motivation-Enhancing HR Practices	Opportunity-Enhancing HR Practices	Human Capital	Employee Motivation	Turnover	Operational Outcomes	Financial Outcomes
Perry-Smith and Blum (2000)	Staffing selectivity, training effectiveness	Incentive compensation, benefits	Grievance procedures, decentralized decision making					Market performance, profit-sales growth
Rodwell and Teo (2008)	Selective staffing, comprehensive training	Performance appraisal			Organization's commitment to employees			Market performance
Rogg, Schmidt, Shull, and Schmitt (2001)	Training, hiring, testing	Performance review	Job description		Employee commitment		Customer service	
Russell, Terborg, and Powers (1985)	Training						Productivity	
Shaw, Delery, Jenkins, and Gupta (1998)	Training, selection ratio, selection procedures	Average pay, benefits, performance appraisal, procedural justice, job stability	Electric monitoring			Quit rates		
Shaw, Dineen, Fang, and Vellella (2009)	Selective staffing					Quit rates		
Shaw, Gupta, and Delery (2005)						Voluntary turnover	Productivity, accident rate, operating ratio	Revenue, return on equity
Shih, Chiang, and Hsu (2006)		Job security						Overall financial performance
Singh (2004)	Selection, training	Performance appraisal, compensation system, career planning	Employee participation, job definition					Market performance
Skaggs and Youndt (2004)				Human capital				Return on equity, return on investment
Snell and Youndt (1995)	Staffing, training and development	Performance appraisal, performance-based reward						Return on assets, sales growth
Stavrou (2005)			Job design			Voluntary turnover		
Steingruber (1996)	Training							Return on assets
Stup (2006)	Training, selection	Performance review, incentives, benefits	Written job descriptions, communication, participation		Organizational commitment			
Subramony, Krause, Norton, and Burns (2008)		Compensation			Employee morale		Productivity, customer satisfaction	
Sun, Aryee, and Law (2007)					Organizational citizenship behavior	Voluntary turnover	Productivity	
Takeuchi, Lepak, Wang, and Takeuchi (2007)				Human capital	Social exchange relationship			
Tzafir (2005a)	Selection, training	Incentive compensation, internal labor market	Employee participation				Overall operational performance	Market performance
Tzafir (2005b)	Training	Evaluation, compensation, internal labor market	Participation		Trust		Overall operational performance	Market performance
Veld, Paauwe, and Boselie (2010)		Performance management	Communication, autonomy, information sharing	Education level	Commitment			
Vlachos (2008)	Selective hiring, training and development	Compensation, job security	Decentralization, information sharing				Product quality	Market share, sales
Way (2002)	Extensiveness of staffing, formal training	Group-based performance pay, pay level	Job rotation, self-directed teams, involvement			Voluntary turnover	Labor productivity	

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APPENDIX

(Continued)

Study	Skill-Enhancing HR Practices	Motivation-Enhancing HR Practices	Opportunity-Enhancing HR Practices	Human Capital	Employee Motivation	Turnover	Operational Outcomes	Financial Outcomes
Welbourne and Andrews (1996)	Training	Organization-based rewards	Participation		Perceived organizational support, trust, organizational commitment		Productivity	Tobin's Q
White (1998)		Incentives, compensation, job security						
Whitener (2001)	Staffing, training	Appraisal, rewards						
Wood, Holman, and Stride (2006)	Selection tests, training	Performance appraisal, internal career opportunity	Work design, teams, flexible work			Employee quitting, unauthorized absence	Productivity, customer satisfaction	
Wright, Gardner, Moynihan, and Allen (2005)					Commitment		Productivity, quality	Profitability
Wright, McCormack, Sherman, and McMahan (1999)	Selection, training	Compensation, appraisal	Participation	Employee skills	Employee motivation			Overall financial performance
Yang and Lin (2009)	Recruiting and selection, training and development	Performance appraisal, compensation		Human capital			Overall operational performance	
Youndt (1997)				Human capital				Returns, sales growth
Youndt and Snell (2004)	Acquisition HR practices, developmental HR practices		Egalitarian HR practices, documentation HR practices	Human capital				Overall financial performance
Zacharatos, Barling, and Iverson (2005)	Selective hiring, training	Employment security, contingent compensation	Teams, information sharing, job quality					
Zhu, Chew, and Spangler (2005)	Selection, training	Compensation	Planning					Sales