

Multiple dimensions of human resource development and organizational performance

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Summary

Building on strategic human resource management literature, this study investigates the effects of various human resource development (HRD) dimensions on organizational performance. We identify four distinct dimensions of HRD that reflect either quantitative or qualitative approaches from either managerial or employee perspectives. Furthermore, we propose that HRD affects organizational performance by shaping employee outcomes, a prevailing but rarely tested assumption. Multi-source data collected from 207 manufacturing companies at three time points over a 5-year period largely support our theoretical propositions. A series of structural path analyses confirm that HRD improves employee commitment and competence, which in turn determine the financial performance of the organization. The quantitative dimensions of HRD (resource investment in HRD) predict only employee commitment. By contrast, the qualitative dimensions of HRD (management support for, and perceived benefits of, HRD) enhance both employee commitment and competence. Our analysis also demonstrates synergistic interactions between the quantitative and qualitative dimensions of HRD in predicting employee outcomes. This study elaborates the distinct values of different dimensions of HRD and highlights the significance of employee outcomes as the mediating mechanism between HRD and firm performance. Copyright © 2014 John Wiley & Sons, Ltd.

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Organizations use human resource (HR) practices as critical strategic tools to promote favorable behavior among employees and leverage their knowledge, skills, and abilities, which should increase productivity and performance (Bates & Chen, 2004; Clardy, 2008). Thus, employee training and development have been acknowledged as the most fundamental activity of strategic human resource management (SHRM; Dhamodharan, Daniel, & Ambuli, 2010; Gubbins, Garavan, Hogan, & Woodlock, 2006). American companies spend approximately \$US134bn annually on employee training and development (Paradise & Patel, 2009). Unfortunately, this enormous capital spending does not always translate to improved organizational performance (Gubbins et al., 2006). Recent meta-analytic reviews (Nguyen, Truong, & Buyens, 2010; Tharenou, Saks, & Moore, 2007) indicate that the empirical evidence of the contribution of human resource development (HRD) to performance is mixed, particularly at the firm level of analysis. Given the prevailing skepticism on the benefits of HRD (Bartlett, 2001; Torraco, 1999), closer examination of the link between HRD and firm performance is necessary.

A plausible reason for the mixed results involving the relationship between HRD and firm performance is the lack of consensus on the conceptualization and its operationalization of the HRD construct. Previous studies used inconsistent conceptualizations of HRD, resulting in a fragmented and limited understanding of its implications on firm performance (Nguyen et al., 2010; Zwick, 2006). Recently, scholars acknowledged such a lack of systematic conceptualization of varying approaches or forms of HRD and called for investigations and comparison of the multifaceted nature of HRD that may suggest diverse strategic approaches to HRD, each of which may have distinct performance implications (Tharenou et al., 2007).

To address this issue, we propose a systematic scheme that identifies four dimensions of HRD on the basis of two defining characteristics: (i) quantitative and qualitative approaches and (ii) managerial and employee perspectives. Existing studies mostly focused on the quantitative aspects of HRD, such as training cost, days of training, and the ratio of

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employees trained (Barrett & O'Connell, 2001; Black & Lynch, 1996; Nguyen & Truong, 2011). A smaller number of studies examined the qualitative aspects of HRD, such as the managerial support for HRD or the effectiveness of training as perceived by employees (Gubbins et al., 2006; Nishii, Lepak, & Schneider, 2008). The four HRD dimensions are expected to result in distinct implications for employee outcomes and firm performance.

Strategic human resource management scholars emphasize the importance of configuration or the simultaneous presence of certain HR practices with regard to firm performance (Lepak & Snell, 2002). Adopting this configurational perspective, we submit that the interactions between the quantitative and qualitative dimensions of HRD play a significant role in shaping employee outcomes (cf. Nguyen et al., 2010). Quantity-focused HRD is concerned with the actual number of employees in training and the amount of resources invested in developing human capital (Barrett & O'Connell, 2001; Indradevi, 2010). By promoting employee perceptions of the importance and meaning of such training and resource expenditure, quality-focused HRD can augment the value of quantity-focused HRD (Glaveli & Karassavidou, 2011; Hutchings, Zhu, Cooper, Zhang, & Shao, 2009). Thus, this study theorizes and empirically tests the possibility that quantitative and qualitative dimensions interact synergistically.

Finally, we also identify the mediating processes by which HRD affects firm performance. In the SHRM literature, scholars have identified three mediating mechanisms that explain the SHRM-firm performance link: "(a) increasing employees' knowledge, skills, and abilities (KSAs), (b) empowering employees to act, and (c) motivating them to do so" (Combs, Liu, Hall, & Kitchen, 2006, p. 503). Employee KSAs and motivation were also identified as the main reasons for the HRD-performance relationship (Tracey, Hinkin, Tannenbaum, & Mathieu, 2001). In the present study, we identify employee commitment and competence as critical mediating processes underlying the HRD-firm performance link.

In summary, the present study makes the following contributions to the SHRM and HRD literature. First, we develop a systematic conceptual model that identifies four dimensions of HRD that have differentiated implications for intermediate employee outcomes, and ultimately, the financial performance of organizations. Second, adopting the configurational perspective, we further examine the synergetic interaction effects between the quantitative and qualitative dimensions of HRD on employee outcomes. Finally, using multi-source, three-wave time-lagged data covering a 5-year period, we overcome common methodological limitations, such as "post-predictive" (i.e., predicting past performance) or "retrospective" (i.e., asking respondents to recall HR practices that existed prior to the performance period) approaches (Wright, Gardner, Moynihan, & Allen, 2005).

Theoretical Framework and Hypotheses

Human resource development has been broadly defined as "a process for developing and unleashing human expertise through organization development and personnel training and development for the purpose of improving performance" (Swanson & Holton, 2001, p. 4). In the present study, we focus on various training efforts of organizations to develop the task-related skills and knowledge of their employees. Such training has been acknowledged as the core feature of HRD efforts (Dhamodharan et al., 2010; Gubbins et al., 2006). Although a number of studies have investigated the effects of HRD on productivity and financial performance, the results were mixed (Bartel, 1994; Black & Lynch, 1996; Indradevi, 2010).

Recent reviews (Nguyen et al., 2010; Tharenou et al., 2007) have indicated that existing studies conceptualize and test different dimensions of HRD under the same name, resulting in mixed empirical findings and controversy on the value of HRD in performance. For instance, HRD focusing on quantitative dimensions, such as the presence of training, hours of training, and expenditure on HRD activities, has been rejected as a significant predictor of firm performance (Aragón-Sánchez, Barba-Aragón, & Sanz-Valle, 2003; Castellanos & Martín, 2011; Glaveli & Karassavidou, 2011). In contrast, HRD concentrating on qualitative dimensions, such as social support for developing employees, perceived benefits of training, and long-term approach to HRD, has been positively associated with firm performance (Bartlett, 2001; Glaveli & Karassavidou, 2011). Given the contradictory findings on HRD-performance relationships in prior studies, a comprehensive examination that systematically considers the various dimensions of HRD is imperative.

Four HRD dimensions

Previous studies have used either quantitative or qualitative approaches to conceptualize HRD. The hard approach, which focuses on the quantitative aspects of HRD, is often based on objective indicators, such as the presence, proportion, cost, and amount of HRD (Aragón-Sánchez et al., 2003; Nguyen & Truong, 2011). In contrast, the soft approach, which focuses on the qualitative aspects of HRD, relies more on the subjective endorsement by the management or on employee satisfaction with HRD (Gubbins et al., 2006; Katou, 2009). Existing studies can also adopt either a managerial perspective (Black & Lynch, 1996; Castellanos & Martín, 2011; Liao, Rice, & Martin, 2011) or an employee perspective (Bartlett, 2001; Gubbins et al., 2006). Studies based on the managerial perspective focus on the characteristics of HRD as implemented by the employer (Aragón-Sánchez et al., 2003; Barrett & O'Connell, 2001), whereas those based on the employee perspective focus on the personal experiences of employees and their evaluation of HRD (Glaveli & Karassavidou, 2011). These HRD dimensions with different foci or features have been collapsed and treated uniformly in prior studies, resulting in inconsistent empirical findings. Hence, the current understanding of the strategic choices available to firms related to employee development remains limited.

Human resource development is multifaceted, and its core feature cannot be captured by a single concept (Tharenou et al., 2007). Therefore, the present study endorses multiple dimensions of HRD. Specifically, we identify four HRD dimensions that can be considered part of the HR architecture of firms by combining the quantitative and qualitative aspects of HRD with managerial and employee perspectives (cf. Tharenou et al., 2007). The four dimensions are (i) *resource investment in HRD* (quantitative dimension focusing on management), which refers to the amount of actual monetary or other forms of expenditure for HRD; (ii) *employee exposure to HRD* (quantitative dimension focusing on employees), which refers to the amount or degree to which employees are exposed to training and development activities; (iii) *management support for HRD* (qualitative dimension focusing on management), which indicates management commitment to, and support for, the development of HRs; and (iv) *perceived benefits of HRD* (qualitative dimension focusing on employees), which indicates the extent to which employees perceive HRD activities as task relevant and beneficial.

Figure 1 depicts four distinct dimensions of HRD. This classification scheme enriches the literature by specifying the theoretically meaningful dimensions of HRD to prevent arbitrary choices and fragmented empirical approaches to HRD. This scheme likewise allows a systematic comparison of HRD dimensions with respect to their distinct efficacy in producing desirable employee and organizational outcomes, thereby guiding the choices of organizations in terms of HRD approaches. We propose and validate the four HRD dimensions to accrue these theoretical and practical benefits. A core requisite of construct validation is discriminant and convergent validity (Campbell & Fiske, 1959). Discriminant validity requires that the dimensions of a construct be able to reflect distinct components. That is, the dimensions should not be equivalent even though they are related. Convergent validity requires that each dimension, although distinct, be able to contribute to an overall construct (cf. Spreitzer, 1995). We thus advance the following hypotheses:

Hypothesis 1a: HRD has four distinct dimensions.

Hypothesis 1b: Each dimension contributes to an overall construct of HRD.

Human resource development and employee outcomes

Our overall conceptual framework is driven by the input–throughput–output model of SHRM literature, according to which various HR practices affect firm performance by shaping employee KSAs and motivation (Combs et al., 2006; Katou, 2009; Kehoe & Wright, 2013; Paul & Anantharaman, 2003; Tracey et al., 2001). This position is consistent with the fundamental idea of institutional theory, which highlights the role of micro-level processes that explain the relationship between macro-level structures and outcomes (Choi & Chang, 2009). Likewise, HRD researchers

Quantitative Approach	Resource Investment in HRD	Employee Exposure to HRD
	<ul style="list-style-type: none"> • Total expenditure on training (Aragón-Sánchez et al., 2003; Nguyen & Truong, 2011) • Ratio of total expenditure on training to total payroll (Barrett & O'Connell, 2001; Castellanos & Martin, 2011) 	<ul style="list-style-type: none"> • Presence of training (Bartel, 1994; Castellanos & Martin, 2011; Hutchings et al. 2009; Liao et al., 2011; Tabassi et al., 2012) • Hours of training employee received (Aragón-Sánchez et al., 2003; Bartlett, 2001; Collier et al., 2011; Glaveli & Karassavidou, 2011) • Proportion of employees trained (Barrett & O'Connell, 2001; Collier et al., 2011)
Qualitative Approach	Management Support for HRD	Perceived Benefits of HRD
	<ul style="list-style-type: none"> • Perceptions of management involvement and support (Gubbins et al., 2006) • Support for training by senior management (Bartlett, 2001; Glaveli & Karassavidou, 2011; Gubbins et al., 2006) 	<ul style="list-style-type: none"> • Perceived effectiveness of training (Katou, 2009) • Perceived benefits of training (Bartlett, 2001; Glaveli & Karassavidou, 2011) • Perceived importance/value of training (Gubbins et al., 2006; Tabassi et al., 2012)
	Management Perspective	Employee Perspective

Figure 1. Four dimensions of HRD

assert that the discretionary efforts of employees, on the basis of their commitment and competence induced by HRD, promote organizational performance (Nguyen et al., 2010; Tharenou et al., 2007). Commitment refers to a sense of being emotionally bound to the target, which in the present study is the organization (Tsui, Pearce, Porter, & Pripoli, 1997). Competence is represented by a combination of the KSAs of the employees, which enable them to fulfill the requisite tasks (Le Deist & Winterton, 2005). In the present study, employee competence specifically refers to the extent to which an organization holds employees with greater KSAs than those held by its competitors, thereby giving the organization an operational advantage. We isolate employee commitment and competence as critical intervening processes that account for the effects of HRD on the financial performance of an organization.

Employee commitment

Researchers maintain that HRD exerts significant effects on employee outcomes, such as motivation, commitment, knowledge, and skills (Hutchings et al., 2009; Indradevi, 2010). The organizational equilibrium theory indicates that employees are motivated to contribute to their organization when the support and incentives offered by the organization are equal to, or exceed, the contributions offered by the employees (March & Simon, 1958). Further, consistent with social exchange theory and the concept of reciprocity, resource investment and managerial support for training may generate perceptions of organizational support and care for the employees, which in turn induce in the employees a sense of attachment to the organization and obligation to return the favor (Masterson & Stamper, 2003; Rhoades & Eisenberger, 2002).

Perceived organizational support also increases the perceived insider status of employees (Stamper & Masterson, 2002). With increased insider perception, employees are likely to experience greater attachment and a greater desire to remain with the organization and are thus ready to exert considerable effort on its behalf (Masterson & Stamper,

2003; Rhoades & Eisenberger, 2002). In addition, employees exposed to sincere managerial support and high-quality HRD activities may perceive that such developmental efforts on part of their organization are not simply perfunctory actions. These perceptions motivate the employees to ascribe human-like attributes to their organization and build a sense of obligation toward it (Glaveli & Karassavidou, 2011). In such a situation, the employees develop a trusting relationship with, and attachment toward, the organization, which in turn elicit desirable attitudes, such as organizational commitment (Macky & Boxall, 2007).

Hypothesis 2: The four dimensions of HRD are positively related with employee commitment.

Employee competence

Human resource development programs are designed and implemented to improve employee capabilities, so that the employees perform effectively and meet performance expectations (Indradevi, 2010; Swanson & Holton, 2001). Given that HRD efforts provide a wide array of training and development opportunities for employees, employees exposed to HRD programs are in a favorable position to improve various task-related KSAs (Aragón-Sánchez et al., 2003). Thus, training opportunities for employees also enhance their sense of task-related efficacy (Choi & Chang, 2009; Clardy, 2008). In addition, organizational practices in support of employee training send a clear signal of managerial interest in employee development (Bartlett, 2001; Gubbins et al., 2006), which urges employees to improve their KSAs to work smarter (Huselid, 1995).

However, resources allocated to HRD and the quantity of training activities themselves may not automatically induce learning experiences on part of the employees, because tuition spent and the number of class hours are poor predictors of student academic achievement (Quiñones, 1995; Tabassi, Ramli, & Bakar, 2012). Recent learning design frameworks emphasize a more active role for learners (Bell & Kozlowski, 2008), suggesting that employees are likely to improve their competence only when they perceive HRD as valuable and are motivated to actively engage in learning (Clardy, 2008; Tabassi et al., 2012). In this respect, managerial support and encouragement of employee development can enhance employee motivation for learning. In addition, employees may engage in active learning when they perceive that HRD programs are effective and valuable for them (Glaveli & Karassavidou, 2011). Thus, although all dimensions of HRD may improve employee competence, we propose that the qualitative dimensions of HRD are more likely to promote employee efforts toward learning and leveraging new knowledge and skills than the quantitative dimensions of HRD (Noe, Tews, & Dachner, 2010).

Hypothesis 3: Qualitative dimensions of HRD (management support for HRD and perceived benefits of HRD) are more strongly and positively related with employee competence than quantitative dimensions of HRD (resource investment in HRD and employee exposure to HRD).

Employee outcomes and organizational performance

Employees' membership perception and commitment to the organization tend to increase their efforts toward achieving organizational goals beyond the minimum task requirement (Macky & Boxall, 2007; Wright et al., 2005). In addition, employees' task-relevant KSAs are a critical condition for the efficient and effective operation of various organizational functions (Gubbins et al., 2006; Indradevi, 2010; Katou, 2009). The enhanced levels and quality of in-role and extra-role task efforts driven by increased commitment and competence of employees contribute to effective organizational functioning, which in turn is reflected in the financial performance of an organization (Katou, 2009; Kehoe & Wright, 2013; Paul & Anantharaman, 2003).

Hypothesis 4: Employee commitment is positively related with organizational performance.

Hypothesis 5: Employee competence is positively related with organizational performance.

Employee commitment and competence as a mediating mechanism

Combining the earlier propositions, we propose employee commitment and competence as meaningful intervening factors by which HRD improves firm performance. Although scholars have presumed such intervening processes (Aragón-Sánchez et al., 2003; Glaveli & Karassavidou, 2011), empirical evidence is still limited, particularly at the organization level (Nguyen et al., 2010). In the present study, we hypothesize and empirically validate whether employee outcomes actually operate as significant reasons for the effects of HRD on organizational performance.

Hypothesis 6: The relationship between the four dimensions of HRD and organizational performance is mediated by employee commitment.

Hypothesis 7: The relationship between the four dimensions of HRD and organizational performance is mediated by employee competence.

Interactions between quantitative and qualitative dimensions of HRD

Scholars have asserted that the performance effects of HRD do not simply stem from the unilateral efforts of the organization, but rather from a joint effort by the organization and its employees (Barrett & O'Connell, 2001). Employees' voluntary efforts depend heavily on their perceptions of the meaningfulness of HRD they experience, which is reflected in the qualitative dimensions of HRD (Bartlett, 2001). For this reason, we propose that qualitative dimensions of HRD unleash the potential of the quantitative dimensions of HRD for employee commitment and competence by actualizing the benefit of the quantitative dimensions. The presence or amount of HRD available to employees, as indicated by the quantitative dimensions, may promote employee outcomes to the extent that employees believe that management support for HRD is genuine and HRD activities are beneficial for them. Managers' earnest support for HRD may engender employee trust and beliefs about the value of the developmental efforts, resulting in positive employee outcomes. Similarly, employees who positively evaluate HRD as relevant and useful may become enthusiastic in utilizing available training programs (Tabassi et al., 2012). Conversely, even when employees are exposed to numerous training programs, the intended benefits may not be realized unless the training is aligned with employee interests and needs (Nijhof, 2004). In sum, we advance the following interaction hypothesis:

Hypothesis 8: The relationships between the quantitative dimensions of HRD (i.e., resource investment in HRD and employee exposure to HRD) and employee commitment and competence are moderated by the qualitative dimensions of HRD (i.e., management support for HRD and perceived benefits of HRD) in such a way that the relationships become more positive with the co-presence of qualitative dimensions of HRD.

Method

Research setting and data structure

To test the present hypotheses, we used Human Capital Corporate Panel data collected by the Korea Research Institute of Vocational Education and Training (KRIVET). A stratified, random sample was drawn from manufacturing companies listed in the database of the Korea Investors Service (KIS). KRIVET created a 4 × 2 matrix on the basis of organization size (i.e., 100 to 299, 300 to 999, 1000 to 2999, and more than 3000) and ownership type

(publicly vs privately owned). To avoid the potential problems of over- or under-sampling of specific cells, approximately 25 percent of the organizations were randomly selected from each cell of the matrix. The corporate data were collected at two time points: 2005 (T1, $N=303$) and 2007 (T2, $N=314$). Of the initial sample, 207 organizations participated in both waves of data collection and provided usable data for the present analysis. These organizations had 739 employees on average and represented diverse manufacturing industries, including automobile, electronics, computer, chemical products, and machinery. For the 207 organizations with complete survey data, we identified matching financial performance data for 2008 and 2009 as archived by KIS. This time-lagged research design corresponded with the following conceptual model: (i) four HRD dimensions were reported by HRM directors and employees in 2005 (T1); (ii) employee commitment and competence were rated by employees and managers in 2007 (T2); and (iii) financial data for 2008 and 2009 were matched (T3).

In each organization, different groups of members, including HRM managers, strategy managers, departmental managers, production managers, and employees, participated in the corporate survey over the period of 3 years. The T1 sample was composed of the HRM and strategy directors of each organization and 6973 employees, including managers, engineers, office workers, and factory workers. To avoid potential problems of over- or under-sampling of employees, approximately 5 percent of employees were randomly selected from each of the participating organizations. On average, there were 33.69 ($SD=19.92$) participants per company, composed of 85.4 percent men with a mean age of 41.8 years ($SD=8.11$) and an average organizational tenure of 14.3 years ($SD=7.29$). For the T2 data, 1202 departmental and production managers and 4630 organizational members completed the survey. The T2 participants included 85.9 percent men with a mean age of 39.9 years ($SD=7.95$) and an average organizational tenure of 12.7 years ($SD=7.52$).

Measures

All variables were assessed using multi-item measures with a 5-point Likert-type scale ranging from 1 (*strongly disagree*) to 5 (*strongly agree*). Individual responses were aggregated to the organization level for analysis. All scales exhibited acceptable within-organization agreement ($r_{wg(j)}$) and ICCs (ICC(1) and ICC(2)), which suggested that employees and managers of the same organization possess shared perceptions on the present constructs (Chen, Mathieu, & Bliese, 2004). HRD measures addressed the collective training inside and outside the company on the basis of off-the-job formal training programs. A separate scale was used to assess the four HRD dimensions on the basis of prior research. For discriminant validity, each scale included only a single dimension of HRD, not bridging two or more dimensions together.

Resource investment in HRD (HRM director, T1)

The quantity of organizational input to HRD was determined using the actual amount of monetary investment in HRD in each organization. The HRM directors reported the total cost the organization incurred in training its employees in (i) collective training inside the company and (ii) collective training outside the company on the basis of the financial data of the company. The total amount of expenses for these HRD efforts was divided by the size of the organization to obtain the per capita spending on HRD.

Management support for HRD (HRM director and employees, T1)

Instead of solely relying on a report by a single respondent, such as the CEO or an executive (Castellanos & Martín, 2011), we considered both manager and employee perspectives in assessing management support for HRD to increase the reliability of the measure (cf. Wright et al., 2001). HRM directors reported the level of management support for HRD using the following three-item scale ($\alpha=.84$): (i) "Management of our company has a clear vision of human resource development," (ii) "Our company has a strong dedication to develop highly competent employees," and (iii) "Management of our company emphasizes the value of competent employees" (Bartlett, 2001; Gubbins et al., 2006). Approximately 34 employees from each participating organization rated the management support

for HRD by responding to the following item: “Our company has a strong dedication to develop highly competent employees.” The scale showed acceptable levels of organizational-level psychometric properties ($ICC(1) = .16$, $ICC(2) = .81$, $F = 7.38$, $p < .001$). The responses of the HRM directors and the employees were significantly correlated ($r = .44$, $p < .01$), and thus the two scores were averaged to form the management support score of the organization.¹

Employee exposure to HRD (HRM director, T1)

The quantity to which employees are exposed to HRD was measured by the amount of hours devoted to collective training that employees receive per year. The HRM directors of each company reported the total number of training hours on the basis of the company records. This measure was created by averaging the number of training hours provided for (i) newly recruited employees including both office and manufacturing workers and (ii) regular job training for existing employees offered each year (Aragón-Sánchez et al., 2003; Collier, Green, Kim, & Peirson, 2011).

Perceived benefits of HRD (employees, T1)

On the basis of existing measures (Bartlett, 2001; Gubbins et al., 2006), we constructed a two-item scale ($\alpha = .81$, $r_{wg(2)} = .90$, $ICC(1) = .03$, $ICC(2) = .47$, $F = 1.89$, $p < .001$) to measure the benefits of HRD as perceived by employees: “The following HRD activities for employees in our company are beneficial in improving our task abilities and skills: (a) collective training inside the company and (b) collective training outside the company.”

Employee commitment (employees, T2)

Adopting items from the Organizational Commitment Questionnaire (Porter, Richard, Richard, & Boilian, 1974), we assessed employee commitment using four items ($\alpha = .78$, $r_{wg(4)} = .89$, $ICC(1) = .13$, $ICC(2) = .81$, $F = 5.18$, $p < .001$): (i) “I feel as if our company’s problems are my own,” (ii) “If I decide to leave this company, I would lose too much in my life,” (iii) “Our company is worthy of my loyalty,” and (iv) “Our company makes employees exert voluntary efforts toward organizational goals.”

Employee competence (departmental managers and production managers, T2)

Drawing on existing studies (Park, Mitsuhashi, Fey, & Björkman, 2003; Wright, McCormick, Sherman, & McMahan, 1999), employee competence was measured by combining two aspects of employee KSAs: (i) overall competence of employees in various functional areas and (ii) task-related specific knowledge and skills in the core production lines of the manufacturing companies of the current sample. The departmental managers reported the level of overall competence of employees by rating the following five items ($\alpha = .72$, $r_{wg(5)} = .89$, $ICC(1) = .34$, $ICC(2) = .76$, $F = 4.23$, $p < .001$):

Employees of our company hold higher levels of overall ability compared to those of our competitors in the following areas: (a) research and development, (b) sales and service, (c) manufacturing, (d) managerial support and staff, and (e) engineering technology. Given that the core competence of manufacturing companies usually lies in the production procedures and technology, production supervisors were asked to identify two main production lines and to report the level of production workers’ task-specific knowledge and skills in these production areas compared to employees of competing companies (1 = very poor, 5 = quite proficient; $\alpha = .79$, $r_{wg(2)} = .85$, $ICC(1) = .10$, $ICC(2) = .41$, $F = 1.67$, $p < .01$). Employee competence was computed by averaging the score of overall competence rated by the departmental managers and that of task-specific abilities in the production lines reported by the production supervisors.

¹Given that employees reported only one item for management support for HRD at T1, we conducted a follow-up analysis to confirm the validity of employee ratings. First, the two scores for management support of HRD offered by HRM directors and employees were significantly correlated ($r = .44$, $p < .01$). The report of the HRM director at T1 was then compared with that of employees at T2, as the employees responded to all three items at T2. These two scores were significantly correlated ($r = .37$, $p < .01$). The zero-order correlation between the report of employees at T1 based on the single-item measure and that at T2 with all three items for management support of HRD was likewise significant ($r = .49$, $p < .01$). These converging correlation patterns demonstrated the validity of the employee report on management support for HRD at T1.

Financial performance (KIS, T3)

The financial performance of the organization was operationalized as return on asset (ROA) in 2008 and 2009, which covered a 2-year period after the T2 corporate survey in 2007. Researchers have confirmed the validity of ROA as a measure of organizational financial performance and employed widely in organization-level studies (Bernthal & Wellins, 2006). We matched financial performance data, as archived by KIS, for the organizations in the present sample with complete survey data. Financial performance data were standardized and transformed into z-scores before analysis.

Control variables (strategy director and HRM director, T1)

In our literature review, we identified a number of factors that may affect organizational performance. In our analysis, we controlled the effects of the following factors on firm performance: (i) industry type, (ii) organization size, (iii) competitive environment, and (iv) market demand. Scholars have often found industry type to be a critical determinant of organizational performance (Swanson & Holton, 2001). Thus, we controlled the effect of industry type using nine dummies created for 10 industry categories: food, fiber, chemical, plastic, metal, machinery, computer, electronics, electric appliance, and automobile industries. Organization size has also been acknowledged as a critical firm-specific factor that affects various organizational outcomes (Barrett & O'Connell, 2001; Zhang & Li, 2009). In the present analysis, organization size was controlled using a scale with four categories indicating the number of employees (1 = 100–299, 2 = 300–999, 3 = 1000–2999, 4 = above 3000). Given the critical role of environment-specific factors in enhancing organizational performance (Katou, 2009; Liao, Toya, Lepak, & Hong, 2009), we also controlled the extent of competition and market demand. The degree of competition was measured by the item “In the past two years, how many domestic competitors have you had?” (1 = none, 2 = 1–2, 3 = 3–4, 4 = 5–9, 5 = more than 10). Market demand was measured by the item “In the past two years, how was the market trend in the demand for the main products of your company?” (1 = rapidly decreasing, 5 = rapidly increasing).²

In addition, to confirm the isolated HRD effects distinct from other HR practices, we controlled the effects of relevant practices, such as intensive selection, performance appraisal, and incentive compensation (Katou, 2009; Richard & Johnson, 2004). We assessed intensive selection by asking the HRM directors to mark all the practices their company administrates prior to hiring: (i) personality test, (ii) aptitude test, (iii) personality interview, (iv) oral competence test, (v) writing competence test, (vi) IQ test, (vii) group discussion, (viii) camp/outdoor observation, (ix) internship, (x) performance test, (xi) recommendation, and (xii) statement of self-introduction. Performance appraisal was measured by asking the HRM directors to mark all systems their company utilizes for employee performance appraisal: (i) balanced scorecard, (ii) management by objectives, (iii) competence appraisal, and (iv) leadership appraisal. Incentive compensation was assessed by simply asking the HRM directors whether their company offers incentives on the basis of employee performance (0 = no, 1 = yes).

Finally, considering the possible effect of the levels of commitment and competence in the past on the current levels, we controlled employee commitment and competence at T1 when testing the effects of HRD on commitment and competence at T2. Commitment at T1 was measured using the following three-item scale: (i) “Our company makes employees exert voluntary efforts toward organizational goals,” (ii) “I am proud to tell others that I am part of this organization,” and (iii) “If I am offered better working conditions including money, I would consider leaving this company” (reverse-coded). Although we used different sets of items to assess commitment at T1 and T2, these items represented different subsets of a larger commitment scale (Tsui et al., 1997). Employee competence at T1 was assessed by the same items used in T2, which were rated by departmental managers and production managers.

²Considering the role of firm-specific (e.g., industry type and organization size) and environment-specific factors (e.g., competitive environment and market demand) in organizational performance, the effects of these factors on financial performance were controlled. These organizational and environmental factors may also plausibly affect the levels of the four HRD dimensions. Thus, the same model was tested as shown in Figure 2, in which paths from these firm-specific and environment-specific factors were added to the four HRD dimensions. The results were almost identical to the current findings reported in Figure 2. Nevertheless, the addition of 48 paths from the 12 control variables to the four HRD dimensions substantially diminished the model fit. Thus, we reported the results without these additional control paths.

Results

The descriptive statistics and correlations among the study variables are reported in Table 1. We proposed two sets of hypotheses in this study, namely, (i) the empirical distinctiveness of the four HRD dimensions that constitute the overall construct of HRD and (ii) the differentiated effects of these four HRD dimensions on employee and organizational outcomes. We tested the first set of hypotheses using confirmatory factor analysis (CFA) and the second set using structural path analysis.

Four-dimensional structure of HRD

The CFA of the eight items that comprise the four dimensions of HRD measures was conducted to test their empirical distinctiveness. The four-factor model exhibited a good fit with the data ($\chi^2(df=15)=36.35$, $p=.002$; $CFI=0.95$; $RMSEA=0.063$; $AIC=78.35$) and performed better than any of the alternative three- and two-factor models (all $p<.001$). The CFA pattern confirms the discriminant validity of the four HRD dimensions, thereby supporting Hypothesis 1a.

We further conducted a second-order CFA to test the convergent validity of the four HRD dimensions. The latent construct of HRD was included as a second-order factor. Resource investment in, management support for, employee exposure to, and perceived benefits of HRD were included as the four distinct first-order factors that compose the overall construct of HRD. This model produced a significantly better model fit ($\chi^2(df=16)=19.9$, $p=.225$; $CFI=0.99$; $RMSEA=0.034$; $AIC=59.90$) than the four-factor measurement model ($\Delta\chi^2(\Delta df=1)=16.46$, $p<.001$). This second-order CFA demonstrates that each of the four dimensions of HRD contributes to an overall construct of HRD, thereby confirming Hypothesis 1b.

Hypothesized model and alternative models

We employed structural path analysis to test the hypotheses involving the main and moderated effects of HRD dimensions on outcomes. Our model included 19 indicators of seven study variables in addition to 17 control variables, resulting in 630 parameters to be estimated [$36(36-1)/2=630$], which was substantially larger than the size of the present sample of 207 organizations. This sample size was insufficient to reliably estimate the parameters even when item parceling was used. We thus employed a structural path analysis that uses the scale means of each variable rather than incorporates item-level indicators, following the previous recommendation for dealing with the small sample situation (Bandalos & Finney, 2001).

We fit the hypothesized model with the covariances among the four HRD dimensions. Considering that different metrics were used to measure these HRD dimensions and financial performance, these variables were standardized and transformed into z -scores. The hypothesized structural model produced good fit to the data (Hu & Bentler, 1999): $\chi^2(df=175)=197.14$, $p=.12$; $CFI=0.97$; $RMSEA=0.025$; $AIC=447.14$. Following the recommended procedure (Anderson & Gerbing, 1988), we verified the possibility that theoretically plausible alternative models could offer a better explanation of the observed patterns in the data. We first verified whether corporate efforts for HRD (i.e., resource investment and management support) could shape employee experiences on exposure to and perceived benefits of HRD, which might have direct implications for employee outcomes (Alternative Model 1). As reported in Table 2, this alternative model exhibited a model fit that was worse than that of the hypothesized model.

Second, although we hypothesized full mediation, the mediated relationships shown in Figure 2 could only be partial rather than full. We therefore tested the possibility for partial mediation by adding the direct effect paths from HRD to financial performance (Alternative Model 2). Although this model indicated a good model fit as reported in Table 2, it failed to significantly improve the specified model fit ($\Delta\chi^2(df=2)=0.46$, $p>.50$), and all the added paths were not significant. This model comparison indicated that those direct effect paths were redundant and unnecessary to explain the observed patterns in the data.

Table 1. Means, standard deviations, and correlations among study variables.

Variables	M	SD	1	2	3	4	5	6	7	8	9	10	11	12
1. Food industry	0.09	0.30	—											
2. Fiber industry	0.06	0.23	-.08	—										
3. Chemical industry	0.13	0.33	-.12	-.09	—									
4. Plastic industry	0.05	0.21	-.07	-.06	-.09	—								
5. Metal industry	0.19	0.40	-.16*	-.12	-.09**	-.11	—							
6. Machinery industry	0.07	0.26	-.09	-.07	-.11	-.06	-.14*	—						
7. Computer industry	0.02	0.14	-.05	-.04	-.05	-.03	-.07	-.04	—					
8. Electronics industry	0.08	0.28	-.10	-.07	-.11	-.07	-.15*	-.08	-.04	—				
9. Electric appliance industry	0.15	0.35	-.14	-.10	-.16*	-.09	-.20**	-.12	-.06	-.12	—			
10. Organization size	1.86	0.94	.38**	.02	.03	-.11	-.06	-.08	-.02	-.16*	-.11	—		
11. Competitive environment	3.16	0.97	.18**	.04	-.02	-.02	-.05	-.09	-.06	-.01	.09	-.02	—	
12. Market demand	3.09	0.97	.05	-.13	-.04	-.07	-.07	-.03	.02	.12	.12	-.06	-.07	—
13. Intensive selection	2.57	1.29	.20**	.02	.10	-.08	.02	.02	-.12	-.05	-.13	.43**	-.13	.01
14. Performance appraisal	1.35	1.25	.11	-.09	-.01	-.10	.07	.03	.07	.02	-.05	.30**	-.07	.09
15. Incentive compensation	3.04	0.49	.18*	-.03	.06	-.09	.01	-.11	.11	-.17*	.10	.23**	.02	-.07
16. Employee commitment (T1)	3.04	0.23	.05	-.03	.04	-.20**	.01	-.01	.11	.08	.12	.14	-.01	.05
17. Employee competence (T1)	3.15	0.62	.01	.03	.13	-.01	.12	-.06	-.01	-.02	-.17*	.18*	-.28**	.07
18. Resource investment in HRD ^a	0.24	0.38	.01	-.06	.09	-.07	.01	.02	.04	-.01	-.08	.33**	-.09	.07
19. Employee exposure to HRD	162.77	184.41	.08	.10	.07	-.08	.10	-.02	-.07	-.01	-.13	.22**	-.14*	-.03
20. Management support for HRD	3.40	0.50	-.01	-.06	.05	-.15*	-.02	-.08	.08	.13	.11	.16*	-.05	.29**
21. Perceived benefits of HRD	3.27	0.27	.08	-.05	.11	.02	-.02	.03	.12	-.01	-.11	.31**	-.01	.01
22. Employee commitment (T2)	3.29	0.26	.17*	-.13	.13	-.09	.15*	-.07	-.08	-.06	-.14*	.41**	-.03	.07
23. Employee competence (T2)	3.67	0.52	.07	-.01	.18**	-.10	.07	-.06	-.04	-.02	-.06	.18*	-.14*	.04
24. Financial performance	3.36	11.66	.10	-.03	.04	.11	-.04	-.06	.07	-.03	-.04	.14*	-.06	-.05
Variables			13	14	15	16	17	18	19	20	21	22	23	24
13. Intensive selection			—											
14. Performance appraisal			.33**	—										
15. Incentive compensation			.19**	.26**	—									
16. Employee commitment (T1)			.10	.29**	.15*	—								
17. Employee competence (T1)			.20*	.16*	.01	.05	—							
18. Resource investment in HRD ^a			.34**	.18**	.13	.47	.16*	—						
19. Employee exposure to HRD			.21**	.01	-.01	.05	.15*	.15*	—					
20. Management support for HRD			.19**	.37**	.22**	.14*	.53**	.20**	-.03	—				
21. Perceived benefits of HRD			.14*	.11	.19**	.07	.21**	.22**	.24**	.15*	—			
22. Employee commitment (T2)			.29**	.26**	.18*	.27**	.15**	.35**	.29**	.16*	.26**	—		
23. Employee competence (T2)			.02	.13	.09	.20**	.26**	.19**	.18*	.05	.18*	.23**	—	
24. Financial performance			-.03	.07	.03	.14*	.06	-.04	-.01	-.15*	.12	.14**	.13**	—

Note: Unit of analysis is organization (N = 207).
^aUnit is 1 million Korean won. *p < .05; **p < .01.

Table 2. Comparison of model fit of alternative models.

Model	$\chi^2(df)$	<i>p</i>	CFI	RMSEA	RMR	AIC
Hypothesized model	197.14 (175)	.121	0.97	0.025	0.046	447.14
Alternative Model 1: Resource investment in HRD and management support for HRD predicting employee exposure to HRD and perceived benefits of HRD	205.81 (179)	.083	0.96	0.027	0.044	447.81
Alternative Model 2: Direct effects of HRD on financial performance (partial mediation model)	194.29 (171)	.107	0.96	0.026	0.046	452.29
Alternative Model 3: Parallel effects of HRD and employee outcomes on operational performance	218.93 (179)	.022	0.94	0.033	0.049	460.93

Note: CFI = Comparative Fit Index; RMSEA = Root Mean-Square Error of Approximation; RMR = Root Mean-Square of Residual; AIC = Akaike Information Criterion.

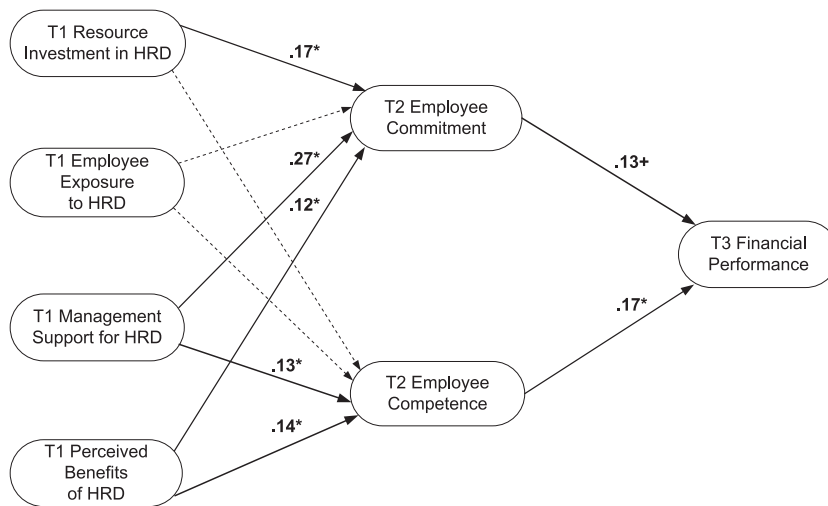


Figure 2. Four dimensions of HRD

Note: Significant paths are depicted as solid lines, and insignificant paths are depicted as dotted lines in the diagram. Control variables are not presented in the diagram. +*p* < .10; **p* < .05.

Finally, we modified the model so that HRD and employee outcomes have separate independent effects on financial performance rather than have mediated relationships (Alternative Model 3). This model produced a model fit that was significantly worse than that of the hypothesized model. This model comparison directed us to select the hypothesized model as the most parsimonious and plausible explanation for the current data.

Testing structural hypotheses

The results of the best-fitting hypothesized model are presented in Figure 2. Employee commitment and competence at T1 were positive predictors of employee commitment and competence at T2 ($\beta = .19$, $p < .10$ and $\beta = .23$, $p < .001$, respectively). Among the three other HR practices controlled in our analysis, only intensive selection was significantly related to employee commitment and competence ($\beta = .37$, $p < .05$ and $\beta = .33$, $p < .10$, respectively). None of the control variables for financial performance were significant.

Main effects of the four HRD dimensions

Hypothesis 2 posited that employee commitment is predicted by all the HRD dimensions. Supporting this hypothesis, resource investment, management support, and perceived benefits of HRD had significant positive effects on employee commitment ($\beta = .17$, $\beta = .27$, and $\beta = .12$, respectively, all $p < .05$). In Hypothesis 3, we proposed that the qualitative dimensions of HRD are more strongly related to employee competence than the quantitative dimensions. Our structural path analysis confirmed that both qualitative dimensions (management support and perceived benefits of HRD) were significant predictors of employee competence ($\beta = .13$ and $\beta = .14$, respectively, both $p < .05$). However, neither of the quantitative dimensions of HRD was significantly related to employee competence. These patterns support Hypothesis 3.

Employee outcomes and financial performance

Hypotheses 4 and 5 proposed positive effects of employee commitment and competence on financial performance of organizations. The path analysis demonstrated that employee competence measured at T2 was indeed a significant predictor of organizational financial performance at T3 ($\beta = .17$, $p < .05$). Employee commitment was related to financial performance with marginal statistical significance ($\beta = .13$, $p < .10$).

Hypothesis 6 suggested that employee commitment and competence mediate the effects of the four HRD dimensions on organizational financial performance. We tested the significance of the mediating role of these two employee outcomes using the bootstrapping procedure (Mackinnon, Fairchild, & Fritz, 2007). As shown in Table 3, Hypothesis 6 was confirmed for the mediated effects of resource investment in HRD, management support for HRD, and perceived benefits of HRD on financial performance via employee commitment (point estimate = 0.07, 0.06, and 0.05, respectively, all $p < .05$).

Hypothesis 7 claimed that employee competence mediates the effects of the four HRD dimensions on organizational performance. As reported in Table 3, of the four dimensions, only management support and perceived benefits of HRD exerted significant indirect effects on organizational financial performance through employee competence (point estimate = 0.04 and 0.05, respectively, both $p < .05$). The overall pattern indicated that HRD dimensions affected the financial performance of organizations by forming desirable employee outcomes, partially supporting Hypotheses 6 and 7.

Interaction effects of quantitative and qualitative HRD dimensions

In Hypothesis 8, we proposed that qualitative HRD dimensions moderate the relationship between quantitative HRD dimensions and employee outcomes. To avoid potentially biased estimates of interaction terms in the structural path analysis (Little, Card, Bovaird, Preacher, & Crandall, 2007), we tested the moderation hypothesis by employing hierarchical regression analyses, which include all control variables for employee outcomes. We performed two

Table 3. Indirect effects.

Independent variable	Mediator	Outcome	Product coefficients			Bootstrapping bias-corrected 95% CI	
			Point estimate	SE	<i>p</i>	Lower	Upper
Resource investment in HRD	Commitment	Financial performance	0.07	0.03	.01	0.03	0.18
	Competence		0.05	0.02	.06	0.00	0.13
Employee exposure to HRD	Commitment	Financial performance	0.03	0.02	.07	0.00	0.10
	Competence		0.02	0.02	.48	-0.01	0.06
Management support for HRD	Commitment	Financial performance	0.06	0.03	.02	0.03	0.13
	Competence		0.04	0.02	.04	0.01	0.12
Perceived benefits of HRD	Commitment	Financial performance	0.05	0.02	.03	0.02	0.12
	Competence		0.05	0.02	.04	0.01	0.13

Note: Bootstrap sample size = 200. Coefficients in bold indicate significant mediation. CI = Confidence Interval.

separate moderation analyses for manager-related HRD dimensions (resource investment and management support) and employee-related HRD dimensions (employee exposure and perceived benefits) to predict employee commitment and competence.

The quantitative and qualitative HRD dimensions from the managers' perspective did not show any significant interactions in predicting employee commitment and competence. Conversely, the quantitative and qualitative HRD dimensions related to employees exhibited significant interactions in predicting employee commitment and competence ($\beta = .14, p < .05$ and $\beta = .13, p < .10$, respectively). These significant interactions were further examined using a simple slope analysis (Aiken & West, 1991). As shown in Figure 3, employee exposure to HRD was a positive predictor of employee commitment when perceived benefits of HRD were high or 1 *SD* above the mean ($b = 1.20, p < .001$). However, the same relationship became negative when perceived benefits of HRD were low or 1 *SD* below the mean ($b = -.93, p < .001$). Similarly, as depicted in Figure 4, employee exposure to HRD increased employee competence when perceived benefits were high ($b = .50, p < .05$) but not when perceived benefits were low ($b = -.46, p < .10$). These patterns support Hypothesis 8.

Discussion

Organizations spend substantial capital for the training and development of their employees (Barrett & O'Connell, 2001; Paradise & Patel, 2009). Thus, understanding whether these organizations accrue intended benefits is important. The present study provides a systematic and rigorous empirical investigation of the HRD–performance relationship on the basis of theoretically identified HR dimensions and their interactive relationships (Aragón-Sánchez et al., 2003; Nguyen et al., 2010). Multi-source firm-level data collected over a 5-year period support most of our theoretical propositions. In the following section, we highlight the implications of this study and present its limitations along with directions for future research.

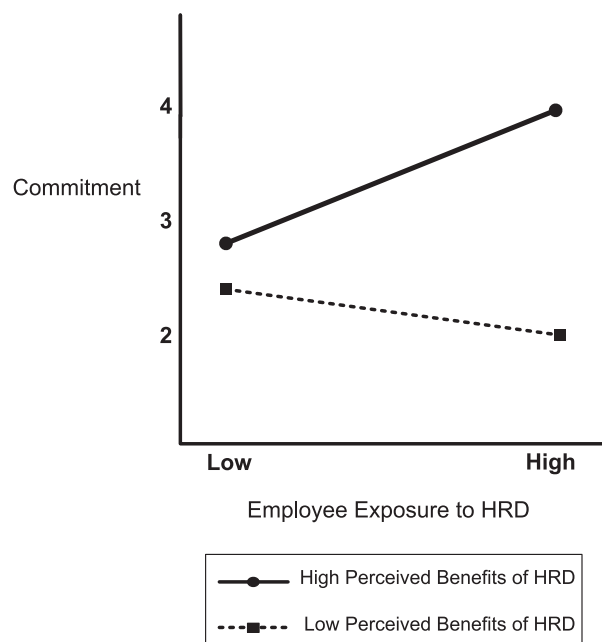


Figure 3. Interaction between employee exposure to HRD and perceived benefits of HRD in predicting employee commitment

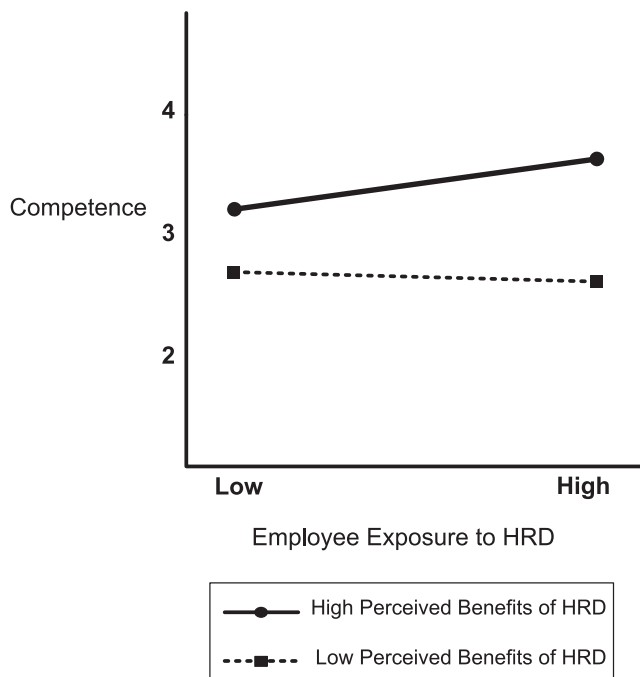


Figure 4. Interaction between employee exposure to HRD and perceived benefits of HRD in predicting employee competence

Implications for theory and research

The present study expands the often-arbitrary conceptualization of HRD to include both the quantitative and qualitative dimensions of HRD with managerial and employee foci. These distinct HRD dimensions offer organizations with valuable insights into effective strategies for developing human capital. The current validation of the four HRD dimensions revealed that each dimension is unique and contributes to an overall construct of HRD, thereby proving the discriminant and convergent validity of these dimensions (cf. Spreitzer, 1995). Our analysis further demonstrated the distinct value of the quantitative and qualitative dimensions of HRD and the significant interaction between the two dimensions of HRD on the basis of employee perspectives. The quantitative and qualitative dimensions of HRD have disparate performance implications and synergetic interactions. Thus, the present conceptualization and operationalization of the multiple dimensions of HRD offer sophisticated and insightful approaches to the study of HRD in organizational settings. Future research may further elaborate the functions and contingencies of these HRD dimensions. In this respect, we recommend that researchers focus more on the distinction between quantitative versus qualitative dimensions than the distinction between the manager and employee perspectives because the former comes with a stronger theoretical rationale and practical implications as demonstrated in this study.

The principal proposition of HRD states that HRD affects organizational performance by promoting employee motivation as well as KSAs (Katou, 2009; Tharenou et al., 2007). Our organization-level analysis of three-wave lagged data confirms that HRD indirectly predicts firm performance via its direct effects on employee outcomes. Employee competence shows a more significant effect on organizational financial performance than employee commitment. In business organizations with a relatively high structure and strong situational control of behavior, employee capability matters more to effective organizational functioning than employee motivation (Indradevi, 2010; Le Deist & Winterton, 2005).

Our analysis revealed that resource investment in, management support for, and perceived benefits of HRD positively affect employee commitment. However, the extent to which employees were exposed to HRD was not

a significant predictor of employee commitment, which rejects the common assertion that more is better with regard to training opportunities. Prior research on SHRM has highlighted the positive employee perceptions toward a given HR practice as a key determinant of favorable attitude and behavior (Masterson & Stamper, 2003; Rhoades & Eisenberger, 2002). In this sense, offering a greater amount of training itself may not necessarily be related to positive employee reactions, such as commitment. Glaveli and Karassavidou (2011) reported that the quantity of training is not a meaningful predictor of employees' perceived benefits accrued from training. Similarly, Aragón-Sánchez et al. (2003) revealed that increasing the frequency and intensity of training could even hinder both employee effectiveness and organizational profitability by disrupting daily work procedures and imposing a psychological burden on employees. The potential negative consequences of high training quantity without the co-presence of positive employee perceptions toward the HRD activity of a company may neutralize the potentially positive effects of training on employee commitment.

Although a greater level of affective commitment among employees is a welcome and common outcome of HRD, employee commitment can probably be more effectively managed by alternative practices, such as incentive systems, fair evaluation procedures, interactional justice in leader behavior, and interpersonal ties among employees (Kehoe & Wright, 2013; Richard & Johnson, 2004). After all, the intended and distinct benefit of HRD is the improvement in employee task capabilities and the development of KSAs, which can be achieved without enhancing commitment (Huselid, 1995; Katou, 2009). Thus, aside from affective outcomes, cognitive and behavioral changes among employees should occur to justify corporate efforts and expenditures for HRD activities.

The present results demonstrate that only qualitative HRD dimensions positively affect employee competence and that quantitative dimensions do not have significant implications. Employees turn into proactive learners only when they perceive that training activities are relevant and beneficial for them (Katou, 2009; Liao et al., 2009). In addition, employees absorb knowledge and skills more actively when they are convinced that the management is genuinely concerned about their development and building capable human capital (Hutchings et al., 2009; Nishii et al., 2008). Posing employees as customers or target users of HR practices, the present findings clearly demonstrate that qualitative approaches to HRD, such as generating value-added experiences and perceptions of care from an organization, are more effective than quantitative approaches to HRD, such as top-down resource expenditure and employee exposure to HRD.

Our analysis reveals that employee exposure to HRD and perceived benefits of HRD have significant interactions in predicting employee commitment and competence, although the statistical significance is only marginal for employee competence ($p < .10$). Employee exposure to HRD itself is not a significant predictor of employee commitment and competence; however, it becomes significant when employees perceive HRD as beneficial (Figures 3 and 4). In contrast, HRD becomes either a neutral or negative predictor of employee outcomes when employees do not perceive HRD as beneficial. Participating in HRD activities that are unnecessary can irritate employees, resulting in unintended dysfunctional employee outcomes (Glaveli & Karassavidou, 2011; Tabassi et al., 2012). The interaction patterns clearly offer intuitively appealing explanations for the potential configurational and synergistic effects of the quantitative and qualitative HRD dimensions.

Practical implications

The present findings provide practical guidelines in designing and implementing HRD programs for organizations. Although a company may aim at increasing employee motivation, knowledge, and skills by providing ample training and development opportunities, the amount of participation in or exposure to the training itself may not generate the intended employee outcomes. Similar to the popular expression "you can lead a horse to water, but you cannot make it drink," this study indicates that organizations fail to achieve favorable employee outcomes even after offering a substantial amount of training. This result suggests that organizations will not accomplish the intended benefits of HRD unless they achieve employee buy-in of the HRD programs on the basis of employee perceptions of benefits or genuine care of the management.

The present study reveals their distinct main and interactive effects of the four HRD dimensions on employee outcomes and organizational performance. The results urge practitioners to adopt a configurational perspective toward balancing quantitative and qualitative approaches to HRD to maximize the performance gains from corporate investment and efforts toward HRD. Organizations can motivate their employees to voluntarily participate in HRD by going beyond simply providing quantity-oriented financial support and opportunities and employing quality-oriented approaches to HRD. Such approaches include simultaneously convincing the employees about the sincere efforts by the management and enhancing the significance of HRD for employees. These efforts are necessary to maximize the competence of employees and increase their commitment to the organizations.

Study limitations and future research directions

The research design has numerous strengths that enhance our confidence in the present results (Tharenou et al., 2007). Nonetheless, the current findings should be cautiously interpreted, and several limitations should be considered. First, our HRD measures addressed only the collective training inside and outside the company at the expense of other forms of HRD, such as on-the-job training, mentoring, e-learning, and career development plans (Black & Lynch, 1996; Liao et al., 2011). Future studies should use a broader operationalization of HRD that captures various types of learning and developmental activities offered to employees.

Second, previous studies indicate that the effects of training are contingent on the content or type of training (Aragón-Sánchez et al., 2003; Noe et al., 2010). Although we identified diverse HRD dimensions, we did not examine the content-related characteristics of HRD. Further studies should explore the implications of various types, specific content domains, instructional designs, or delivery formats of HRD with regard to employee outcomes and organizational performance. One related issue is that company-wide investment in HRD may have idiosyncratic implications for each employee, depending on how the programs are designed and delivered. Therefore, the potential multilevel dynamics involving HRD at the organization and individual levels must be investigated.

Third, different from prior studies that solely relied on the managerial report, the present study used the reports of both managers and employees to assess management support for HRD. Although the two scores for management support of HRD offered by HRM directors and employees were significantly correlated ($r = .44, p < .01$), the size of the association was only moderately high. Managers and employees might have different perceptions regarding the HRD efforts of the company because of their different positions in the organization. The effect of this perceptual gap across different organizational echelons on various outcomes can be an intriguing area for further research.

Fourth, although we employed time-lagged data, the causality between HRD and performance is not completely clear. Despite the prevailing assumption that HRD efforts improve performance, another view suggests that high-performing firms invest more in HRD, rather than HRD investment improves firm performance (Katou, 2009; Wright et al., 2005). Future studies should further analyze the potential reciprocal effects or reverse causality between HRD and organizational performance.

Finally, the present data included companies in the manufacturing sector. The meaning and value of each dimension of HRD proposed in this study may vary across industries. In addition, manufacturing industries are often dominated by men, as shown in the current data (86 percent men). Using data from female-dominated (e.g., service and education) or gender-balanced industries (e.g., banking industry) may reveal different patterns involving HRD. Future studies are required to further investigate industrial dynamics and internal firm environment that render a specific HRD dimension more important than others.

Despite these limitations, the present study significantly enriches the HRD literature by elaborating the meaningful dimensions of HRD and investigating their distinct implications for organizational performance. Our analysis demonstrates that employee outcomes, such as motivation and capability, explain why HRD affects organizational performance (Glaveli & Karassavidou, 2011; Indradevi, 2010). Nevertheless, further conceptual and empirical endeavors can be directed to explore other promising underlying mechanisms in organizations, such as knowledge management and learning processes (Di Milia & Birdi, 2010; Noe et al., 2010). In addition, given that most

mediating mechanisms considered are internal organizational factors (Liao et al., 2011), researchers may shift their attention to the potential external ramifications of HRD, such as the public image of the company, which improves market positions and interactions with external constituents, including the government, investors, and business partners. This balanced consideration of internal and external mechanisms, along with the inclusion of both quantitative and qualitative HRD dimensions, should enrich the theoretical and practical underpinnings of HRD related to various organizational outcomes. This study is an initial step toward developing and validating a multidimensional measure of HRD in a work context. Continued development of theoretical model and refinement of HRD measures is necessary.

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References

- Aiken, L. S., & West, S. G. (1991). *Multiple regression: Testing and interpreting interactions*. Sage: Newbury Park CA.
- Anderson, J. C., & Gerbing, D. W. (1988). Structural equation modeling in practice: A review and recommended two-step approach. *Psychological Bulletin*, *103*, 411–423.
- Aragón-Sánchez, A., Barba-Aragón, I., & Sanz-Valle, R. (2003). Effects of training on business results. *International Journal of Human Resource Management*, *14*, 956–980.
- Bandalos, D. L., & Finney, S. J. (2001). Item parceling issues in structural equation modeling. In G. A. Marcoulides, & R. E. Schumacker (Eds.), *Advanced structural equation modeling: New developments and techniques*. Lawrence Erlbaum Associates, Inc.: Mahwah, NJ.
- Barrett, A., & O'Connell, P. J. (2001). Does training generally work? The returns to in-company training. *Industrial and Labor Relations Review*, *54*, 647–662.
- Bartel, A. P. (1994). Productivity gains from the implements of employee training programs. *Industrial Relations*, *33*, 411–425.
- Bartlett, K. R. (2001). The relationship between training and organizational commitment: A study in the health care field. *Human Resource Development Quarterly*, *12*, 335–352.
- Bates, R., & Chen, H. C. (2004). Human resource development value orientations: A construct validation study. *Human Resource Development International*, *7*, 351–370.
- Bell, B., & Kozlowski, S. W. J. (2008). Active learning: Effects of core training design elements on self-regulatory processes, learning, and adaptability. *Journal of Applied Psychology*, *93*, 296–316.
- Bernthal, P., & Wellins, R. (2006). Trends in leader development and succession. *Human Resource Planning*, *29*, 31–40.
- Black, S. E., & Lynch, L. M. (1996). Human-capital investments and productivity. *American Economic Review*, *86*, 263–267.
- Campbell, D. T., & Fiske, D. W. (1959). Convergent and discriminant validation by the multi-trait-multi-method matrix. *Psychological Bulletin*, *56*, 81–105.
- Castellanos, R. M. M., & Martín, M. Y. S. (2011). Training as a source of competitive advantage: Performance impact and the role of firm strategy, the Spanish case. *International Journal of Human Resource Management*, *22*, 574–594.
- Chen, G., Mathieu, J. E., & Bliese, P. D. (2004). A Framework for conducting multi-level construct validation. In F. J. Yammarino & F. Dansereau (Eds.), *Multi-level issues in organizational behavior and processes* (pp. 273–303). Elsevier, UK: Emerald Group Publishing.
- Choi, J. N., & Chang, J. Y. (2009). Innovation implementation in the public sector: An integration of institutional and collective dynamics. *Journal of Applied Psychology*, *94*, 245–253.

- Clardy, A. (2008). The strategic role of human resource development in managing core competencies. *Human Resource Development International*, 11, 183–197.
- Collier, W., Green, F., Kim, Y.-B., & Peirson, J. (2011). Education, training and economic performance: Evidence from establishment survival data. *Journal of Labor Research*, 32, 336–361.
- Combs, J., Liu, Y., Hall, S., & Kitchen, D. (2006). How much do high-performance work practices matter? A meta-analysis of their effects on organizational performance. *Personnel Psychology*, 59, 501–528.
- Dhamodharan, V., Daniel, J. C., & Ambuli, T. V. (2010). An empirical study on assessing trainees' expectations and their perceptions. *International Business Research*, 3, 174–180.
- Di Milia, L. D., & Birdi, A. K. (2010). The relationship between multiple levels of learning practices and objective and subjective organizational financial performance. *Journal of Organizational Behavior*, 31, 481–498.
- Glaveli, N., & Karassavidou, E. (2011). Exploring a possible route through which training affects organizational performance: The case of a Greek bank. *International Journal of Human Resource Management*, 22, 2892–2923.
- Gubbins, C., Garavan, T. N., Hogan, C., & Woodlock, M. (2006). Enhancing the role of the HRD function: The case of a health services organisation. *Irish Journal of Management*, 27, 171–206.
- Hu, L., & Bentler, P. M. (1999). Cutoff criteria for fit indexes in covariance structure analysis: Conventional criteria versus new alternatives. *Structural Equation Modeling*, 6, 1–55.
- Huselid, M. A. (1995). The impact of human resource management practices on turnover, productivity and corporate financial performance. *Academy of Management Journal*, 38, 635–672.
- Hutchings, K., Zhu, C. J., Cooper, B. K., Zhang, Y., & Shao, S. (2009). Perceptions of the effectiveness of training and development of 'grey-collar' workers in the People's Republic of China. *Human Resource Development International*, 12, 279–296.
- Indradevi, R. (2010). Training for most capable workforce. *Advances in Management*, 3, 49–54.
- Katou, A. A. (2009). The impact of human resource development on organisational performance: Test of a causal model. *Journal of Behavioral & Applied Management*, 10, 335–356.
- Keohoe, R. R., & Wright, P. M. (2013). The impact of high performance human resource practices on employees' attitudes and behaviors. *Journal of Management*, 39, 366–391.
- Le Deist, F. D., & Winterton, J. (2005). What is competence? *Human Resource Development International*, 8, 27–46.
- Lepak, D. P., & Snell, S. A. (2002). Examining the human resource architecture: The relationships among human capital, employment, and human resource configurations. *Journal of Management*, 28, 517–543.
- Liao, T. S., Rice, J., & Martin, N. (2011). The role of the market in transforming training and knowledge to superior performance: Evidence from the Australian manufacturing sector. *The International Journal of Human Resource Management*, 22, 376–394.
- Liao, H., Toya, K., Lepak, D. P., & Hong, Y. (2009). Do they see eye to eye? Management and employee perspectives of high-performance work systems and influence processes on service quality. *Journal of Applied Psychology*, 94, 371–391.
- Little, T. D., Card, N. A., Bovaird, J. A., Preacher, K. J., & Crandall, C. S. (2007). Structural equation modeling of mediation and moderation with contextual factors. In T. D. Little, J. A. Bovaird, & N. A. Card (Eds.), *Modeling contextual effects in longitudinal studies* (pp. 207–230). Mahwah, NJ: Lawrence Erlbaum.
- MacKinnon, D. P., Fairchild, A. J., & Fritz, M. S. (2007). Mediation analysis. *Annual Review of Psychology*, 58, 593–614.
- Macky, K., & Boxall, P. (2007). The relationship between high-performance work practices and employee attitudes: An investigation of additive and interaction effects. *International Journal of Human Resource Management*, 18, 537–567.
- March, J. G., & Simon, H. A. (1958). *Organizations*. New York: Wiley.
- Masterson, S. S., & Stamper, C. L. (2003). Perceived organizational membership: An aggregate framework representing the employee–organization relationship. *Journal of Organizational Behavior*, 24, 473–490.
- Nguyen, T. N., & Truong, Q. (2011). The impact of training on firm performance in a transitional economy: Evidence from Vietnam. *Research & Practice in Human Resource Management*, 19, 11–24.
- Nguyen, T. N., Truong, Q., & Buyens, D. (2010). The relationship between training and firm performance: A literature review. *Research & Practice in Human Resource Management*, 18, 36–45.
- Nijhof, W. J. (2004). Is the HRD profession in the Netherlands changing? *Human Resource Development International*, 7, 57–72.
- Nishii, L. H., Lepak, D. P., & Schneider, B. (2008). Employee attributions of the why of HR practices: Their effects on employee attributes and behaviors, and customer satisfaction. *Personnel Psychology*, 61, 503–545.
- Noe, R. A., Tews, M. J., & Dachner, A. M. (2010). Learner engagement: A new perspective for enhancing our understanding of learner motivation and workplace learning. *Academy of Management Annals*, 4, 279–315.
- Paradise, A., & Patel, L. (2009). *2009 State of the industry report*. Alexandria, VA: American Society for Training and Development.
- Park, H. J., Mitsuhashi, H., Fey, C. F., & Björkman, I. (2003). The effect of human resource management practices on Japanese MNC subsidiary performance: A partial mediating model. *International Journal of Human Resource Management*, 14, 1391–1406.
- Paul, A. K., & Anantharaman, R. N. (2003). Impact of people management practices on organizational performance: Analysis of a causal model. *International Journal of Human Resource Management*, 14, 1246–1266.

- Porter, L. W., Richard, M. S., & Richard, T. M., & Boilian, P. V. (1974). Organizational commitment, job satisfaction, and turnover among psychiatric technicians. *Journal of Applied Psychology, 59*, 603–609.
- Quiñones, M. A. (1995). Pre-training context effects: Training assignment as feedback. *Journal of Applied Psychology, 80*, 226–238.
- Rhoades, L., & Eisenberger, R. (2002). Perceived organizational support: A review of the literature. *Journal of Applied Psychology, 87*, 698–714.
- Richard, O. C., & Johnson, N. B. (2004). High performance work practices and human resource management effectiveness: Substitutes or complements? *Journal of Business Strategies, 21*, 133–148.
- Spreitzer, G. M. (1995). Psychological empowerment in the workplace: Dimensions, measurement, and validation. *Academy of Management Journal, 5*, 1442–1465.
- Stamper, C. L., & Masterson, S. S. (2002). Insider or outsider? How employee perceptions of insider status affect their work behavior. *Journal of Organizational Behavior, 23*, 875–894.
- Swanson, R. A., & Holton, E. F. (2001). *Foundations of human resource development*. San Francisco: Berrett-Koehler.
- Tabassi, A. A., Ramli, M., & Bakar, A. H. A. (2012). Effects of training and motivation practices on teamwork improvement and task efficiency: The case of construction firms. *International Journal of Project Management, 30*, 213–224.
- 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.
- Torraco, R. J. (1999). Advancing our understanding of performance improvement. In R. J. Torraco (Ed.), *Performance improvement theory and practice*. Baton Rouge, LA: Academy of Human Resource Development.
- Tracey, J. B., Hinkin, T. R., Tannenbaum, S., & Mathieu, J. E. (2001). The influence of individual characteristics and the work environment on varying levels of training outcomes. *Human Resource Development Quarterly, 12*, 5–23.
- Tsui, A. S., Pearce, J. L., Porter, L. W., & Pripoli, A. M. (1997). Alternative approaches to the employee–organization relationship: Does investment in employees pay off? *Academy of Management Journal, 40*, 1089–1121.
- Wright, P. M., Gardner, T. M., Moynihan, L. M., & Allen, M. R. (2005). The relationship between HR practices and firm performance: Examining casual order. *Personnel Psychology, 58*, 409–446.
- Wright, P. M., Gardner, T. M., Moynihan, L. M., Park, H. J., Gerhart, B., & Delery, J. E. (2001). Measurement error in research on human resources and firm performance: Additional data and suggestions for future research. *Personnel Psychology, 54*, 875–901.
- Wright, P. M., McCormick, B., Sherman, W. S., & McMahan, G. C. (1999). The role of human resource practices in petrochemical refinery performance. *International Journal of Human Resource Management, 10*, 551–571.
- Zhang, Y. C., & Li, S. L. (2009). High performance work practices and firm performance: Evidence from the pharmaceutical industry in China. *International Journal of Human Resource Management, 20*, 2331–2348.
- Zwick, T. (2006). The impact of training intensity on establishment productivity. *Industrial Relations, 45*, 26–46.