

**Structural Empowerment, Human Capital, and Organizational Innovation Capability:
Focusing on Fit with Internal Workplace Contexts**

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ABSTRACT

Building on workplace empowerment and human capital resource theory, we examine the role of human capital in the creation of organizational innovation capability through structural empowerment. We further propose the internal dynamic environment and strategic importance of human capital moderate the indirect effect of human capital in the relationship between structural empowerment and innovation capability. With a sample of 437 manufacturing firms representing 28,455 managers and employees from 2007 to 2019 in South Korea, we found that structural empowerment positively affects innovation capability via human capital. Moreover, we found that when structural empowerment is underpinned by a high internal dynamic environment or under high strategic importance of human capital, the indirect effect of structural empowerment on innovation capability.

Key words: structural empowerment, human capital, innovation capability, internal dynamic environment, strategic importance of human capital, workplace empowerment theory, human capital resource theory

Structural Empowerment, Human Capital, and Organizational Innovation Capability: Focusing on Fit with Internal Workplace Contexts

Since the 1980s, structural empowerment has become popular (Block, 1987) and continues today (e.g., Coun, Peters, Blomme, & Schaveling, 2022; Van den Berg, Alblas, Blanc, & Romme, 2022). Structural empowerment refers to socio-cultural conditions that enable employees to accomplish their work in meaningful ways at the workplace (Kanter, 1977). Scholars have found that structural empowerment is associated with individual-level outcomes such as psychological empowerment and job satisfaction (Laschinger, Finegan, Shamian, & Wilk, 2004). To the best of our knowledge, the understanding of the process through which structural empowerment affects organizational innovation capability has yet to be fully addressed despite most prior studies having been conducted at the individual level. Therefore, to advance the literature, the first purpose of our study is to investigate the effect of structural empowerment on organizational innovation capability.

In strategic human resource management (HRM) literature, “*understanding the degree to which HPWPs affect organizational performance and the conditions that moderate the relationship helps researchers build contingencies into SHRM theory and aids practitioners seeking to justify investments in HPWPs*” (Combs, Liu, Hall, & Ketchen, 2006: 502). Accordingly, prior research suggested how HRM practices influence organizational innovation (e.g., Sung & Choi, 2018). However, strategic HRM literature has typically bundled HRM practices together, and empowerment has been regarded as one of the facets of multidimensional high performance work practice (HPWP) (e.g., Shin & Konrad, 2017: 977). While other HRM practices such as staffing, training, and pay-for-performance were studied separately for their impact on organizational outcomes, empowerment was rarely investigated in isolation. When empowerment is implemented with other HRM practices, its positive

influence on organizational outcomes might be overemphasized or the issue of a “*deadly combination*” might be raised (Delery, 1998; Maynard, Gilson, & Mathieu, 2012). Maynard et al (2012) stated that “*when empowerment is integrated into a larger bundle, it becomes difficult-if not impossible-to discern its unique effects*” (p. 1262). Given the relationship between HPWP and organizational outcome, the effect of HPWP on organizational innovation capability should be controlled, as the effect of empowerment might be spurious unless HPWP is controlled. Thus, this study’s second purpose involves examining whether structural empowerment enhances organizational innovation capability both in isolation and after controlling for HPWP.

Moreover, another issue in the empowerment literature is the need to describe how structural empowerment influences organizational innovation capability. Despite the call for research exploring the “*black box*” (Maynard et al., 2012), the mechanism through which structural empowerment influences organizational innovation capability remains unraveled. Thus, it is necessary to open the “*black box*” of structural empowerment-organizational outcome linkage to better understand how (and why) empowerment is related to organizational innovation capability. Applying the proximal-distal outcome framework in HRM (e.g., Jiang, Lepak, Hu, & Baer, 2012), we speculate that structural empowerment first influences human capital (*a proximal outcome*), which further affects innovation capability (*a distal outcome*).

Fourth, this study aims to explore the boundary conditions that may influence the structural empowerment-human capital-innovation capability mechanism. Despite the progress in HRM fit approach, HRM studies have been criticized for the “*simplistic representation of strategy, often in static constructs (e.g., cost leadership versus differentiation) (cf. Porter, 1985)*” and “*insufficient attention to dynamics, as fit with various contextual factors represent “a process of adaptation to context”*” (Boon, 2008: 4). We consider that (a) internal dynamic environment and (b) strategic importance of human capital may facilitate individual-level knowledge, skill, ability, and others (KSAOs) into a unit-level human capital resource that

increases organizational effectiveness (Ployhart & Moliterno, 2011). Building upon the human capital resource theory (Ployhart, Nyberg, Reilly, & Maltarich, 2014; Ray, Nyberg, & Maltarich, 2021), we postulate that internal dynamic environment and strategic importance of human capital are key emergence-enabling processes in increasing the proposed mediating effect of human capital between structural empowerment and organizational innovation capability.

This study contributes to the literature in the following ways: First, we focus on the effect of structural empowerment on organizational innovation capability in isolation after controlling for the effect of HPWP. Second, this study unravels an underlying process linking structural empowerment and innovation capability. Third, it contributes to empowerment literature and human capital theory by identifying key internal contextual conditions that influence the effectiveness of structural empowerment (see Figure 1).

[Insert Figure 1 about here]

THEORETICAL FRAMEWORK AND HYPOTHESES

In this study, we theorize and empirically validate the relationship between structural empowerment and innovation capability. Our research builds on workplace empowerment theory and human capital resource theory to understand the positive implication of structural empowerment on innovation capability and its associated pattern of human capital resource emergences. The two theories provide a complementary framework for understanding the full range of the empowering process at an organizational level although they have rarely been discussed together in empowerment literature. The workplace empowerment theory concerns the organizational conditions that facilitates human capital. Human capital resource theory concerns the emergence-enabling process that facilitate structural empowerment and human capital to give rise to organizational innovation capability. In explaining the mechanism of

structural empowerment-human capital-innovation capability, our research advocates the complementarity of the two theories as moderated by internal dynamic environment and strategic importance of human capital.

Structural Empowerment, Human Capital, and Innovation Capability

Workplace empowerment theory describes whether and how organizational conditions developed by structural empowerment facilitate employee's abilities in four ways within work settings: (a) information; (b) support; (c) resources; and (d) opportunity to learn and grow (Kanter, 1977). First, structural empowerment helps develop human capital by providing employees with timely and transparent information. An organization needs to communicate with employees clearly and effectively with task-related information so that employees at the workplace will understand the task's current progress and the organization's vision. Additionally, providing access to task-related information will help employees perform their job more effectively (Chen, Silverthorne, & Hung, 2006). To facilitate access to information by empowering processes, previous research suggested that empowering leadership, as one of the multiple methods of knowledge sharing with employees, leads to greater emotional attachment to their job and organization (Srivastava, Bartol, & Locke, 2006).

Another benefit of structural empowerment is to provide employees with an ongoing supportive environment. Employees discuss concerns with their colleagues in formal or informal supportive ways, as occurs in structural empowerment progress. In particular, employees may develop a supportive climate to encourage collaboration and collegiality among employees and provide access to help when needed (Laschinger, Read, & Zhu, 2016). Employees in a supportive environment are more likely to receive various types of support that enhance their ability and skill, thereby developing human capital within work settings (Alpkan, Bulut, Gunday, Ulusoy, & Kilic, 2010). Employees can also be motivated to share knowledge

with others in an organization (Hendriks, 1999) and seek feedback (Whitaker, Dahling, & Levy, 2007), consequently leading to the development of human capital.

Third, adequate resources from a structurally empowering environment are vital to ensure that organizations are able to develop human capital effectively. These resources involve adequate resources for immediate decision-making or autonomous judgements including unit staffing, training activities, and task allocation at the workplace. When work at the workplace requires immediate decision-making and autonomous judgement, access to resources at the workplace may be crucial. Managers who are structurally empowered at the workplace can encourage employees to interpret workload data as an integral part of decision-making and engage employees in resource decision-making and abilities in their task-related areas.

Finally, as an important way to develop human capital, structural empowerment involves providing employees with an adequate opportunity to learn and grow. Structural empowerment increases advantages for employees' desire to achieve their personal goals, particularly as the structurally empowering process encourages employees to promote competence as well as develop greater feelings of improving themselves (Laschinger et al., 2016; Spreitzer, 1995). Theoretically, a structurally empowering process results in psychological empowerment characterized by an employee's self-awareness by enhancing job meaningfulness, competence, self-determination, and a sense of being able to make an impact among employees (Kanter, 1977). Employees should be motivated to create structurally and psychologically empowering environments and identify practical actions to improve their knowledge, skills, and abilities. These empowering environments can improve employee interaction and develop discussion, consultation, and open communication, thus enhancing human capital within a workplace (e.g., Xue, Bradley, & Liang, 2011). The improved patterns of interaction and open communication in the context of structural empowerment (e.g., giving and receiving feedback) are essentially human capital. Based on the above argument and

findings, we hypothesize that structural empowerment encourages unit members to better develop and improve human capital within their work settings.

Hypothesis 1. Structural empowerment is positively related to human capital.

We predict that structural empowerment will improve human capital, thereby enhancing innovation capabilities by mediating the relationship between structural empowerment and innovation capability. The empirical evidence on the relationship between human capital and innovation capability has long been accumulated. According to human capital literature and the resource-based view, human capital might be an indicator of a firm's competitive advantage and a key resource for organizational effectiveness when it is valuable, rare for an organization, hard to imitate, and non-substitutable (Barney, 1991; Coff, 1997; Wright, McMahan, & McWilliams, 1994; Wright & McMahan, 1992). Li, Wang, Van Jaarsveld, Lee and Ma (2018) state that human capital is a key factor in improving organizational innovation capability.

Furthermore, HRM researchers have speculated that HRM practices enhance organizational outcomes via HRM outcomes (e.g., human capital) (e.g., Jiang et al., 2012; Takeuchi, Lepak, Wang, & Takeuchi, 2007). Since empowerment has been regarded as one of the HRM practices in the strategic HRM literature, enhanced human capital through structural empowerment may aid higher innovation capability. Therefore, structural empowerment is expected to improve innovation capability through the enhanced quality of human capital. As such, we predict a mediating role for human capital in the structural empowerment and innovation capability linkage:

Hypothesis 2. Human capital mediates the relationship between structural empowerment and

innovation capability.

Contingencies of Internal Workplace Contexts

We propose an emergence-enabling process that facilitates human capital to give rise to organizational-level innovation capability. Human capital emergence is defined as transforming and amplifying individual human capital into unit-level human capital to improve organizational effectiveness (Li et al., 2018; Ployhart & Moliterno, 2011). Specifically, we probe two distinct emergence enablers that transform (augmentation of unit-member KSAOs) and amplify (improvement of the performance and value of a unit's stock of KSAOs) the positive influence of human capital on innovation capability (Ployhart & Moliterno, 2011). Unit members might be motivated to improve the collective interactions in certain workplace contexts: (a) internal dynamic environment and (b) strategic importance of human capital.

Internal dynamic environment

We postulate the internal dynamic environment as a critical internal context that accentuates the transformation and amplification effects of the emergent-enabling process. Internal dynamic environment can be manifested as the extent to which the unit's tasks are fluid or marked by change and uncertainty (Kozlowski, Gully, Nason, & Smith, 1999). This environment tends to be associated with high levels of dynamism and requires strong social ties among members. Under the internal dynamic environment, individuals conclude their tasks collectively and involve interaction, coordination, and interdependence with other unit members (Byström & Järvelin, 1995). As the highly internal dynamic environment imposes strong member linkages related to a complex environment, unit members must communicate with each other as part of a strong social linkage that intends to hold information and knowledge for organizational capability (Ancona & Chong, 1996; Zander & Kogut, 1995). Thus, unit members improve

collective interaction and engage in extra-role behavior and competence development activities.

Furthermore, internal dynamic environment requires re-establishing the current workflow designed to interact and coordinate unit members to complete tasks (Bell & Kozlowski, 2002). The unit member in highly complex environments induces potential for a unit-level human capital resource to emerge, thus leading to an organizational outcome (innovation capability) (Ployhart & Moliterno, 2011). Therefore, when firms are exposed to high internal dynamic environment, the value of human capital in promoting innovation capability is strengthened. As such, we hypothesize the following:

Hypothesis 3. Internal dynamic environment moderates the relationship between human capital and innovation capability, such that when human capital is under internal dynamic environment, innovation capability will be higher compared to when it does not.

Strategic importance of human capital

While the internal dynamic environment allows organizational capabilities to emerge, transformation and amplification may not automatically happen (Ployhart & Hale, 2014). Aside from the role of internal dynamic environment, we propose that strategic importance of human capital determines concerted collective actions that strengthen human capital's positive influences on innovation capability. Drawing on prior research (Aragon-Sanchez, Barba-Aragon, & Sanz-Valle, 2003; Barlett, 2001; Glavell & Karassavidou, 2011; Gubbins, Garavan, Hogan, & Woodlock, 2006), we define the strategic importance of human capital as the degree to which an employee perceives how much an organization cares about the development of human capital or invests in the development of human capital. It might manifest as an employee's perceived value of a qualitative (e.g., management support for HRM) or quantitative (e.g., resource investment in HRM) approach. In line with our definition, we

postulate that the strategic importance of human capital facilitates the emergence of human capital resource, a necessary condition for achieving innovation capability through human capital. When employees are exposed to an organizational setting that develops human capital, they are more likely to increase the collective interactions at the workplace, thereby leading to a new set of organizational outcomes (Bhatti, Zakariya, Vrontis, Santoro, & Christofi, 2020). In other words, the strategic importance of human capital transforms and amplifies the collective interaction among employees, thereby enhancing the quality of human capital.

The strategic importance of human capital might facilitate the emergence-enabling process by establishing behavioral processes, cognitive states, and affective states so that human capital at the workplace helps give rise to organizational-level innovation capability (Kozlowski & Ilgen, 2006; Ployhart & Moliterno, 2011). First, the behavioral process relates to the unit member's action. The behavioral processes manifest as unit members' behavioral regulation and explicit coordination within the workplace (Ployhart & Moliterno, 2011). As unit members perceive the strategic importance of human capital, they are more likely to be guided by explicitly set goals and corrected for deviation from actions similar to the unit's goals in interacting and working together (Marks, Mathieu, & Zaccaro, 2001). Through the communication process, unit members can share and transfer knowledge, which is an important source of innovation capability (Argote, 1999; Argote & Ingram, 2000). In addition, through coordination processes, unit members can streamline and synchronize interaction toward forming a unified workforce (Campbell, Saxton, & Banerjee, 2014). Second, when unit members recognize the strategic importance of human capital in an organization, they may cultivate concerted emergent cognitive states for knowledge creation. The collective cognitive states within a unit share cognitive representations of work tasks and develop shared understandings in line with the organization's expectations (Li et al., 2018). The strategic importance of human capital may benefit organizational learning that facilitates knowledge

sharing, thus enhancing the performance effect of human capital (Argote & Ingram, 2000). Third, when employees recognize an organization's strategic orientation toward human capital, they may cultivate concerted emergent affective states. The collective affective states among unit members are manifested by the strength of emotional "bonds" and positive emotional orientation, which tie members together (Ployhart & Moliterno, 2011). The strategic importance of human capital can strengthen emotional "bonds" by cultivating social capital within the workforce (Brooks & Nafukho, 2006). In particular, through social capital, unit members can develop interpersonal relationships that are useful in the market (Lin, 2001). Such affective interactions through interpersonal relationships can help human capital develop collective cohesion and positive emotional orientation for innovation capability (Clegg, Unsworth, Epitropaki, & Parker, 2002). Furthermore, unit members engage in positive attribution related to the ulterior motive in a complex task environment, thus positively reacting to human resource development. They are, accordingly, more likely to become emotionally attached and be motivated to develop their competence (Kozlowski & Ilgen, 2006). As such, we hypothesize the following:

Hypothesis 4. Strategic importance of human capital moderates the relationship between human capital and innovation capability, such that when human capital is with strategic importance of human capital, innovation capability will be higher compared to when it does not.

Taking Hypotheses 2 to 4, we predict the moderating roles of (a) internal dynamic environment (Hypothesis 3) and (b) strategic importance of human capital (Hypothesis 4) for the mediating relationship between structural empowerment and innovation capability through human capital (Hypothesis 2). In other words, based upon the rationales for Hypotheses 2 to 4

(mediation and moderation effects), the indirect effects of structural empowerment on innovation capability via the mediator (human capital) are expected to be conditional upon (a) internal dynamic environment and (b) strategic importance of human capital, such that the conditional indirect effects of structural empowerment on innovation capability would be stronger when implemented under turbulent environment within an organization or with the strategic importance of human capital than when does not. This is a case of the second-stage moderated mediation model (Edwards & Lambert, 2007), in which the moderators (internal dynamic environment and strategic importance of human capital) affect the relationship between the mediator (human capital) and the dependent variable (innovation capability) in the first stage. In the second stage, the independent variable (structural empowerment) indirectly affects the dependent variable (innovation capability) through the mediator (human capital), and the strength of its indirect relationship depends on the degree of two moderating effects. Therefore, drawing from the combined arguments for Hypotheses 2 to 4, we hypothesize the following:

Hypothesis 5. The conditional indirect effect of structural empowerment on innovation capability via human capital is stronger when an organization is under internal dynamic environment than when it is not.

Hypothesis 6. The conditional indirect effect of structural empowerment on innovation capability via human capital is stronger when strategic importance of human capital exists than when it is not.

METHODS

Sample and Data Collection Procedure

To empirically validate the proposed model, we create a multi-sourced longitudinal dataset. First, we use Human Capital Corporate Panel (HCCP) data. HCCP has biannually collected and provided organization- and employee-level archival data on Korean firms across various industries. Of the initial sample, 745 firms were adopted for empirical analysis. HCCP surveys obtained in 2007 (N = 467); 2009 (N = 473); 2011 (N = 500); 2013 (N = 482); 2015 (N = 467); and 2017 (N = 474). A diverse unit of members (e.g., production/department/HR/strategy manager, and employees) was asked to respond to strategy-, organization-, and HR-related survey items and gave the necessary information for our analysis. Second, we adopt the firm's innovation capability from the Korea Intellectual Property Organization (KIPO). KIPO has annually updated the firm's innovation information. Last, to identify industry-level variables, we use financial data provided by Korea Investors Services (KIS). Based on the Korean SIC code, KIS annually provides financial information by firm and industry. Of the 745 organizations, 308 without sufficient information about our research are excluded from the sample. The final sample includes information obtained from 28,455 employees from 437 firms in 28 manufacturing industries.

Measures

This study measured most items on a five-point Likert-type scale ranging from 1 (strongly disagree) to 5 (strongly agree). Structural empowerment and internal dynamic environment are assessed based on a four-point Likert-type scale ranging from 1 (almost none) to 4 (there were a lot). We adopted items from different sources (e.g., production, departments, HR, and strategy managers and employees) in order to minimize the potential problem from common method variance. As our empirical analyses were conducted at the organization level, respondent's ratings of structural empowerment, human capital, and strategic importance of human capital were aggregated to the organization level. To identify statistical reliability, we confirmed (a)

within-organization agreement ($r_{wg(j)}$) and (b) intra-class correlations (ICC(1) and ICC(2)) statistics for justifying the organizational-level aggregation, and all scales exhibit acceptable levels for analysis ($r_{wg(j)}$ value $> .70$, ICC(1) value $> .05$, and ICC(2) value $> .60$) (Bliese, 2000; James, 1982; James, Demaree, & Wolf, 1984). Lastly, we considered a time-lagged research setting between structural empowerment, human capital, and innovation capability to establish the causal relationship.

Structural empowerment (HCCP: production manager, T1).

Production managers in each organization reported the level of structural empowerment they implemented. In line with prior research (Lee & Kim, 2020), we used the following eight items to assess structural empowerment ($\alpha = .906$, $r_{wg(8)} = .960$, ICC(1) = .565, ICC(2) = .764, $F = 1.947$, $p < .001$): “How much authority and responsibility do you have at the production site over the following? (a) workload, (b) work methods, (c) work pace, (d) working hours, (e) task allocation, (f) job rotation, (g) training activities, and (h) hiring unit members.”

Innovation capability (KIPO: T2-T3).

Drawing on the previous approach (Hagedoorn & Cloudt, 2003; Jeong & Shin, 2019; Ko & Choi, 2019; Yang, Phelps, & Steensma, 2010), innovation capability is measured by the number of patent applications including invention, design/brand, and declaration for utility during two-years.

Human capital (HCCP: department manager and HR manager, T1).

To measure human capital within the unit of a production site, we consider the unit members' competence and job-related skills (Kim, Atwater, Patel, & Smither, 2016; Sung & Choi, 2018; Wright, McCormick, Sherman, & McMahan, 1999). Department managers were asked to rate

the extent to which human capital is competitive in terms of their job capability in two functional areas (engineering technology and manufacturing production) using a five-point Likert scale (1 = much lower than the industry average, 5 = much higher than the industry average). These functional areas are directly related to the human capital working at the production site. We predict that department managers' rating of human capital accurately reflect the research intent ($\alpha = .806$, $r_{wg(2)} = .889$, $ICC(1) = .412$, $ICC(2) = .772$, $F = 2.685$, $p < .001$). Similarly, HR managers were asked to assess the extent to which unit members at the production site have job-related skills in two functional areas using a five-point Likert scale (1 = less than the level of demand, 5 = greater than the level of demand) ($\alpha = .732$). We created an additive index of human capital by standardizing and adding up the organization-wide employee competence and job-related skills so that the measure of human capital represents a unique index.

Internal dynamic environment (HCCP: strategy manager, T2-T3).

Drawing on prior studies assessing the internal dynamic environment (e.g., Jeong & Shin, 2019), we measure the internal dynamic environment using four items: (a) "Our company exerted a great deal of effort in new product development in the last two years (*new product development*)"; (b) "Our company experienced considerable technological changes in the last two years (*technological change*)"; (c) "Our company experienced a huge amount of departmental and organizational changes in the last two years (*organizational change*)"; and (d) "Our company experienced significant changes in the production lines or facilities (*process change*).” The strategy manager reported the overall level of internal dynamic environment, which was assessed using four-point Likert-type scale ranging from 1 (almost none) to 4 (a lot) ($\alpha = .749$).

Strategic importance of human capital (HCCP: HR manager and employee, T1).

To assess the degree to which organizations perceive the importance of human capital, we created a unique index of strategic importance of human capital comprised of (a) employee's perception of management support for human resource development (a qualitative approach) and (b) firm-specific investment in human resource development (a quantitative approach) (Sung & Choi, 2014). First, to measure how employees perceive the strategic importance of human capital, we use three items: Our company (a) gives preferential treatment to talented people; (b) has a clear vision for human resource development; and (c) emphasizes the importance of human resources whenever we have time ($\alpha = .890$, $r_{wg(3)} = .853$, $ICC(1) = .223$, $ICC(2) = .869$, $F = 6.369$, $p < .001$). Second, we adopt the amount of firm-specific HRD investment that HR managers reported. Third, we created a standardized score for organizations on each qualitative and quantitative item and then added those scores to create the new strategic importance of human capital index.

Control variables (HCCP: HR and department manager and employee, T1; and KIS: T1-T3).

Drawing on the relevant literature (e.g., Guthrie, 2001; Kim et al., 2016), our study isolated individual-, firm-, and industry-level factors that may theoretically and empirically influence the implication of structural empowerment on innovation capability. First, to control for individual-level effects, we included employees' average education level and organizational tenure working at the production site. Employees' educational level (1 = high school diploma or below, 4 = master's or doctoral degree) was averaged for each organization. Similarly, the organization tenure of employees was also averaged.

Second, to control for firm-level effects, we used organization size measured as the number of sales at the time of T1. Organization age is measured by deducting the year of the establishment at T1. To satisfy an assumption of normal distribution, we took a natural

logarithm into organization size and age. Unionization is adopted as a dummy variable (0: organization without any labor union or labor-management council, and 1: otherwise). HPWP was also adopted to control for firm-level context. Numerous studies have argued that organization operating HPWP have higher organizational capabilities (e.g., Arthur, 1994; Huselid, 1995). We controlled a firm's HPWP to limit omitted variable bias because empowerment literature has mainly argued its implication on organizational outcome with HPWP (Bae & Lawler, 2000; Shin & Konrad, 2017). Based on previous studies (e.g., Jiang et al., 2012; Kim, Ok, Kang, & Bae, 2021; Kim & Ployhart, 2018), we created a new HPWP index that consisted of six HRM practices encompassing skill-, motivation-, and opportunity-enhancing areas: (a) *internal training ratio*; (b) *selection*; (c) *performance-related pay*; (d) *performance evaluation practices*; (e) *employee participation practices*; and (f) *information sharing*. The *internal training ratio* was measured as the formal in-house training programs completed by regular employees divided by the total number of regular employees. The *selection* was measured as the firm's investment in staffing divided by the total number of applicants. *Performance-related pay* was measured as the ratio of bonus pay to base pay. In order to identify the performance evaluation practices, HR managers were asked to rate whether their organization operates four performance evaluation practices (yes: 1 or no: 0). We used a number of relevant practices, including the balanced scorecard, management by objectives, competency evaluation, and multi-score feedback. Department managers were requested to rate the number of *employee participation practices*. We used the following five participation practices (e.g., job rotation, suggestion program, quality circle (QC), total quality management (TQM), and the six sigma program) and added them to create a new measure of employee participation practices. Moreover, employees were requested to assess three items concerning *information sharing*. A sample item includes "Our company shares organization information (e.g., strategy and financial performance) with all employees through information systems" (α

= .801, $r_{wg(3)} = .862$, $ICC(1) = .178$, $ICC(2) = .834$, $F = 4.792$, $p < .001$). To create an additive index of job autonomy, we standardize and add up the indices from department managers and employees so that the measure of job autonomy represents a critical index. All HRM practices were standardized as z-scores and added to compute the composite HPWP score.

Third, we included industry growth and dynamism to control for industry-level effects. In strategic HRM literature, industry growth and dynamism have been regarded as important contingencies that affect the effectiveness of HRM practices (e.g., Youndt, Snell, & Lepak, 1996); however, little has been considered about industry-level contexts in empowerment literature. Industry growth (dynamism) was obtained using the following equation: After regressing industry sales on the year variable T1-T3, we regressed sales for each two-digit industry for the T1-T3, and then industry growth (dynamism) was computed by the coefficient (standard errors of regression coefficients) (Keats & Hitt, 1988; Youndt et al., 1996). Finally, because our study's research samples included organizations from 28 different manufacturing industries and were measured six times, we included both year and industry dummies to control for industry and year effects.

ANALYSES AND RESULTS

We examine the effects of structural empowerment using a firm-year unit of analysis. As HCCP has been biennially measured, we lag the dependent variable by one to two year to confirm the causal relationship. General linear squares (GLS) was used to test the performance implications of structural empowerment. The GLS models rectify the existence of auto-correlation and heteroscedasticity in pooled time series data (Kmenta, 1986).

Table 1 reports the descriptive statistics and correlations among variables. It indicates that the independent, dependent, and moderating variables are significantly correlated. Specifically, structural empowerment is significantly correlated with human capital and

innovation capability ($r = .075, p < .01; r = .106, p < .01$). Furthermore, human capital and innovation capability are also highly correlated ($r = .213, p < .01$). Therefore, we confirm multicollinearity through the variance inflation factor (VIF). The mean value of VIF is 1.33 (*the maximum value is 2.05*), indicating no potential problem derived from multicollinearity in our research model (Cohen, West, & Aiken, 2003).

[Insert Table 1 about here]

[Insert Table 2 about here]

The Effect of Structural Empowerment on Human Capital

Table 2 shows the results of GLS regressions. Model 1 includes only control variables. Our research postulates that structural empowerment positively correlates human capital (Hypothesis 1). The coefficient of the linear term of structural empowerment in Model 3 in Table 2 exhibits a significantly positive relationship with human capital ($\beta = .142, p < .05$). Thus, Hypothesis 1 is statistically supported.

Mediating Effect of Human Capital

Hypothesis 2 predicts that human capital mediates the relationship between structural empowerment and innovation capability. We adopted Baron and Kenny's (1986) causal step approach to confirm the research hypothesis. First, structural empowerment is positively related to innovation capability (see Model 2: $\beta = .166, p < .05$). Second, the effect of structural empowerment on human capital is statistically significant (Hypothesis 1: significant). In unreported regression, we also confirm that human capital has a positive effect on innovation capability ($\beta = .087, p < .01$). Finally, both structural empowerment and human capital, which

are included concurrently in Model 4, show a significant positive relationship on innovation capability ($\beta = .154, p < .05$; $\beta = .084, p < .01$). To evaluate the mediating effect of human capital further, we tested the significance of the indirect effects using the Sobel test (Baron & Kenny, 1986; Goodman, 1960; MacKinnon, Warsi, & Dwyer 1995; Sobel, 1982). The result represents that a significant indirect relationship exists between structural empowerment and innovation capability ($z = 1.892, p = 0.058$). Those results indicate that Hypothesis 2 is statistically supported (a partially mediating relationship).

Moderating Effects of Internal dynamic environment and Strategic fit of human capital

Hypotheses 3 and 4 propose that the internal dynamic environment and strategic importance of human capital positively moderate the relationship between human capital and innovation capability. The interaction term of human capital with internal dynamic environment is included in Model 5 in Table 2. According to Model 5, internal dynamic environment has a positive moderating effect on the relationship between human capital and innovation capability ($\beta = .063, p < .10$). This significant interaction was examined further using a simple slope analysis (Aiken & West, 1991). Figure 2 shows that the effect of human capital on innovation capability is more salient for firms with high internal dynamic environment than for firms with a low internal dynamic environment (Low: $b = -.001, n.s.$; High: $b = .079, p < .10$, respectively). Thus, Hypothesis 3 is statistically supported. Hypothesis 4 predicts that a strategic importance of human capital within an organization is more likely to strengthen the benefits of human capital on innovation capability. The interaction between human capital and strategic importance of human capital is a significant interaction ($\beta = .043, p < .05$; see Model 6 in Table 2). Further, we confirm the graphical illustration that describes the moderating role of strategic importance of human capital in the relationship between human capital and innovation capability (Low: $b = .013, p < n.s.$; High: $b = .119, p < .001$, respectively; see Figure 3). Thus,

Hypothesis 4 is also statistically supported.

[Insert Figure 2 about here]

[Insert Figure 3 about here]

Conditional Indirect Effects of Structural Empowerment on Innovation Capability

We predict that when organizations have an internal dynamic environment (Hypothesis 5) and a strategic importance of human capital (Hypothesis 6), the mediation effect of human capital on the relationship between structural empowerment and innovation capability will be strengthened. Drawing on Muller, Judd, and Yzerbyt, (2005), we confirm whether the conditional indirect effects of (a) internal dynamic environment and (b) strategic importance of human capital exist in the structural empowerment-human capital-innovation capability mechanism. First, we confirm the mediating relationship through Model 2-4 of Table 2 and the additional Sobel test. Second, the interaction effect of the independent variable (structural empowerment) and moderators (a) internal dynamic environment and (b) strategic importance of human capital) on the dependent variable (innovation capability) should be statistically insignificant. The interaction effects of structural empowerment and each moderator on innovation capability were not statistically significant ((a) $\beta = -.024, p = .843$; (b) $\beta = -.033, p = .559$). Third, we confirm whether the interaction terms of the independent variable (structural empowerment) with each moderator are not statistically significant on the mediator (human capital). As the results of the analysis, the interaction terms were not statistically significant on human capital ((a) $\beta = -.083, p = .459$; (b) $\beta = .041, p = .470$). On the other hand, the interaction term with a mediator and each moderator on innovation capability are statistically significant (see Models 5 and 6 of Table 2). Therefore, hypotheses 5 and 6 are supported based on the

assumption of the mediating effect of human capital in the relationship between structural empowerment and innovation capability.

Additional Analyses

Although we empirically validated the moderating effect of the strategic importance of human capital, we tested whether there was any difference between (a) employees' perception of the strategic importance of human capital and (b) the actual amount of investment in human resource development (sub-dimension test). The results show that the moderating effects of each sub-dimension of strategic importance of human capital are statistically significant ((a) $\beta = .050, p < .10$; (b) $\beta = .075, p < .10$).

While we predict the linear effect of structural empowerment on innovation capability, Mills and Ungson (2003) proposed a curvilinear relationship between structural empowerment and organizational outcomes. We tested for non-linearity between structural empowerment and innovation capability, but it was not significant (structural empowerment: $\beta = .281, p = .321$; the quadratic term of structural empowerment: $\beta = -.050, p = .357$). One question can also be raised about the main findings concerning the dependent variable. The logic underlying the hypotheses in the study predicts that structural empowerment leads to higher innovation capability, as manifested by the number of patent applications for a firm. Crook et al. (2011) noted that the global measure of organizational outcome might not capture the true effect. Drawing on the Son, Park, Bae, and Ok (2018) approach, we employ operational performance¹ measured by the strategy manager. Through the Sobel test, we confirmed the linkage between structural empowerment-human capital-operational performance is statistically significant ($z = 2.298, p = 0.022$).

¹ Organizational performance measured by Son et al (2018) is the same as the internal dynamic environment in our study.

Lastly, the direction of causality in our study postulates that structural empowerment leads to higher innovation capability. However, an alternative explanation that predicts innovation capability is related to structural empowerment via human capital may exist. That is, firms with higher innovation capability have more resources that can implement empowerment programs. Although we designed the longitudinal analysis, this alternative analysis may not be identified. To address this issue, we investigate reverse causality by predicting structural empowerment at time T3 using innovation capability at times T1-T2. The coefficient is not significant (*p-value is greater than .10*), indicating that reverse causality cannot be established. These findings imply that the positive relationship between empowerment and innovation capability is not simply due to firms with higher innovation ability being more likely to innovate than firms with structural empowerment.

DISCUSSION AND CONCLUSION

Based on a sample of 437 Korean firms (28,455 managers and employees) across various manufacturing industries, we found that an organization that uses structural empowerment has higher levels of human capital than an organization that does not use it. Noteworthy, the use of structural empowerment has a positive and direct effect on innovation capability. These results represent that the use of structural empowerment has an indirect effect (through human capital) on innovation capability. These results build on workplace empowerment and human capital resource theory. The workplace empowerment theory suggests that structural empowerment facilitates organizational conditions that enhance individuals' abilities within a unit. According to human capital resource theory, human capital is a key source of organizational outcome and that (a) internal dynamic environment and (b) strategic importance of human capital impact human capital resource emergence processes by shaping collective interactions among individual unit members. These internal workplace contexts were sufficient to increase the

positive implications of human capital as predicted. Thus, the relationship between human capital and innovation capability is reinforced. Moreover, we discovered that the conditional indirect mechanism of structural empowerment and innovation capability via human capital is stronger for an organization under an internal dynamic environment or a strategic importance of human capital than for one that does not. Our study suggests that additional internal workplace contexts that facilitate the collective interactions among unit members are needed to encourage an organization to enhance its innovation capability concerning structural empowerment.

Theoretical Implications

This study contributes to the empowerment literature by bridging workplace empowerment theory and human capital resource theory. First, we confirm the positive influence of structural empowerment on the organizational outcome. Although numerous studies have examined the effect of structural empowerment on individual-level outcomes, which may potentially lead to organizational outcomes (e.g., Wong & Laschinger, 2013), organizational-level outcomes are, in general, theoretically and statistically different from individual-level outcomes (Klein & Kozlowski, 2000; Kozlowski & Klein, 2000). One notable exception includes Guerrero and Barraud-Didier (2004), who monitored 180 HR directors from French organizations in the manufacturing and service sectors and found that empowerment is positively associated with financial performance. However, research on the relationship between structural empowerment and organizational innovation capability is scarce. Furthermore, empowerment has traditionally been included in HPWP at the organizational-level study. For example, Bae and Lawler (2000) included empowerment as a facet of a multidimensional high-involvement HRM strategy and found that it is positively related to organizational outcomes. When empowerment is introduced along with other HRM practices, the effect of empowerment might be overstated. It is also

exposed to potential problems like “deadly combinations” of HRM practices (Delery, 1998; Greasley, Bryman, Dainty, Price, Soetanto, & King, 2005; Vallas, 2006). This study is significant because it confirms the organizational effect of structural empowerment both in isolation and after controlling for the effect of HPWP.

Second, our study contributes to the human capital literature by identifying that human capital is important in explaining the relationship between structural empowerment and innovation capability. In the strategic HRM literature, the relationship between HRM practices and the organizational outcome has been considered a “black box” as the underlying mechanisms through which HRM practices affect the organizational outcome (e.g., innovation capability) have not been clearly explained (Messersmith, Patel, Lepak, & Gould-Williams, 2011; Jiang et al., 2012). Although a few studies have examined the mechanisms through which empowerment is related to organizational outcomes, little has been focused on the role of human capital. Empowerment literature has focused on the psychological aspects of structural empowerment (e.g., Laschinger et al., 2004). However, our research sheds light on facilitating organizational contexts for human capital (Kanter, 1977). Concerning human capital resource theory, another contribution of our study is to confirm the emergent-enabling process. The empirical results indicate that an organization with an internal workplace context can amplify the effectiveness of human capital enhanced through structural empowerment of innovation capability. We demonstrate that (a) internal dynamic environment and (b) strategic importance of human capital are key boundary conditions that impact human capital resource emergence. Previously, Maynard et al. (2012) have suggested that examining empowerment with contextual factors might lead to confounding effects. However, we theorize how the internal workplace context’s structural empowerment-human capital-innovation capability linkage is strengthened in relation to emergent-enabling mechanism. Organizations in a dynamic environment or with a strategic importance of human capital may benefit from (a) developing interdependence and

coordination among employees and (b) determining concerted collective actions as it facilitates the emergent-enabling process that enhances human capital effectiveness within an organization.

Lastly, we confirmed the structural empowerment longitudinal effect on human capital and innovation capability. Prior research on the organizational implications of human capital employed cross-sectional designs; however, this research design is incapable of capturing the full utility of human capital and organizational outcomes (Crook et al., 2011; Rouse & Daellenbach, 1999). Similarly, prior research on empowerment literature with a cross-sectional research design failed to broaden its generalizability. It can also not capture the lagged effects of structural empowerment and human capital. To address these empowerment and human capital literature issues, this is the first study to test structural empowerment-human capital-innovation capability mechanisms and their boundary conditions across multiple manufacturing industries (two-digit KSIC Rev. 9) and over time.

Managerial Implications

This study provides several implications for business leaders and managers. Despite the efforts and resources invested in implementing and maintaining structural empowerment programs, as there is a lack of empirical evidence that structural empowerment leads to higher organizational innovation capability, the organization's decision over structural empowerment is probably based on anecdotal evidence. The organizational value of structural empowerment has been questioned in recent years; however, this study's findings indicate that structural empowerment increases human capital and organizational innovation capability. Previous research in empowerment literature has found that, on average, empowerment positively affects subsequent employee performance (e.g., Logan & Ganster, 2007). However, questions have been raised about whether these effects can directly affect the organizational outcome (Maynard et al.,

2012). We discovered positive effects for structural empowerment at the organizational level by focusing on a more macro-level outcome (organizational innovation capability). Additional implications are that investments in the mechanism (through human capital) could also increase organizational performance (Barney, 1991; Coff, 1997; Wright, Dunford, & Snell, 2001). It implies that the accumulation of firm-specific assets (e.g., human capital) at production sites increases innovation capability without any firm -level investment in organizational innovation capability.

Furthermore, it is expected that there will be no significant financial constraints when an organization implements structural empowerment as structural empowerment at the workplace is implemented formally (e.g., public document) or informally (e.g., verbal). Particularly, it is also expected to help improve organizational innovation without significant investment in human capital and training and development programs. Moreover, this study's results suggest that for the effectiveness of structural empowerment and human capital, organizations should consider the strategic role of internal dynamic environment and organizational-level support for human capital. We found that the positive relationships between structural empowerment and other variables were stronger when the organization was in an internal dynamic environment and used with management support for human capital, both qualitatively and quantitatively.

Limitations and Suggestions for Future Research

Despite its theoretical and managerial implications, this study has certain limitations. First, we suggest several additional avenues for future research to confirm the replication and tests the generalizability of this study's empirical findings. We utilized the multi-sourced longitudinal data on manufacturing organizations headquartered in Korea collected by the governmental organization, which increases the credibility of the data. For example, the use of stratified

random sampling, along with the diversity of organization size and manufacturing industries (two-digit KSIC Rev. 9), enhances sample representativeness (Särndal, Swensson, & Wretman, 1992). However, to generalize the findings, future research should examine the impact of structural empowerment in other industries (e.g., service, financial, and public industries) and different countries.

Second, while empirical research on individual- or team-level empowerment literature has used a uniform measurement of structural empowerment and adopted similar analytical strategies, such measurement envisioning structural empowerment at the organizational level is less consistent in prior studies (Maynard et al., 2012). Except for a few studies (Lee & Kim, 2020), a measurement method for structural empowerment adopted in our study has yet to be implemented in previous studies. Future research should replicate and expand on our current measurement in a variety of research contexts.

Third, at the organizational level, we examined human capital as a mediating mechanism for the structural empowerment-innovation capability relationship. However, we did not theorize and empirically validate the underlying collective psychological process through which structural empowerment improves organizational outcomes. Maynard et al. (2012) proposed for a study to test the mediating role of psychological empowerment in the relationship between structural empowerment at the organizational level and organizational outcomes; however, this area remains unexplored. For a long time, scholars have recognized the potential impact of employee motivation, as manifested by positive work attitudes (e.g., collective job satisfaction and organizational commitment) and behaviors (e.g., innovative behavior, organizational citizenship behavior), on organizational effectiveness (Chuang & Liao, 2010; Gelade & Ivery, 2003; Rogg, Schmidt, Shull, & Schmitt, 2001; Sung & Choi, 2018). Regarding structural empowerment, future research should examine the specific attitudinal or behavioral variables that might positively influence the organizational outcome.

Conclusion

This study revealed that there is a relationship between structural empowerment and higher levels of human capital and innovation capability. Under high internal dynamic environment and high strategic importance of human capital, the positive associations between structural empowerment, human capital, and innovation capability were strong.

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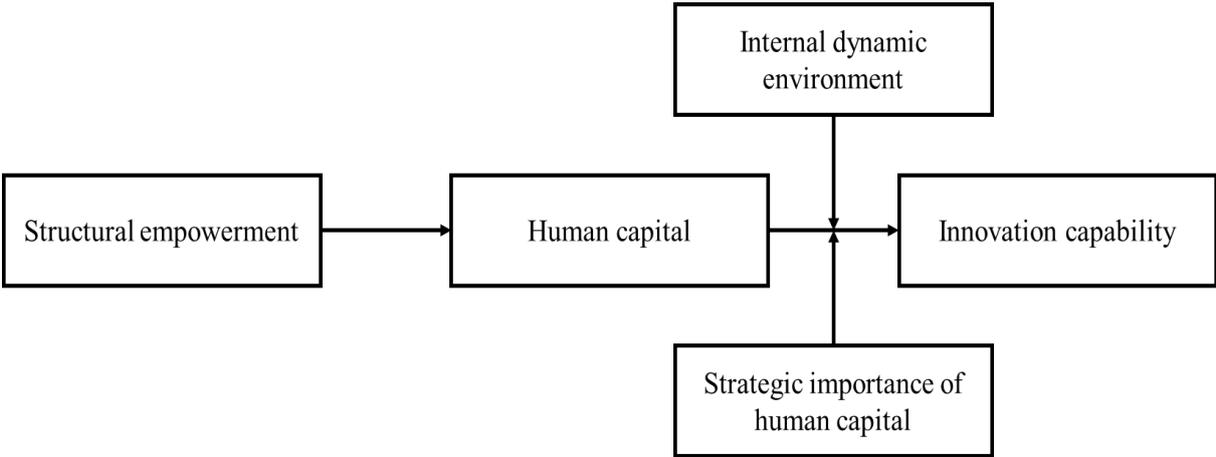
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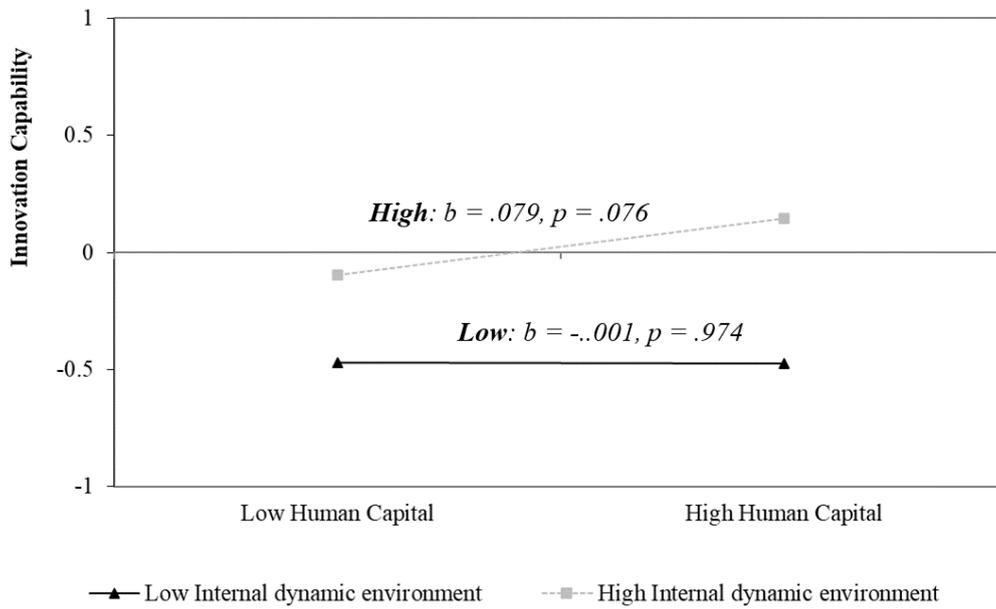
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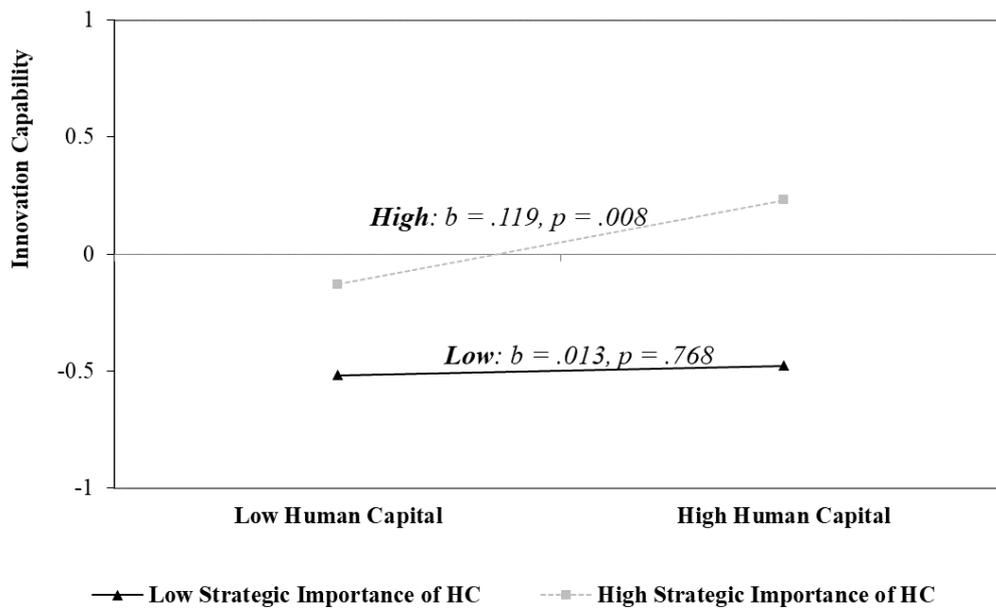
[Figure 1] Conceptual Model



[Figure 2] The Two-Way Interaction between Human Capital and Internal Dynamic Environment in Predicting Innovation capability



[Figure 3] The Two-Way Interaction between Human Capital and Strategic Importance of Human Capital (SIHC) in Predicting Innovation Capability



[Table 1] Mean, Standard Deviations, and Correlations among the Variables

| Variables | Obs | Mean | S.D. | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) | (10) | (11) | (12) |
|--------------------------------------|------|--------|-------|---------|---------|--------|---------|--------|--------|--------|-------|--------|--------|--------|--------|
| (1) Average education | 1355 | 1.377 | .414 | | | | | | | | | | | | |
| (2) Average org tenure ^{a)} | 1355 | 4.840 | .577 | -.127** | | | | | | | | | | | |
| (3) Organization size ^{a)} | 1355 | 18.859 | 1.403 | .098** | .323** | | | | | | | | | | |
| (4) Organization age ^{a)} | 1355 | 3.474 | .529 | .064* | .416** | .133** | | | | | | | | | |
| (5) Unionization | 1355 | .934 | .249 | .029 | .203** | .135** | .173** | | | | | | | | |
| (6) HPWP | 1355 | -.112 | 2.770 | .125** | .232** | .426** | .085** | .111** | | | | | | | |
| (7) Industry growth | 1355 | .053 | .080 | -.088** | -.062* | -.037 | -.072** | -.055* | -.013 | | | | | | |
| (8) Industry dynamism | 1355 | .028 | .039 | -.025 | .015 | .093** | -.035 | .006 | .050 | .015 | | | | | |
| (9) Structural empowerment | 1355 | 2.602 | .554 | .099** | -.036 | .031 | -.037 | .009 | .159** | .100** | .026 | | | | |
| (10) Human capital | 1355 | .008 | 1.543 | .016 | .152** | .253** | .073** | .041 | .308** | .002 | .044 | .075** | | | |
| (11) IDE | 1236 | 2.428 | .648 | .002 | -.094** | .223** | -.081** | -.024 | .260** | .133** | .013 | .169** | .143** | | |
| (12) SIHC | 1355 | -.300 | 1.301 | .129** | .145** | .438** | .054* | .033 | .650** | -.003 | .067* | .187** | .321** | .295** | |
| (13) Innovation capability | 1355 | 1.801 | 1.778 | .004 | .057* | .523** | -.014 | .070** | .314** | .013 | .004 | .106** | .213** | .350** | .381** |

N = 437 firms; ** p < .01, * p < .05

Note: HPWP (*high performance work practice*), IDE (*internal dynamic environment*), SIHC (*strategic importance of human capital*)

a) We take a natural logarithm to satisfy the assumption of normal distribution

[Table 2] Results of GLS Regressions

| Model Dependent variable | Model (1) Innovation capability | Model (2) Innovation capability | Model (3) Human capital | Model (4) Innovation capability | Model (5) Innovation capability | Model (6) Innovation capability |
|----------------------------------|------------------------------------|------------------------------------|----------------------------|------------------------------------|------------------------------------|------------------------------------|
| Constant | -.207 (.165) | -.198 (.165) | -.160 (.167) | -.184 (.164) | -.224 (.167) | -.223 (.163) |
| Average education | -.254** (.098) | -.278** (.099) | -.153 (.100) | -.265** (.098) | -.206* (.099) | -.256** (.097) |
| Average org tenure ^{a)} | -.287** (.084) | -.287** (.084) | .086 (.085) | -.294** (.084) | -.170† (.087) | -.273** (.083) |
| Organization size ^{a)} | .744** (.033) | .746** (.033) | .177** (.033) | .731** (.033) | .680** (.035) | .676** (.034) |
| Organization age ^{a)} | .000 (.088) | .003 (.087) | -.053 (.088) | .007 (.087) | -.036 (.089) | .038 (.086) |
| Unionization | .106 (.155) | .103 (.155) | -.108 (.156) | .112 (.154) | .075 (.159) | .167 (.152) |
| HPWP | .090** (.017) | .083** (.017) | .125** (.017) | .073** (.017) | .061** (.018) | .017 (.020) |
| Industry growth | .132 (.651) | .028 (.651) | 1.044 (.658) | -.059 (.649) | -.176 (.679) | -.013 (.641) |
| Industry dynamism | .077 (1.513) | .119 (1.510) | .804 (1.524) | .051 (1.504) | -.359 (1.523) | -.258 (1.486) |
| Year dummy | YES | YES | YES | YES | YES | YES |
| Industry dummy | YES | YES | YES | YES | YES | YES |
| Structural empowerment | | .166* (.071) | .142* (.071) | .154* (.070) | .115 (.071) | .112 (.070) |
| Human capital (HC) | | | | .084** (.027) | .039 (.028) | .066* (.027) |
| IDE | | | | | .388** (.065) | |
| HC*IDE | | | | | .063† (.038) | |
| SIHC | | | | | | .223** (.043) |
| HC*SIHC | | | | | | .043* (.020) |
| Observations | 1355 | 1355 | 1355 | 1355 | 1236 | 1355 |

N = 437 firms; ** p < .01, * p < .05, † p < .10; Standard errors are in parentheses.

Note: HPWP (*high performance work practice*), IDE (*internal dynamic environment*), SIHC (*strategic importance of human capital*)

a) We take a natural logarithm to satisfy the assumption of normal distribution