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The Effects of Human Resource Development on Operational and Financial Performance of Manufacturing Companies: A Large-Scale, Longitudinal Analysis

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Abstract
Building on strategic human resource management (SHRM) literature, we investigate the effect of human resource development (HRD) on the operational and financial performance of manufacturing organizations. We identify four different approaches to HRD that reflect management-driven or employee-focused HRD efforts with either quantitative or qualitative focus. We further propose that HRD practices predict organizational performance by shaping the competence and commitment of employees that reflect the prevailing, untested assumption in the SHRM literature. Multi-source data collected from 207 manufacturing companies at three time points over a five-year period largely support our theoretical propositions. Financial investment and managerial support for HRD show positive effects on employee commitment but not on competence. Perceived benefits of HRD enhance both employee competence and commitment, whereas the amount of participation in HRD is not a meaningful predictor of those employee outcomes. A series of structural equation models confirms that HRD practices improve employee competence and commitment that have direct effects on operational performance of the organization, which ultimately shapes its financial performance. The present study elaborates distinct values of different HRD practices, and highlights the significance of employee outcomes as the mediating mechanism between HRD and organizational performance.

Keywords: human resource development, strategic human resource management, employee competence, employee commitment, operational performance, financial performance
Organizations use human resource (HR) practices as critical strategic tools for promoting favorable behavior among employees and leveraging their knowledge, skills, and abilities, which should increase productivity and performance (Bartlett, 2001; Bates & Chen, 2004; Clardy, 2008; Katou, 2009). For this reason, human resource development (HRD) or training and development of employees has been acknowledged as the most foundational activity of the HR system (Dhamodharan, Daniel, & Ambuli, 2010; Gubbins, Garavan, Hogan, & Woodlock, 2006; Scott & Meyer, 1991). Paradise and Patel (2009) estimated that American companies spend approximately $134 billion US dollars annually on the training and development of their employees. Unfortunately, this enormous capital spending is not always translated into improved individual and organizational performance (Brinkerhoff, 1997; Gubbins et al., 2006). Unlike the considerable attention paid to organizational factors that enhance training effectiveness such as learning transfer system (Holton, Bates, & Ruona, 2000) and organizational network relationships (Hatala & Fleming, 2007), direct empirical investigations of the HRD-performance relationship is rare, particularly at the firm level (for an exception, see Bartlett, 2001). Given the prevailing skepticism regarding the contribution of training to objective firm-level performance (Bartlett, 2001; Torraco, 1999), providing systematic models and empirical evidence regarding the HRD-performance link is imperative.

Furthermore, we explore the mediating processes or reasons that HRD affects organizational performance. In explaining the effects of HR practices on firm performance, scholars have identified three mediating mechanisms: “(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). This is consistent with institutional theory in that micro-level processes involving employee cognition and attitudes mediate the relationship between organization-level antecedents and institutional outcomes (Bowen & Ostroff, 2004; Scott, 1995). Despite the prevailing mention of these employee-related processes as the mediating mechanisms between HR practices and performance, empirical studies, particularly at the organization level, are lacking (Combs et al., 2006).

In our examination of the HRD-performance relationship, we expand the prevailing operationalization of HRD that has been mostly based on managerial reports of the quantity of activities or resources allocated to training and development (Huselid, 1995; Lopez, Peon, & Ordas, 2005; Zhang & Li, 2009). This approach perhaps reflects the management-centric approach in designing and delivering HR practices. Recent learning design frameworks emphasize a more active role of learners (Bell & Kozlowski, 2008), suggesting that employees can accrue the intended benefits of increased competence only when they experience substantial learning from training programs (Bates & Chen, 2004; Choi & Change, 2009; Clardy, 2008). Unlike prior studies that have primarily focused on managerial reports of the presence or quantity of HRD practices (e.g., adequate opportunities for training, Richard & Johnson, 2004; the extent of training, Zhang & Li, 2009), we expand the operationalization of training by including both managerial and employee perspectives, as well as both quantity and quality aspects of HRD. The expanded operationalization of HRD should enrich the literature by specifying various approaches to HRD that organizations can employ, which hold differing performance implications.

Finally, existing studies that examined the HR practice-performance relationship have methodological limitations caused by measuring HR practices after the performance period, so
called “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). To address this limitation, we employ a time-lagged, multi-source design. Specifically, the present study utilizes three-wave data collected over a five-year period from multiple constituents, including HRM managers, strategy managers, departmental managers, and employees. Moreover, we include both subjective and objective firm performance measures. This allows an empirical test of the assumption that HR practices affect financial performance by enhancing operating effectiveness that may comprise a proximal outcome more prone to employee efforts (Huselid, 1995).

In summary, we empirically examine the role of employee competence (KSAs) and employee commitment (motivation) as mediators of the relationship between HRD and two types of organizational outcomes (operational performance and financial performance) at the firm level of analysis. The present study further expands the literature by identifying various approaches to HRD and empirically examining their effects on firm performance. The multi-wave lagged data reflecting perspectives of multiple constituents clearly reduce common shortcomings of prior studies, such as reliance on managers as the single source of data and cross-sectional or retrospective research design that introduces ambiguity in causality (Wright et al., 2005).

**Theoretical Framework and Hypotheses**

Scholars of strategic human resource management (SHRM) have investigated the role of human resource (HR) practices in promoting organizational effectiveness. These practices, often identified as high-performance work practices (HPWPs), include various components such as employee recruitment and selection, training and development, employee participation, performance incentives, and flexible work arrangement (Huselid, 1995; Lopez et al., 2005;
Richard & Johnson, 2004). A number of empirical studies have demonstrated the significance of a set (or system) of HR practices in explaining the operational efficiency and financial performance of organizations (Delaney & Huselid, 1996; Katou, 2009; Macky & Boxall, 2007).

Combs et al. (2006) observed that 92 studies included in their meta-analysis operationalized HPWPs using varying sets of practices ranging between 2 and 13. For this reason, although the HPWP system is a stronger predictor of organizational performance compared to individual HR practices, the specific practices that contribute to the increased explained variance remain unclear. Therefore, examining the effect of individual HR practices in a systematic and rigorous empirical setting is necessary to complement the prevailing focus on the system of HR practices. In the present study, we attend to organizational practices related to HRD or “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 Combs et al.’s (2006) meta-analysis, training was found to be the second most commonly examined component of HPWPs, following incentive compensation.

Figure 1 visually depicts our overall conceptual framework. As a core component of the HR system, HRD promotes the operational effectiveness and financial performance of the organization (Huselid, 1995; Katou, 2009; Richard & Johnson, 2004). As SHRM scholars have argued (Delaney & Huselid, 1996; Evans & Davis, 2005; Lopez et al., 2005), we expect an organization’s HRD effort will influence its outcomes by developing an effective workforce that is sufficiently competent and committed to achieving organizational goals. Numerous studies on SHRM have asserted that the discretionary efforts of employees, based on their competence and commitment, promote organizational performance (Becker, Huselid, Pickus, & Spratt, 1997; Katou, 2009). Competence refers to a combination of the KSAs of employees which enable them
to meet task requirements (Le Deist & Winterton, 2005). Commitment refers to a sense of being bound emotionally to the target, which is the organization in the present study (Tsui, Pearce, Porter, & Pripoli, 1997). Thus, we propose employee competence and commitment together as intermediate processes between HRD practices of an organization and its operational performance, which ultimately translates into financial performance (Dyer & Reeves, 1995; Huselid, 1995).

**HRD Practices, Operational Performance, and Financial Performance**

The major thrust of SHRM literature is the premise and findings that HR practices enhance various aspects of organizational effectiveness, including productivity, employee retention, market value, and financial performance (Becker et al., 1997; Huselid, 1995; Richard & Johnson, 2004; Zhang & Li, 2009). Meta-analytic findings clearly support the meaningful association between HR practices and firm performance (Combs et al., 2006). However, as the review of Wright et al. (2005) indicates, the vast majority of studies have employed post-predictive, retrospective, or contemporaneous research designs that render the cause-effect relationship ambiguous. In addition, scholars have proposed that HR practices promote financial outcomes by improving operational performance, such as productivity and flexibility of organizational functioning (Huselid, 1995). Nonetheless, the mediating role of operating performance of the relationship between HR practices and financial performance has rarely been investigated because of the lack of empirical studies that include both types of organizational outcomes.

In the present study, focusing on HRD, we offer a rigorous empirical test of the long-term effect of HR practices on firm performance. In addition, we investigate the possibility that HRD enhances financial performance indirectly by influencing more proximal operational outcomes.
related to efficient and effective functioning of the organization. A long-term perspective is particularly important in understanding the effects of HR practices on organizational outcomes, because the development of employee KSAs cannot be achieved in a short duration and a long-term commitment of the employer is required to accrue benefit from such practices (Datta, Guthrie, & Wright, 2005; Tsui & Wu, 2005).

**Hypothesis 1.** The relationship between HRD and financial performance will be mediated by operational performance.

**HRD and Intermediate Employee Outcomes**

HRD programs are, by definition, designed and implemented to improve employee capability to perform effectively and meet performance expectations (Schwoerer, May, Hollensbe, & Mencl, 2005). Extensive HRD efforts provide a wide array of training and development opportunities to employees, which are likely to upgrade their knowledge and skills. Training is indeed a positive predictor of knowledge and skills of individuals (Bates & Chen, 2004; Clardy, 2008). Employees exposed to various HRD programs are in a good position to improve their capability, and thus effectively leverage their capacity in conducting their tasks (Liao et al., 2009; Schwoerer et al., 2005). Training opportunities for employees to learn various task-related KSAs also enhance their sense of task efficacy (Choi & Chang, 2009; Clardy, 2008). In addition, organizational practices in support of HRD send a clear signal of the managerial interest in training and developing employees (Bartlett, 2001; Gubbins et al., 2006), which urges employees to improve their KSAs to work smarter (Huselid, 1995). Thus, we propose the following hypothesis:

**Hypothesis 2.** HRD is positively related to employee competence.
Organizational equilibrium theory posits that employees are motivated to contribute to their organization when the inducements offered by the organization are equal to or exceeds the contributions expected from them (Subramony, Krause, Norton, & Burns, 2008). An organization’s efforts to train and develop its employees offer clear evidence of its willingness to invest resources in its employees. In addition, HRD practices convey a message to employees that the organization values their contribution and supports their long-term development (Bartlett, 2001; Macky & Boxall, 2007). Organizational support or care as perceived by employees increases the perceived insider status of employees. With increased insider perception, employees are also likely to have greater attachment and desire to remain with the organization, and thus be ready to exert considerable effort on its behalf (Masterson & Stamper, 2003; Rhoades & Eisenberger, 2002). In such a situation, employees develop a trusting relationship with and attachment toward the organization, which elicit desirable reciprocal attitudes such as organizational commitment (Bartlett, 2001; Macky & Boxall, 2007).

**Hypothesis 3.** HRD is positively related to employee commitment.

**Employee Competence and Commitment as a Mediating Mechanism**

Combining the earlier propositions, we advance that workforce effectiveness (i.e., employee competence and commitment) is a meaningful intervening process through which HRD practices increase organizational performance. Employees’ task-relevant capabilities or KSAs are a critical condition for efficient and effective operation of various organizational functions (Gubbins et al., 2006; Tharenou, 1997). In addition, HRD practices are likely to strengthen employee membership perception and commitment to the organization, which tend to increase their efforts toward achieving organizational goals beyond the minimum task requirement (Bartlett, 2001; Macky & Boxall, 2007; Wright et al., 2005). The enhanced levels
and quality of in-role and extra-role task efforts driven by increased competence and commitment of employees contribute to the effectiveness of organizational functioning (Kehoe & Wright, in press). Although scholars have presumed that this intervening role of employee outcomes explains the relationship between HR practices and firm performance (Huselid, 1995), empirical evidence of this mediated relationship is still quite limited, particularly at the organization level (Combs et al., 2006). In the present study, we hypothesize and empirically validate whether employee outcomes actually operate as significant reasons for the effect of HRD on organizational performance.

**Hypothesis 4.** The relationship between HRD practices and organizational performance will be mediated by employee competence and commitment.

**Four Approaches to Human Resource Development**

Existing studies on SHRM have adopted either the management perspective (Lopez et al., 2005; Zhang & Li, 2009) or the employee perspective (Kehoe & Wright, in press; Macky & Boxall, 2007). Studies based on the management perspective have focused on the aspects of inducements and HR designs as implemented by the employer (Richard & Johnson, 2004). Studies based on the employee perspective have focused on the personal experiences of employees and their evaluation of HR practices (Liao, Toya, Lepak, & Hong, 2009). From another viewpoint, existing studies have utilized either quantitative or qualitative approaches to HR practices. Quantitative approaches are often based on objective measures, such as the presence, proportion, amount, or intensity of HR practices (Kehoe & Wright, in press; Lopez et al., 2005). In contrast, qualitative approaches tend to rely on more subjective assessments of management endorsement or employee satisfaction with HR practices (Delaney & Huselid, 1996; Katou, 2009). Although these distinctions are more apparent in operationalizing HR
practices in different studies, they may have substantive implications in conceptualizing the orientation or strategy of the organization related to the practice in question. For example, management-driven HRD efforts in investing financial resources may not be the same as HRD efforts perceived by employees as beneficial.

Drawing on the distinction between manager versus employee focus and between quantitative versus qualitative orientation, we operationalize an organization’s HRD efforts using the following four measures: (a) financial investment in HRD (quantitative approach taken by the management), which refers to the amount of actual monetary expenditure for training and development; (b) management support for HRD (qualitative approach taken by the management), which indicates management commitment and support for developing human resources; (c) employee participation in HRD (quantitative approach focused on employees), which refers to the amount or degree to which employees are exposed to training and development activities; and (d) perceived benefits of HRD (qualitative approach focused on employees), which indicates the extent to which training and development activities are perceived by employees as task-relevant and beneficial.

These four measures of HRD may also capture various approaches or strategies that an organization can pursue in their HRD efforts. Therefore, the four HRD measures may have different implications for intermediate employee outcomes and subsequent organizational performance. Of the four measures, we expect perceived benefits of HRD to have the strongest association with employee competence and commitment. Management-driven HRD such as financial investment and support may put employees in a passive position as recipients of knowledge and skills, which impedes the process of learning and further application of KSAs to the job task (Gubbins et al., 2006; Liao et al., 2009). In
addition, even when employees participate in numerous training programs, intended benefits may not be generated unless the training is aligned with employee interest and need (Nijhof, 2004).

Perceived benefits based on the meaningfulness and relevance of HRD programs motivate employees to exert effort toward learning, and thus effectively expand their capacity in conducting their tasks (Clardy, 2008; Hutchings, Zhu, Cooper, Zhang, & Shao, 2009). In addition, employees exposed to high-quality HRD activities may perceive that the training and development efforts of their organization are not simply perfunctory actions. Instead, they are likely to believe that their organization cares about them and expends sincere efforts to help them develop their full potential. This recognition builds employee trust and sense of obligation toward the organization (Masterson & Stamper, 2003; Rhoades & Eisenberger, 2002). These favorable processes toward employee competence and commitment may be most strongly initiated by employees’ positive attitudes toward the HRD program.

Hypothesis 5. Of the four measures of HRD practices, perceived benefits of HRD is the measure most strongly related to employee competence and commitment.

Method

Research Setting and Data Structure

We used Human Capital Corporate Panel (HCCP) data to empirically test the present hypotheses. A stratified, random sample was drawn from private business organizations with 100 or more employees in the manufacturing industry in Korea. The effect of HRD on firm performance should be more pronounced in manufacturing organizations than in service organizations (Combs et al., 2006). Manufacturers largely depend on the ability of their
employees in order to improve product quality and adapt to technological changes. Contrary to service organizations, where employee ability and motivation are usually shaped by informal socialization and interactions with customers, employee KSAs needed in manufacturing companies are often organization-specific and technical. Thus, employees must receive formal training on engineering and technical skills related to the products and production procedures.

The corporate data were collected at three time points: 2005 (T1, N = 303), 2007 (T2, N = 314), and 2009 (T3, N = 336). Of the initial sample, we identified 207 organizations that participated in all three waves of data collection. These organizations had, on average, 739 employees and represented diverse manufacturing industries, including energy, automobile, steel, electronics, computer, chemical products, and machinery. For the 207 organizations with complete survey data, we identified matching financial performance data for 2009 as archived by the Korean Information Service (KIS). This time-lagged research design corresponds with the conceptual model summarized in Figure 1: (a) HRD practices were reported by HRM directors and employees at T1, (b) employee competence and commitment were rated by departmental managers and employees at T2, and (c) operational performance was evaluated by departmental managers at T3. T3 data were collected in the middle of 2009; thus, operational performance measure and financial performance data for the entire year have partial temporal overlap, and the two measures can be regarded as contemporaneous (Wright et al., 2005). However, both performance measures were collected after the assessments of HRD practices and employee outcomes. The temporal gap between the predictors and the organizational performance measures was more than two years, which is sufficient to test the long-term effects of HRD on organizational performance.
In each organization, different groups of organizational members participated in the corporate survey over a period of five years. The T1 sample was composed of HRM and strategy directors of each organization and 6,973 organizational members, including office workers, engineers, and manufacturing supervisors and workers. On average, there were 33.69 (SD = 19.92) participants per company, composed of 85.4% males with a mean age of 41.8 years (SD = 8.11) and an average organizational tenure of 14.27 years (SD = 7.29). For the T2 data, 1,202 departmental managers and 4,630 organizational members completed the survey. The T2 participants included 85.9% males with a mean age of 39.9 years (SD = 7.95) and an average organizational tenure of 12.7 years (SD = 7.52). Finally, the T3 sample was composed of 1,093 departmental managers, with an average of 5.28 (SD = 1.84) managers per company. The T3 manager sample included 97.6% males with an average age of 42.9 years (SD = 5.41) and an average tenure of 14.0 years (SD = 7.07).

Measures

The present data represent assessments of various organizational practices and processes by multiple constituents. All variables were assessed by multi-item measures using a five-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 (rwg(j)) and intraclass correlations (ICC(1), ICC(2)), suggesting that employees and managers of the same organization possessed shared perceptions regarding the present constructs (Chen, Mathieu, & Bliese, 2004).

Financial investment in HRD (HRM Director, T1). Unlike prior studies which have mostly relied on subjective judgment regarding the intensity of HRD (e.g., Macky & Boxall, 2007; Zhang & Li, 2009), the quantity of organizational input to HRD was assessed by the actual
amount of monetary investment in HRD in each organization. Specifically, HRM directors reported the total cost that the organization incurred in training its employees in (a) collective training inside the company and (b) collective training outside the company. The total amount of expenses for these HRD efforts was divided by the size of the organization to obtain per capita spending on HRD.

Management support for HRD (HRM Director, T1). Drawing on previous studies (Gubbins et al., 2006; Tharenou, 1997), we used a three-item scale ($\alpha = .84$) to measure management support for HRD: (a) “Management of our company has a clear vision of human resource development,” (b) “Our company has a strong dedication to developing highly competent employees,” and (c) “Management of our company emphasizes the value of competent employees.”

Employee participation in HRD (HRM Director, T1). The quantity to which employees participate in HRD was measured by the total number of hours devoted to collective training that employees receive per year. This measure was created by adding the number of training hours provided for (a) newly recruited office workers, (b) newly recruited manufacturing and engineering workers, and (c) regular job training for existing employees (Bartlett, 2001; Gubbins et al., 2006; Huselid, 1995).

Perceived benefits of HRD (employees, T1). Based on existing measures (Bartlett, 2001; Delaney & Huselid, 1996; Hutchings et al., 2009), we constructed a four-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 competence (managers, T2). Employee competence was rated by departmental managers using the following five-item scale ($\alpha = .72$, $ rwg(5) = .89$, ICC(1) = .34, ICC(2) = .76, $F = 4.23, p < .001$): “Our company holds competent employees in (a) research and development, (b) sales and service, (c) manufacturing, (d) managerial support and staff, and (e) engineering technology” (cf. Katou, 2009).

Employee commitment (employees, T2). Adopting items from an existing measure of affective commitment (Tsui et al., 1997), we assessed employee commitment using four items ($\alpha = .78$, $ rwg(4) = .89$, ICC(1) = .13, ICC(2) = .81, $F = 5.18, p < .001$): (a) “I feel as if our company’s problems are my own,” (b) “If I decide to leave this company, I would lose too much in my life;” (c) “Our company is worthwhile to get my loyalty,” and (d) “Our company makes employees exert voluntary efforts toward organizational goals.”

Operational performance (managers, T3). Departmental managers rated operational performance of their organization by responding to five items ($\alpha = .92$, $ rwg(5) = .93$, ICC(1) = .17, ICC(2) = .59, $F = 2.46, p < .001$): “Our company has competitive advantage over other companies in (a) new product development, (b) efficiency of task procedures, (c) cost reduction, (d) product quality, and (e) overall productivity and defect reduction” (Katou, 2009).

Financial performance (KIS, T3). Financial performance of the organization was operationalized as return on asset (ROA) in 2009, in which operational performance was measured. The validity of ROA as a measure of organizational financial performance has been confirmed by a number of studies (Huselid, 1995; Huselid, Jackson, & Schuler, 1997).

Control variables (Strategy Director, T1). Reviewing the literature, we identified a number of factors that may bear significance for organizational performance. In our analysis, we controlled the effects of the following factors on firm performance: (a) industry type, (b)
organization size, (c) competitive environment, and (d) market demand. Scholars often found industry type to be a critical determinant of organizational performance (Swanson & Holton, 2001). Thus, we controlled the effect of industry type using two dummies created for three industry categories: consumer product industry, heavy industry, and high-tech industry. Organization size has also been acknowledged as a critical firm-specific factor that affects various organizational outcomes (Zhang & Li, 2009). In the present analysis, organization size was controlled using a scale with four categories that indicate the number of employees ($1 = 100–299; 2 = 300–999; 3 = 1,000–2,999; 4 = above 3,000$). Finally, we included the extent of competition and market demand to control the effects of environmental factors that affect organizational performance (Liao et al., 2009; Katou, 2009). 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?” ($1 = rapidly decreasing; 5 = rapidly increasing$).

Results

Descriptive statistics and correlations among study variables are reported in Table 1. Our theoretical framework was tested by structural equation modeling (SEM), which provides an omnibus test of all hypotheses involving multi-step predictive relationships with multiple mediators while simultaneously taking their measurement error into account (Bentler, 2006).

Hypothesized Model and Alternative Models

We first fit the hypothesized model, as shown in Figure 1. The hypothesized structural model produced good fit to the data (Hu & Bentler, 1999): $\chi^2 (df = 39) = 54.74, p = .11; \text{CFI} = .97; \text{RMSEA} = .036; \text{AIC} = 150.74$. Following the recommended procedure (Anderson &
Gerbing, 1988), we checked the possibility that theoretically plausible alternative models offer a better explanation of the observed patterns in the data. For example, although we hypothesized the full mediation, the mediated relationships shown in Figure 1 could be only partial rather than full. Thus, as reported in Table 2, we tested the possibility of partial mediation by adding the following direct effect paths: (a) direct effects of HRD on operational performance (Alternative Model 1), (b) direct effects of HRD on financial performance (Alternative Model 2), and (c) direct effects of employee outcomes on financial performance (Alternative Model 3). In all three cases, the partial mediation model with additional direct paths failed to improve the model fit significantly ($\Delta \chi^2 (df = 4) = 3.22, p > .50$; $\Delta \chi^2 (df = 4) = 4.46, p > .20$; $\Delta \chi^2 (df = 2) = 1.35, p > .50$, respectively) and all the added paths were not significant.

In Alternative Model 4, we modified the model so that HRD practices and employee outcomes have independent effects on operational performance, instead of having a mediated relationship. This model produced a poor model fit: $\chi^2 (df = 45) = 93.88, p = .001$; CFI = .86; RMSEA = .073; AIC = 185.88. Another possibility is that corporate efforts for HRD (financial investment and management support) shape employee experiences of participation and perceived benefits of HRD, which may have direct implications for employee outcomes (Alternative Model 5). This alternative model exhibited good fit to the data; however, the hypothesized model still offered a better explanation of the data. Hence, the present data support the overall conceptual framework depicted in Figure 1.

**Hypothesis Testing**

The results of the best-fitting, hypothesized model are presented in Figure 2. None of the control variables was significantly related to financial performance. Of the four HRD variables measured at T1, perceived benefits of HRD was the only significant predictor of employee
competence assessed two years later at T2 ($\beta = .18, p < .01$). The association between perceived benefits of HRD and employee competence is meaningful given the two-year temporal separation and the different sources used to assess the two variables (employees and departmental managers).

With regard to the HRD-commitment linkage, financial investment, management support, and perceived benefits of HRD exerted significant positive effects on employee commitment. The HRD-commitment effects were particularly strong for financial investment in HRD and perceived benefits of HRD ($\beta = .25, p < .001$ and $\beta = .17, p < .01$, respectively). In contrast, employee participation in HRD did not show any significant effects on employee outcomes. Thus, the results support Hypotheses 2 and 3, although the significance of the relationships between HRD and employee outcomes depends on the measure of HRD. The superiority of perceived benefits of HRD to other measures in predicting employee outcomes is supported only for competence.

The structural relations reported in Figure 2 also reveals that employee competence and commitment increased operational performance measured two years later ($\beta = .37, p < .001$ and $\beta = .17, p < .01$, respectively). As expected, operational performance, in turn, predicted financial performance of the organization ($\beta = .34, p < .001$). These mediation patterns offer empirical support for Hypotheses 1 and 4.

To validate the significance of the mediated, indirect effects of HRD practices on organizational performance, we employed the product-of-coefficients approach and tested their significance using Sobel-test statistics (MacKinnon, Fairchild, & Fritz, 2007). As shown in Table 3, financial investment and management support for HRD exerted meaningful indirect effects on operational performance through employee commitment ($\alpha\beta = .04, z = 2.14, p < .05$; $\alpha\beta = .02, z$
= 1.71, p < .10, respectively). While perceived benefits of HRD has significant indirect effects on operational performance via both employee competence and commitment ($\alpha\beta = .07, z = 2.35, p < .05; \alpha\beta = .03, z = 1.85, p < .10, \text{respectively}$), employee participation in HRD did not show any significant indirect effects. Our examination of the indirect effects also revealed that employee competence and commitment improved financial performance by enhancing operational performance of the organization ($\alpha\beta = .12, z = 3.76, p < .001; \alpha\beta = .05, z = 2.29, p < .05, \text{respectively}$). The overall pattern indicates that HRD practices affect operational performance by forming desirable employee outcomes. In addition, employee outcomes contribute to firm financial performance indirectly through operational performance, such as efficiency and product quality.

**Discussion**

Given that organizations spend substantial capital on the training and development of their employees (Evans & Davis, 2005; Kehoe & Wright, in press), both practitioners and researchers need to understand whether HRD efforts accrue intended benefits such as enhanced operational and financial performance. More importantly, investigations of the underlying mechanisms that explain the HRD-performance link and the specific HRD approach that effectively generates such a link present answers with practical and scholarly significance. Attending to HRD as a critical component of an HR system, we provide a systematic and rigorous empirical investigation of the HRD-performance relationship at the organization level of analysis using more detailed and diverse measures of HRD compared to those employed in extant studies. Building on the prevailing assumption of the SHRM literature (Kehoe & Wright, in press), we proposed that HRD practices enhance employee competence and commitment that promote operational performance of an organization, which ultimately affects its financial
performance. Multi-source firm-level data collected from 207 Korean manufacturing companies over a five-year period support most of our theoretical propositions. Below, we highlight the implications of this study along with its limitations.

**Implications for Theory and Research**

The principal proposition of SHRM states that HR practices affect organizational performance by promoting employee KSAs and motivation (Combs et al., 2006; Huselid, 1995; Katou, 2009). Despite the substantial research attention to the effects of HR practices on organizational performance (Delaney & Huselid, 1996; Evan & Davis, 2005; Zhang & Li, 2009), empirical evidence regarding the underlying mechanism that generates such effects has been rare and fragmented, particularly at the organization level. Our organization-level analysis of three-wave lagged data confirms that HRD practices indirectly predict organizational performance through their direct effects on employee outcomes. This causal flow is also 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 (Scott, 1995; Choi & Chang, 2009). In addition, consistent with the presumption that HR practices affect financial outcomes by improving intermediate organizational functioning (Dyer & Reeves, 1995; Huselid, 1995), our comparison of alternative models indicates that HRD practices and employee outcomes predict operational performance, which in turn predicts financial performance. Of the two employee outcomes, employee competence showed a more significant effect on operational performance compared to employee commitment. Perhaps, in business organizations with the relatively high structure and strong situational control of behavior, employee capability matters more for effective organizational functioning than does their motivation (Le Deist & Winterton, 2005; Lopez et al., 2005).
The present study expands the typical operationalization of HRD as the presence or intensity of employee training to include both managerial interventions and employee experiences in quantity and quality of HRD. The four HRD measures may reflect unique strategies of organizations in developing their human capital. On the one hand, organizations can utilize a top-down strategy driven by the decision of resource expenditure and/or support for HRD by institutional elites. On the other, organizations can take a more customer-oriented, employee-focused approach to provide abundant and high-quality developmental experiences for their employees.

Our structural analysis indicates that management-driven HRD practices such as financial investment and managerial support have meaningful implications for employee commitment. As suggested in the literature based on social exchange theory and the concept of reciprocity, the effort of organizations for developing their employees may generate perceptions of organizational support and care for the employees, which induces a sense of attachment to the organization and obligation to return the favor among employees (Masterson & Stamper, 2003; Rhoades & Eisenberger, 2002). Perceived benefits of HRD also generate desirable attitudinal reactions from employees, perhaps because their perception of a high-quality organizational investment in and care for employees engenders the sense of insider status or strong identification with the organization (Bartlett, 2001; Macky & Boxall, 2007).

Although a greater level of affective commitment among employees is a welcome and common outcome of HRD practices, employee commitment can perhaps be more effectively managed by other practices, such as incentive systems, fair evaluation procedures, interactional justice in leader behavior, and interpersonal ties among employees (Evans & Davis, 2005; Kehoe & Wright, in press; Richard & Johnson, 2004). After all, the intended and distinct benefit of
HRD is the increase in employee task capabilities, which would allow them to perform more effectively and efficiently, and ultimately contribute to the achievement of organizational goals to a greater extent (Huselid, 1995; Katou, 2009). Thus, in addition to affective outcomes, cognitive and behavioral changes among employees should take place in order to justify corporate efforts and expenditures for HRD activities.

Unfortunately, of the four HRD practices, perceived benefits of HRD reported by employees was the only significant predictor of employee competence reported by managers two years later. This suggests that large-scale corporate expenditures based on top-down training initiatives may not be effective in building capable human capital in the organization. With the increasing endorsement of active engagement of trainees in the learning process, scholars have increasingly attended to employees’ positive perceptions toward HRD programs (Bartlett, 2001; Gubbins et al., 2006). Perhaps, employees turn into proactive learners only when they perceive that HRD activities are relevant and beneficial for their personal and professional development (Katou, 2009; Liao et al., 2009). Thus, employees become enthusiastic participants of learning and actively absorb knowledge and skills only when they are convinced that the HRD programs are beneficial for them.

Due to its significant effects on both employee competence and commitment, perceived benefits of HRD exhibited meaningful indirect effects on operational performance via both employee outcomes (see Table 3). In contrast, the degree of participation in HRD programs or training experience itself did not show any meaningful associations with competence and commitment. This pattern resonates the emphasis on customers as active seekers of the service experience rather than passive users, which puts perceived value of services and products at the center of marketing interventions (Carù & Cova, 2007; Urban, 2010). Technology acceptance
model also highlights the usefulness or benefit as perceived by users as the core factor of innovation adoption (Venkatesh, Morris, Davis, & Davis, 2003). Posing employees as the customer or target user of HR practices or innovations, the present findings clearly demonstrate that generating value-added experience and perception of benefit among employees is more important than top-down resource expenditure and managerial support for HR practices. These results offer practical guidelines in designing and implementing HRD programs in organizations.

**Study Limitations and Conclusion**

The present research design has several strengths, including multi-source longitudinal data, a large random sample at the organization level, multi-item scales, and the use of objective indicators of HR practices and financial performance. These rigorous design features overcome a number of shortcomings of prior empirical studies in the domain of SHRM and enhance our confidence with regard to the present results. The current findings, however, should be interpreted with caution, taking into account several limitations of the study. First, the present data included only manufacturing industries and the findings may not be generalized to other industries, such as financial or healthcare industries, or to a different sector, such as non-profit organizations. Distinct industry-specific internal conditions and individual characteristics may produce somewhat different HRD-related dynamics than the present patterns.

Second, in the present study, we assessed employee commitment by aggregating the commitment level of each individual, thereby relying on the direct consensus composition model of aggregation (Chan, 1998). This may reduce the validity of the measure in assessing employee commitment as a collective, organization-level property (Chen et al., 2004). Similarly, the present HRD measures addressed only collective training inside and outside the company (thus, mostly off-the-job formal training programs) at the expense of other forms of training relying
more on individual efforts, such as e-learning and attending degree programs as well as on-the-job training. Future studies need to employ HRD measures that capture various types of learning and developmental processes in organizations.

Finally, the present research context could affect our findings because organizational learning process is shaped by specific cultural and national contexts (Antonacopoulou & Gabriel, 2006). The Korean culture is characterized by a strong tendency toward collectivism and power distance, resulting in distinct managerial practices and organizational culture (Quick & Kim, 2009). These cultural factors may explain the relatively stronger connections between HRD practices and employee commitment or the sense of belongingness to the organization. These considerations present the need to further investigate the effects of HRD and other HR practices in diverse cultural contexts. These limitations, however, also offer distinct strengths to the study. For instance, by focusing on the manufacturing industry instead of a composite of companies from diverse industries, it reveals potentially distinct patterns reflecting the industry characteristics, which might be revealed in meta-analytic comparisons. Furthermore, given that the vast majority of studies of SHRM have been based on organizations in Western countries (Delaney & Huselid, 1996; Huselid, 1995; Macky & Boxall, 2007; Richard & Johnson, 2004), the present analyses based on Korean organizations supply valuable empirical data in the setting of an emerging market.

Scholars of SHRM have accumulated substantial empirical literature related to the relationship between HR systems and organizational outcomes. This stream of research has demonstrated the superior value of a bundle of HR practices over a single HR practice (Evans & Davis, 2005; Huselid, 1995; Richard & Johnson, 2004). As recent reviews indicate, however, this focus on additive effects of HR practices should be complemented by further attention on the
way each individual HR component operates to affect organizational outcomes (Combs et al., 2006). The present study meaningfully expands the SHRM literature by elaborating different types of HRD practices and conceptually and empirically exploring the intermediate venue that explains the effect of HRD on operational and financial performance of the organization. As revealed in the present study, employee outcomes, such as capability and motivation, render a compelling explanation of the reason that HR practices affect organizational outcomes (Katou, 2009; Liao et al., 2009). Nevertheless, further conceptual and empirical endeavors are needed to achieve a clear and comprehensive understanding of the SHRM-performance link. With regard to HRD, knowledge management and learning processes of obtaining, sharing, and generating task-related expertise and knowledge and accompanying increment in social capital could be a promising organizational mechanism that underlies the effect of HRD on organizational performance.
References


Table 1

Means, Standard Deviations, and Correlations among Study Variables

<table>
<thead>
<tr>
<th>Variables</th>
<th>M</th>
<th>SD</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
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<th>11</th>
<th>12</th>
<th>13</th>
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<tr>
<td>1. Consumer Product Industry</td>
<td>.15</td>
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<td>2. Heavy Industry</td>
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<td>-.52**</td>
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<td>3. Organization Size</td>
<td>1.86</td>
<td>.94</td>
<td>.32**</td>
<td>- .06</td>
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<td></td>
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<td>4. Competitive Environment</td>
<td>3.16</td>
<td>.97</td>
<td>.18*</td>
<td>-.17*</td>
<td>-.02</td>
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<td>5. Market Demand</td>
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<td>.97</td>
<td>-.12</td>
<td>-.07</td>
<td>-.06</td>
<td>-.07</td>
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<tr>
<td>6. Financial Investment in HRD&lt;sup&gt;a&lt;/sup&gt;</td>
<td>.24</td>
<td>.38</td>
<td>-.02</td>
<td>.07</td>
<td>.33**</td>
<td>-.09</td>
<td>.07</td>
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<tr>
<td>7. Management Support for HRD</td>
<td>3.59</td>
<td>.69</td>
<td>-.08</td>
<td>-.12</td>
<td>.07</td>
<td>-.03</td>
<td>.32**</td>
<td>.17*</td>
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<td>8. Employee Participation in HRD</td>
<td>167.37</td>
<td>189.32</td>
<td>.12</td>
<td>.03</td>
<td>.23**</td>
<td>-.14*</td>
<td>-.03</td>
<td>.18*</td>
<td>-.07</td>
<td></td>
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<td>9. Perceived Benefits of HRD</td>
<td>3.27</td>
<td>.27</td>
<td>.03</td>
<td>.02</td>
<td>.31**</td>
<td>-.01</td>
<td>.01</td>
<td>.22**</td>
<td>.10</td>
<td>.15*</td>
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<td>10. Employee Competence</td>
<td>3.56</td>
<td>.51</td>
<td>.07</td>
<td>.02</td>
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<td>.02</td>
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<td>.10</td>
<td>.19**</td>
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<td>11. Employee Commitment</td>
<td>3.29</td>
<td>.26</td>
<td>.05</td>
<td>.12</td>
<td>.41**</td>
<td>-.03</td>
<td>.07</td>
<td>.35**</td>
<td>.22**</td>
<td>.16*</td>
<td>.26**</td>
<td>.33**</td>
<td></td>
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<td></td>
</tr>
<tr>
<td>12. Operational Performance</td>
<td>3.55</td>
<td>.52</td>
<td>-.02</td>
<td>.13</td>
<td>.27**</td>
<td>-.11</td>
<td>.04</td>
<td>.16*</td>
<td>.01</td>
<td>.07</td>
<td>.19**</td>
<td>.42**</td>
<td>.29**</td>
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<tr>
<td>13. Financial Performance</td>
<td>3.36</td>
<td>11.66</td>
<td>.06</td>
<td>-.02</td>
<td>.14*</td>
<td>-.06</td>
<td>-.05</td>
<td>-.04</td>
<td>-.04</td>
<td>-.15*</td>
<td>.12</td>
<td>.14*</td>
<td>.14*</td>
<td>.34*</td>
<td></td>
</tr>
</tbody>
</table>

Note. Unit of analysis is organization (N = 207).
<sup>a</sup> Unit is one million Korean Won.
* p < .05; ** p < .01
Table 2

Comparison of Model Fit of Alternative Models

<table>
<thead>
<tr>
<th>Model</th>
<th>$\chi^2$ (df)</th>
<th>$p$</th>
<th>CFI</th>
<th>RMSEA</th>
<th>AIC</th>
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</thead>
<tbody>
<tr>
<td>Hypothesized Model</td>
<td>54.74 (43)</td>
<td>.108</td>
<td>.97</td>
<td>.036</td>
<td>150.744</td>
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<tr>
<td>Alternative Model 1: Direct effects of HRD on operational performance (partial mediation model)</td>
<td>51.52 (39)</td>
<td>.087</td>
<td>.96</td>
<td>.039</td>
<td>155.515</td>
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<tr>
<td>Alternative Model 2: Direct effects of HRD on financial performance (partial mediation model)</td>
<td>50.28 (39)</td>
<td>.107</td>
<td>.97</td>
<td>.037</td>
<td>154.276</td>
</tr>
<tr>
<td>Alternative Model 3: Direct effects of employee outcomes on financial performance (partial mediation model)</td>
<td>53.39 (41)</td>
<td>.093</td>
<td>.96</td>
<td>.038</td>
<td>153.392</td>
</tr>
<tr>
<td>Alternative Model 4: Parallel effects of HRD and employee outcomes on operational performance</td>
<td>93.88 (45)</td>
<td>.000</td>
<td>.86</td>
<td>.073</td>
<td>185.880</td>
</tr>
<tr>
<td>Alternative Model 5: Financial investment in HRD and management support for HRD predicting employee participation in HRD and perceived benefits of HRD</td>
<td>62.68 (46)</td>
<td>.051</td>
<td>.95</td>
<td>.042</td>
<td>152.680</td>
</tr>
</tbody>
</table>

Note. CFI = Comparative Fit Index. RMSEA = Root Mean-Square Error of Approximation. AIC = Akaike Information Criterion.
### Table 3

**Indirect Effects**

<table>
<thead>
<tr>
<th>Dependent Variable</th>
<th>Independent Variable</th>
<th>Indirect Effect</th>
<th>Sobel-Test Statistic</th>
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</thead>
<tbody>
<tr>
<td>Operational Performance</td>
<td>Employee Participation in HRD through Competence</td>
<td>.03</td>
<td>.58</td>
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<td></td>
<td>Perceived Benefits of HRD through Competence</td>
<td>.07*</td>
<td>2.35</td>
</tr>
<tr>
<td>Operational Performance</td>
<td>Financial Investment in HRD through Commitment</td>
<td>.04*</td>
<td>2.14</td>
</tr>
<tr>
<td></td>
<td>Management Support for HRD through Commitment</td>
<td>.02+</td>
<td>1.71</td>
</tr>
<tr>
<td></td>
<td>Employee Participation in HRD through Commitment</td>
<td>.02</td>
<td>.93</td>
</tr>
<tr>
<td></td>
<td>Perceived Benefits of HRD through Commitment</td>
<td>.03+</td>
<td>1.85</td>
</tr>
<tr>
<td>Financial Performance&lt;sup&gt;a&lt;/sup&gt;</td>
<td>Competence through Operational Performance</td>
<td>.12***</td>
<td>3.76</td>
</tr>
<tr>
<td></td>
<td>Commitment through Operational Performance</td>
<td>.05*</td>
<td>2.29</td>
</tr>
</tbody>
</table>

<sup>a</sup> None of the indirect effects of HRD on financial performance was statistically significant and was therefore not included in this table.

+ $p < .10$; * $p < .05$; *** $p < .001$
HRD Practices, Employee Outcomes, and Organizational Performance

Employee Outcomes
- Employee Competence
- Employee Commitment

Control Variables
- Industry Type
- Organization Size
- Competitive Environment
- Market Demand

Four Approaches to HRD
- Financial Investment in HRD
- Management Support for HRD
- Employee Participation in HRD
- Perceived Benefits of HRD

Operational Performance
- Product Quality
- Productivity
- New Product Development

Financial Performance
- Return on Asset

Time 1 Time 2 Time 3

Figure 1. Theoretical Framework Predicting Organizational Performance
HRD Practices, Employee Outcomes, and Organizational Performance

Employee Commitment

Employee Competence

Management Support for HRD

Employee Participation in HRD

Perceived Benefits of HRD

Financial Investment in HRD

Operational Performance

Financial Performance

Control Variables

Industry Type
Organizational Size
Competitive Environment
Market Demand

Note. Solid lines represent statistically significant results. Insignificant paths are not depicted in the diagram.

* $p < .05$; ** $p < .01$; *** $p < .001$

Figure 2. Four Approaches to Human Resource Development