International Journal of Manpower

Leveraging structural empowerment and human capital for organizational innovation

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Received 18 October 2024
Revised 22 April 2025
10 June 2025
Accepted 25 June 2025

Abstract

Purpose – This study examines how structural empowerment fosters organizational innovation, with human capital as a mediating mechanism. It also explores the moderating roles of technology-driven organizational change and the strategic importance of human capital in shaping the empowerment-innovation relationship.

Design/methodology/approach – Leveraging workplace empowerment and human capital resource theories, this study tests a moderated mediation model using data from 434 South Korean manufacturing firms (42,511 managers and employees). Zero-inflated Poisson's regression analyses and bootstrapping methods are employed to test the hypotheses.

Findings – The results indicate that structural empowerment enhances human capital, which in turn drives innovation. Furthermore, technology-driven organizational change and the strategic importance of human capital strengthen the positive effects of human capital on innovation, revealing the crucial contextual factors that amplify these relationships.

Originality/value – This study integrates workplace empowerment theory with human capital resource theory to offer a new perspective on how structural empowerment fosters innovation by transforming individual capabilities into collective resources. By isolating structural empowerment's unique role, it highlights the critical mediating function of human capital in driving innovation. Furthermore, the introduction of technology-driven organizational change and the strategic importance of human capital as moderators emphasizes how these factors shape the task and social environments, enabling human capital to function effectively as an organizational resource.

Keywords Structural empowerment, Human capital, Innovation, Technology-driven organizational change, Strategic importance of human capital, Workplace empowerment theory, Human capital resource theory

Paper type Research article

Structural empowerment offers employees autonomy, access to resources, and meaningful engagement in their roles (Kanter, 1977), and has been linked to positive individual outcomes such as psychological empowerment, job satisfaction, and commitment (Laschinger *et al.*, 2016). Yet, its potential to foster organizational innovation remains underexplored. At the organizational level, structural empowerment is frequently embedded within high-performance work systems (HPWS), which complicates efforts to assess its distinct contribution (Jiang *et al.*, 2012; Shin and Konrad, 2017). Bundled HR practices can obscure individual effects, and certain combinations—so-called "deadly combinations" (Delery, 1998)—may even undermine performance. While Jeong and Shin (2019) examined the impact of HR practice using the same dataset, our study isolates structural empowerment as a distinct HR practice and introduces human capital (HC) as a mediating mechanism. This approach enables a more focused examination of how empowerment operates in broader innovation processes. Therefore, isolating structural empowerment from HPWS is critical for understanding its unique role in driving innovation.

A critical challenge in understanding structural empowerment's role in innovation lies in identifying the mechanisms that translate empowerment into organizational outcomes. By employing the proximal-distal outcome framework in HRM (Jiang *et al.*, 2012), this study

International Journal of Manpower
Vol. 46 No. 8, 2025
pp. 1599-1616

e-ISSN: 1758-6577
p-ISSN: 0143-7720
DOI 10.1108/IJM-10-2024-0709

proposes that structural empowerment enhances HC—defined as the knowledge, skills, and abilities (KSAOs) of employees—which in turn drives innovation. This framework clarifies how empowerment influences HC as an intermediary process, thereby facilitating innovation as a broader organizational outcome.

Moreover, the Strategic Human Resource Management (SHRM) literature highlights that the effect of HRM on firm performance is contingent upon various contextual factors that shape the implementation and impact of HR practices (Delery and Doty, 1996). Contingency theory in SHRM suggests that there is no one-size-fits-all approach; the effectiveness of HR practices depends on how well they align with the firm's internal and external environment (Boon, 2008). For example, practices that are effective in stable environments may not perform similarly in dynamic, rapidly changing conditions (e.g. Chang and Huang, 2005). Therefore, understanding the boundary conditions that moderate the relationship between HR practices, like structural empowerment, and firm innovation is crucial for optimizing the use of empowerment.

Building on this perspective, we examine two contextual factors—technology-driven organizational change and the strategic importance of HC—as moderators of the structural empowerment–HC–innovation relationship. Technology-driven change, characterized by greater task complexity and interdependence, fosters employees' collective adaptation and strengthens HCR. Meanwhile, prioritizing HC as a strategic asset facilitates social interaction, enabling the development of its affective, behavioral, and cognitive dimensions, which enhance its value as an organizational resource (Ployhart and Moliterno, 2011). These boundary conditions emphasize the need for dynamic alignment between empowerment practices and organizational context to maximize HC's contribution to innovation.

In sum, this study contributes to the literature by offering a more nuanced understanding of how structural empowerment drives innovation. First, by isolating its effects from HPWS, we provide a clearer picture of its unique role in fostering innovation. Second, we unravel the mechanisms connecting structural empowerment to innovation, emphasizing the central role of HC as a mediator. Finally, we identify critical boundary conditions—technology-driven organizational change and the strategic importance of HC—that enhance the effectiveness of empowerment, offering valuable insights for organizations seeking to leverage empowerment to maintain a competitive edge.

Theoretical underpinnings and hypotheses

We propose a relationship between structural empowerment and innovation, drawing upon workplace empowerment theory (Kanter, 1977) and HCR theory (Ployhart *et al.*, 2014) to elucidate the positive implications of structural empowerment for innovation and the emergence of HCR. Although these two theories have seldom been discussed together in the empowerment literature, they offer a complementary framework for understanding the empowering process at the organizational level. Workplace empowerment theory focuses on the organizational conditions that facilitate HC development, while HCR theory explains the mechanisms by which individuals' KSAOs are transformed into unit-level resources that contribute to organizational performance.

Structural empowerment, human capital, and organizational innovation

Workplace empowerment theory (Kanter, 1977) identifies four ways in which organizational conditions foster employees' abilities: (1) information; (2) support; (3) resources; and (4) opportunity to learn and grow. Structural empowerment achieves this by offering employees access to internal environments—such as information, support, autonomy, and opportunities for growth—thereby fostering engagement, motivation, and collaboration across the organization.

First, structural empowerment aids HC development by providing employees with timely, transparent access to task-related information. Effective communication ensures that employees understand the organization's vision and the current progress of their tasks,

enhancing their performance (Chen *et al.*, 2006). By increasing access to relevant information, structural empowerment fosters a sense of control and ownership over one's work, allowing employees to make informed decisions and perform tasks with greater autonomy (Laschinger *et al.*, 2016). This, in turn, enhances their confidence and motivation to contribute more effectively to organizational goals, promoting overall HC growth.

Second, structural empowerment fosters a supportive environment where employees can discuss concerns and collaborate with colleagues, whether formally or informally. A supportive climate encourages collegiality and access to assistance when needed, which enhances employee skills and abilities, thereby contributing to HC development. In such environments, employees are also more motivated to share knowledge and seek feedback, further promoting HC growth (Alpkan *et al.*, 2010; Laschinger *et al.*, 2016).

Third, access to adequate resources is essential in structurally empowered environments, as it enables employees to make autonomous decisions and engage in immediate decision-making. These resources, which include staffing, training, and task allocation, empower employees to interpret data and engage meaningfully in decision-making processes, thus fostering HC development. Adequate resources equip employees with the necessary tools and support to perform their tasks effectively, which enhances their ability to contribute to organizational goals (Regan *et al.*, 2016; Spreitzer, 2008). When employees have access to sufficient resources, they are more likely to feel empowered and capable of taking on new responsibilities, thereby fostering skill development and innovation (Laschinger *et al.*, 2016).

Lastly, structural empowerment enhances opportunities for employees to learn and grow. It encourages personal goal achievement and promotes competence, while fostering psychological empowerment through increased job meaningfulness, competence, self-determination, and impact (Laschinger *et al.*, 2016; Spreitzer, 1995). Empowered employees are more likely to create environments conducive to open communication, feedback, and collaboration, which are critical to HC development (e.g. Xue *et al.*, 2011). Based on these reasonings, we hypothesize that structural empowerment promotes the development and improvement of HC within work settings.

H1. Structural empowerment is positively related to human capital.

Building on the positive relationship established in Hypothesis 1—that structural empowerment enhances HC—we propose that HC mediates the relationship between structural empowerment and innovation. HC, defined as the skills, knowledge, and abilities of employees, plays a central role in driving innovation (Crook *et al.*, 2011). Structurally empowered employees, who benefit from increased access to information, support, resources, and opportunities for growth, are better positioned to develop and apply their HC to foster innovation.

We suggest that HC is central in linking structural empowerment to innovation. Empowered employees, equipped with the autonomy and resources to act, are more likely to utilize their skills and expertise to generate and implement innovative ideas within the organization (Subramaniam and Youndt, 2005). As a result, structural empowerment facilitates HC development, which in turn enhances innovation by enabling employees to apply their knowledge and capabilities to creative problem solving and strategic initiatives.

Thus, HC acts as a critical mechanism through which structural empowerment influences innovation. Empowered employees, who feel supported and autonomous, are more likely to leverage their HC to drive innovative outcomes. This suggests that the relationship between structural empowerment and innovation is mediated by HC, as empowered employees channel their enhanced capabilities toward innovative performance.

HRM researchers have suggested that HRM systems improve organizational outcomes through HRM-mediated mechanisms (Jiang *et al.*, 2013). Rather than focusing solely on comprehensive bundles of HR practices, individual HR practices can also positively affect organizational outcomes (Jiang *et al.*, 2012). Given limited resources, practitioners often prioritize HR practices that are most relevant to their organizations (Shin and Konrad, 2017).

For instance, Kim and Ployhart (2018) demonstrate how individual HR practices, such as selection, can impact performance, suggesting that similar mechanisms may mediate the relationship between structural empowerment and performance. Accordingly, the enhanced HC resulting from structural empowerment is expected to lead to higher levels of innovation. Thus, we propose that the relationship between structural empowerment and innovation is mediated by the enhanced HC resulting from empowered work environments.

H2. Human capital mediates the relationship between structural empowerment and innovation.

HCR emergence mechanisms in the structural empowerment-innovation process

To foster the emergence of HCR, organizations must manage the environment created by structural empowerment, which converts employees' KSAOs into unit-level resources (Ployhart and Moliterno, 2011). HCR is defined as "individual or unit-level capacities based on individual KSAOs that are accessible for unit-relevant purposes" (Ployhart *et al.*, 2014: 374), and emerges when the collective potential of KSAOs is realized through organizational mechanisms such as support, coordination, and interaction (Eckardt and Jiang, 2019). In structurally empowered settings, individual capabilities are both developed and integrated into collective outcomes through two core processes: transformation and amplification.

Transformation refers to the ongoing enhancement of individual KSAOs to meet evolving organizational demands, primarily through social interaction, experiential learning, and knowledge sharing (Eckardt and Jiang, 2019; Ployhart *et al.*, 2014). Amplification, in contrast, centers on the strategic coordination of these capabilities to produce synergistic outcomes that surpass individual contributions (Crocker and Eckardt, 2014). While transformation equips employees to adapt and grow, amplification ensures that their efforts are collectively leveraged to maximize organizational benefit. These two processes are conceptually distinct yet deeply interdependent; transformed KSAOs must be amplified to generate meaningful collective outcomes (Ployhart and Moliterno, 2011).

Structural empowerment is essential for enabling both transformation and amplification. It fosters autonomy, communication, and knowledge exchange—conditions necessary for individuals to develop and align their KSAOs with organizational objectives (Seibert *et al.*, 2011). Simultaneously, it supports trust and collaboration, enabling employees to share expertise and co-create value (Laschinger *et al.*, 2016). Without structural empowerment, the mechanisms required for HCR emergence may be weakened or absent.

Yet structural empowerment alone does not guarantee the successful emergence of HCR. Its effects are shaped by internal contexts that determine whether empowered individuals can collectively transform and amplify their capabilities. We identify two key moderators: technology-driven organizational change and the strategic importance of HC. Technology-driven organizational change increases task interdependence and fluidity, accelerating transformation and the need for coordinated effort. Meanwhile, when HC is strategically prioritized, employees are more likely to internalize organizational goals, trust leadership, and participate in knowledge-sharing, thus enhancing amplification (Ployhart and Moliterno, 2011).

Thus, while mediation explains how structural empowerment leads to innovation through HCR (i.e. the mechanism), moderated mediation explains when and under what internal conditions this indirect effect is strengthened or weakened. A simple mediation model assumes a uniform process across contexts, but the emergence of HCR is contingent on the organizational environment. By testing moderated mediation, we account for contextual enablers that shape the effectiveness of structural empowerment in driving innovation through HCR.

Technology-driven organizational change

We propose that technology-driven organizational change, as a specific form of organizational transformation characterized by advancements in products, processes, and systems, serves as a

critical internal context that facilitates the HCR emergence process. Such change often stems from the adoption of new digital tools, automation, and process innovations, which disrupt the status quo and require employees to rapidly adapt their KSAOs to evolving technological and operational demands (Gelade and Ivery, 2003; Rogg *et al.*, 2001).

In these contexts, work tasks become more fluid, complex, and uncertain (Kozlowski *et al.*, 1999), necessitating stronger collaboration and interdependence among employees. As organizations implement new technologies and restructure workflows accordingly, close coordination and communication become essential for maintaining productivity and organizational learning (Byström and Järvelin, 1995). These interactions not only accelerate the transformation of individual capabilities but also foster the collective adaptation necessary for HCR emergence.

Moreover, technology-driven change inherently requires the reconfiguration of roles, responsibilities, and team structures, thereby intensifying the need for real-time knowledge sharing and adaptive problem-solving (Bell and Kozlowski, 2002). In such environments, HC becomes more salient in driving innovation outcomes. Accordingly, technology-driven organizational change strengthens both the direct effect of HC on innovation and the indirect effect of structural empowerment on innovation via HC.

H3. The conditional indirect effect of structural empowerment on innovation via human capital is stronger when an organization is under technology-driven organizational change than when it is not.

Strategic importance of human capital

Ployhart and Moliterno (2011) identified three emergent-enabling processes—behavioral, cognitive, and affective—that enhance collective actions among employees. We propose that the strategic importance of HC plays a critical role in facilitating these processes, which are essential for promoting innovation.

First, when organizations emphasize the strategic importance of HC, individuals foster behavioral processes that enhance coordination and collaboration among team members. Employees who recognize their organization's commitment to developing HC are more likely to align their actions with organizational goals. This alignment encourages clear communication and behavioral regulation, facilitating effective collaboration and task execution. By creating a shared understanding of goals and expectations, employees can coordinate their efforts more effectively, thus improving overall innovation (Tyler and Blader, 2003).

Second, emphasizing the strategic importance of HC is likely to foster distinct cognitive states that facilitate collective understanding and alignment with organizational objectives. This approach encourages employees to develop shared mental models and cognitive frameworks, which are crucial for enhancing organizational learning. Furthermore, by recognizing employees' contributions as strategically valuable, organizations cultivate a sense of trust, as employees perceive a genuine commitment to their development. When employees feel valued in this way, they are more likely to trust the organization and its leadership (Whitener *et al.*, 1998). In such environments, employees are more inclined to engage in behaviors that promote collaborative knowledge creation, thereby driving innovation.

Third, the strategic emphasis on HC fosters affective states that enhance interpersonal relationships and cohesion among employees. These strong emotional bonds improve teamwork, creating a supportive environment that is conducive to innovation. As employees strengthen these connections, they become more engaged and motivated (Clegg *et al.*, 2002). Additionally, the strategic importance helps to cultivate social capital within the organization (Brooks and Nafukho, 2006), enabling unit members to develop valuable interpersonal relationships that can be leveraged in the marketplace (Lin, 2001). Based on this, we propose the following hypothesis:

H4. The conditional indirect effect of structural empowerment on innovation via human capital is stronger when the strategic importance of human capital exists than when it is not.

Data and methods

Sample and data collection procedure

To test our hypotheses, we combined data from multiple sources: the Human Capital Corporate Panel (HCCP) survey conducted by the Korean Research Institute for Vocational Education and Training, and firm-level innovation data from the Korea Intellectual Property Organization (KIPO). The HCCP includes a Workplace Survey and an Employee Survey, which together offer comprehensive information on firms' strategies, HR practices, and employee outcomes. Each survey is completed by respondents with domain-specific expertise (e.g. production, department, HR, strategy managers, and employees). These respondents provided data on strategic, organizational, and HRM dimensions essential to our analysis. KIPO annually updates innovation data, and the HCCP's firm-level identifiers enabled us to link Workplace Survey, Employee Survey, and KIPO records to examine the effect of structural empowerment on firm-level innovation.

KRIVET has conducted the HCCP survey biennially since 2004. Korean manufacturing firms operate in a globally competitive and innovation-intensive environment, making them a theoretically appropriate setting for examining how structural empowerment fosters human capital and drives innovation. For our analysis, we used data from the 2006–2017 waves of the Workplace and Employee Surveys, as these included the items relevant to our study. Earlier surveys did not cover the necessary variables, and data collection on key constructs (e.g. structural empowerment) was discontinued after 2017. The final sample includes information obtained from 42,511 employees from 434 firms across 24 manufacturing industries (two-digit KSIC code). The HCCP survey data represent an unbalanced panel, in which some firms appear in multiple waves, while others enter or exit the sample over time. Although KIPO collects innovation data annually, we employed a lagged cross-sectional design, linking same-year predictors with innovation outcomes in the subsequent year.

We conducted our empirical analyses at the organizational level, aggregating respondents' ratings accordingly. To justify organizational-level aggregation, we assessed within-organization agreement ($r_{wg(j)}$) and intra-class correlations (ICC(1) and ICC(2)). All scales met acceptable thresholds: $r_{wg(j)} > 0.70$, ICC(1)>0.05, and ICC(2)>0.60. Given that our theorizing, hypotheses, and interpretations are all conducted at the organizational level, we do not draw inferences about individual-level attitudes, perceptions, or behaviors from the aggregated data. This approach minimizes the risk of ecological fallacy.

Dependent variable

Innovation was measured by the number of patent registration. Given that patent registration reflects completed innovation outcomes, it is suitable for detecting the effects of organizational practices within a one-year lag structure, as supported by prior HRM research (e.g. Roca-Puig *et al.*, 2019).

Independent, mediating, and moderating variable

To assess structural empowerment, production managers reported the perceived extent of empowerment they implemented in their workplace. Following Lee and Kim (2020), we used the following eight items to assess empowerment ($\alpha = 0.906$, $r_{wg(8)} = 0.960$, ICC(1) = 0.565, ICC(2) = 0.764): "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." Respondents

rated each item on a 4-point Likert scale (1 = very little structural empowerment, 4 = a great deal of structural empowerment).

Following Kim *et al.*'s (2016) approach, we measured unit-level HC by assessing the competence of unit members in two functional areas—engineering technology and manufacturing production—based on their job capabilities. These areas were selected in accordance with the HCCP's definition of production-site HC. Department managers evaluated their unit's competence in each area relative to other firms in the same industry, using a five-point Likert scale (1 = much lower, 5 = much higher; $\alpha = 0.812$, $r_{wg(2)} = 0.889$, ICC(1) = 0.412, ICC(2) = 0.772). Since structural empowerment and HC were assessed by different respondents, concerns about common method variance were minimized. Moreover, both constructs were measured using task-focused items that are less susceptible to social desirability bias.

We assessed technology-driven organizational change based on strategy managers' reports of change in four areas: (1) new product development; (2) technological change; (3) structural change; and (4) process change. These four items collectively reflect technology-driven organizational change by capturing both direct technological advancements (e.g. new product development and technological change) and the broader organizational adaptations they trigger (e.g. structural and process change). While the former indicate core shifts in technical systems, the latter capture consequential reconfigurations in workflows and hierarchy, thus encompassing the dual nature of change that originates in technological transformation but extends to organizational systems. This was assessed using a four-point Likert-type scale ranging from 1 (almost none) to 4 (a lot) ($\alpha = 0.749$).

We assessed the strategic importance of HC based on employees' aggregated perceptions of management support for human resource development. Specifically, employees rated three items regarding: (1) talented people, (2) a clear vision for HRD, and (3) the importance of human resources. These responses were aggregated to the organizational level ($\alpha = 0.890$, $r_{wg(3)} = 0.853$, ICC(1) = 0.223, ICC(2) = 0.869).

Control variables

We included several control variables known to influence firm innovation. Firm size, assessed by the total number of regular employees, and firm age, measured by the number of years since establishment, were considered due to their potential to influence resource availability and organizational outcomes. Unionization was included (1 = presence of a labor union, 0 = otherwise). Additionally, we incorporated return on assets, calculated as net income divided by total assets, as profitability can significantly drive innovation efforts.

To account for firms' financial capacity to support HC development and innovation, we included the current ratio (current assets divided by current liabilities) and the debt ratio (total liabilities divided by total assets). Given that innovation is capital-intensive, firms with greater liquidity and lower leverage are generally better positioned to invest in long-term R&D, training, and digital technologies, thereby sustaining innovation efforts.

Additionally, we included HPWS to isolate its effects from those of structural empowerment, as HPWS has been shown to independently influence outcomes in production environments (Bonavia and Marin-Garcia, 2011). Following Kim and Ployhart's (2018) framework, we incorporated five core components of HPWS, excluding one due to missing data across waves: (1) internal training ratio, (2) selection costs, (3) number of performance appraisal practices, (4) number of pay-for-performance compensation practices, and (5) open communication. The open communication construct was measured via three employee-reported items (e.g. "Our company shares organization information with all employees"; $\alpha = 0.913$, $r_{wg}(3) = 0.847$, ICC(1) = 0.164, ICC(2) = 0.997), captures the organization's efforts to broadly share information.

Although both open communication and structural empowerment involve the flow of information, we conceptualize open communication as part of the opportunity-enhancing

dimension of HPWS under the AMO framework, as it reflects relational and cultural norms that support transparency and employee voice, rather than the formal authority and operational autonomy emphasized in structural empowerment (Kanter, 1977).

Lastly, to account for industry-level heterogeneity, we included measure of domestic industry growth and dynamism. Following Hambrick and Abrahamson (1995), we first regressed industry-level sales on year for each two-digit KSIC industry classification over a three-year period. Based on the regression output, industry growth was captured using the slope coefficient, while industry dynamism was operationalized as the standard error of the coefficient.

Analytical strategy

To test our hypotheses, we employed a multi-method analytical strategy tailored to the nature of our variables and data structure. We first used generalized least squares (GLS) regression to examine the relationship between structural empowerment and HC. GLS was selected because HC was measured as a continuous dependent variable, and GLS is efficient in addressing potential heteroskedasticity and unbalanced panel data.

Next, for our innovation outcome—measured as the count of patent registrations—we employed zero-inflated Poisson (ZIP) regression. Patent counts are inherently non-negative integers and typically contain a large number of zeros, as many firms do not file patents in a given period. The likelihood-ratio test confirmed that the alpha parameter was significantly different from zero ($p < 0.001$), and the Vuong (1989) test supported the use of a zero-inflated model over standard count models (z-statistic positive, $p < 0.001$). We included innovation climate as an exclusive variable in the inflation equation, as it reflects a firm's internal cultural orientation toward innovation, which may affect the likelihood of reporting zero patent activity independently of the variables in the count model. Following Sung and Choi (2014), we assessed innovation climate. A sample item includes "Our company encourages change and new initiatives." The measure was confirmed to be appropriate for aggregation at the organizational level ($\alpha = 0.873$, $r_{wg(3)} = 0.876$, ICC(1) = 0.153, ICC(2) = 0.996).

To test our mediation and moderated mediation hypotheses, we employed Hayes' (2018) bootstrapping method using 5,000 resamples. This approach is particularly suited for panel survey data and allows for the estimation of indirect effects and bias-corrected confidence intervals without assuming multivariate normality. When combined with a lagged design, this method strengthens the causal interpretation of the mediating mechanisms. All regression and bootstrapping analyses were conducted using Stata 17.

Results

Table 1 reports the descriptive statistics and correlations among the variables. We tested for multicollinearity by estimating the variance inflation factor (VIF), which ranged from 1.05 to 2.32 (mean VIF = 1.43).

In Table 2, the results of GLS regressions with HC as the dependent variable are presented. Model 2 in Table 2 exhibit a significantly positive relationship with HC ($\beta = 0.042$, $p < 0.05$), supporting Hypothesis 1.

Table 3 presents the results of ZIP regressions, with the number of patent registration as the dependent variable. Hypothesis 2 predicts that HC mediates the relationship between structural empowerment and innovation. We confirm that HC and structural empowerment have a positive effect (Model 2: $\beta = 0.585$, $p < 0.01$; Model 3: $\beta = 0.287$, $p < 0.01$). Finally, both HC and structural empowerment, which are included concurrently in Model 4, show a significant positive relationship on innovation ($\beta = 0.554$, $p < 0.01$; $\beta = 0.220$, $p < 0.01$).

Using Hayes' (2018) bootstrapping method with 5,000 samples and 95% confidence intervals (CIs), we further tested the mediation. As shown in Table 4, the indirect effect of structural empowerment on innovation via HC was represented as 0.023 (S E. = 0.013,

Table 1. Mean, standard deviations, and correlations among the variables

Variables	Mean	S.D.	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
(1) Firm size (log)	18.840	1.401	1.000												
(2) Firm age (log)	3.485	0.518	0.115**												
(3) Unionization	0.939	0.240	0.128**	0.175**											
(4) HPWS (z-scored)	−0.311	2.577	0.297**	0.001	0.076**										
(5) ROA	0.019	0.135	0.135**	0.059*	0.059*	0.170**									
(6) Current ratio	2.325	9.454	−0.222**	0.037	0.001	−0.019	0.040								
(7) Debt ratio	0.472	0.266	0.063*	−0.151**	0.024	−0.126**	−0.388**	−0.190**							
(8) Industry growth	0.034	0.032	0.016	−0.062*	−0.061*	0.004	0.033	−0.007	−0.009						
(9) Industry dynamism	0.010	0.010	0.085**	−0.023	0.026	0.052*	−0.004	0.001	0.006	0.183**					
(10) Structural empowerment	2.601	0.553	0.031	−0.041	0.007	0.146**	0.036	−0.005	−0.043	−0.001	0.052				
(11) Human capital	3.541	0.462	0.257**	0.064*	0.041	0.190**	0.136**	0.005	−0.149**	0.041	0.039	0.069**			
(12) Technology-driven organizational change	2.487	0.655	0.226**	−0.108**	−0.013	0.254**	0.067*	−0.090**	0.034	0.162**	0.018	0.163**	0.171**		
(13) Strategic importance of HC	3.347	0.388	0.331**	0.009	0.011	0.505**	0.192**	−0.048	−0.112**	0.096**	0.059*	0.180**	0.375**	0.291**	
(14) Innovation	22.144	243.744	0.206**	0.021	0.019	0.108**	−0.003	−0.008	0.014	0.020	−0.017	0.031	0.074**	0.102**	0.094**

Note(s): $N = 434$ firms; **p-value<0.01, *p-value<0.05

Source(s): Created by authors

Table 2. The results of GLS regressions

DV = Human capital	Model (1)	Model (2)
Constant	2.220**	2.104**
Firm size	0.073**	0.073**
Firm age	−0.001	0.000
Unionization	0.022	0.022
HPWS	0.016**	0.015**
ROA	0.193*	0.191*
Current ratio	0.002†	0.002†
Debt ratio	−0.182**	−0.179**
Industry growth	−0.092	−0.060
Industry dynamism	−1.721	−1.824
Year FE	*Included*	*Included*
Industry FE	*Included*	*Included*
Structural empowerment		0.042*
Observations	1,418	1,418
χ^2	351.3	356.4

Note(s): ** p-value<0.01, * p-value<0.05, † p-value<0.1
Source(s): Created by authors

$p < 0.01$). Furthermore, zero was not included in the range of the Boot lower-level C.I.s (Boot LLCI) and the Boot upper-level C.I.s (Boot ULCI), statistically confirming Hypothesis 2.

For Hypothesis 3, technology-driven organizational change has a positive moderating effect on the relationship between HC and innovation (Model 5: $\beta = 0.326$, $p < 0.01$). In Figure 1, a simple slope analysis (Aiken and West, 1991) shows that the impact of HC is more pronounced for firms with high levels of organizational change ($b = 0.554$, $p < 0.01$) than for those with low levels of organizational change ($b = 0.127$, $p < 0.01$). For Hypothesis 4, the interaction between HC and this importance is significant (Model 6: $\beta = 1.515$, $p < 0.01$). Figure 2 further confirms this moderating effect (low: $b = -0.414$, $p = 0.000$; high: $b = 0.762$, $p = 0.000$).

Interestingly, in Model 6, the main effects of HC and the strategic importance of HC appear negative when the interaction term is included. While this may seem counterintuitive, the main effects become unreliable—or even misleading—in the presence of an interaction term and should not be interpreted in isolation. What matters is the significant positive interaction effect, which indicates that the influence of human capital on innovation becomes stronger as its strategic importance increases.

We further employed Hayes' (2018) moderated mediation procedure with 5,000 bootstraps (95% C.I.). The results shown in Table 5 indicate that the indirect effect of structural empowerment on innovation via HC is significantly moderated by both organizational change and the strategic importance of HC. Specifically, the conditional indirect effect is statistically significant when technology-based organizational change is high (effect = 0.023), but not when it is low (effect = 0.005). Similarly, the conditional indirect effect is significant under high strategic importance of HC conditions (effect = −0.017), but not under low strategic importance of HC (effect = 0.032). These findings provide statistical support for Hypotheses 3 and 4.

To further validate internal validity, we applied a modified two-stage least squares approach. We used the number of organizational hierarchies as an instrumental variable. A greater number of hierarchies can make it more difficult to delegate authority structurally (Fuller *et al.*, 2006). Therefore, we reverse-coded this variable so that higher values represent a greater propensity to structurally empower. It reflects the extent to which a firm delegates authority to production managers in the workplace, as fewer hierarchies tend to reduce the complexity of the delegation process. Given that organizational hierarchy affects the delegation structure but is not directly related to innovation outcomes, this serves as a theoretically appropriate instrument.

Table 3. The results of ZIP regressions

DV = Innovation	Model (1)	Model (2)	Model (3)	Model (4)	Model (5)	Model (6)
Constant	−14.220**	−15.237**	−15.031**	−15.785**	−12.096**	5.348**
Firm size	0.928**	0.861**	0.930**	0.866**	0.803**	0.897**
Firm age	0.245**	0.242**	0.212**	0.214**	0.160**	0.247**
Unionization	0.613**	0.699**	0.627**	0.700**	0.698**	0.716**
HPWS	0.102**	0.098**	0.099**	0.096**	0.073**	0.111**
ROA	−1.764**	−1.967**	−1.605**	−1.819**	−1.672**	−1.596**
Current ratio	−0.115**	−0.117**	−0.093**	−0.098**	−0.012†	−0.118**
Debt ratio	−1.462**	−1.299**	−1.370**	−1.223**	−1.059**	−1.242**
Industry growth	−1.694**	0.368	−1.568**	0.302	−2.167**	1.658**
Industry dynamism	−19.206**	−11.966**	−18.696**	−11.867**	−13.360**	−6.184**
Year FE	*Included*	*Included*	*Included*	*Included*	*Included*	*Included*
Industry FE	*Included*	*Included*	*Included*	*Included*	*Included*	*Included*
Human capital (HC)		0.585**		0.554**	−0.470**	−4.897**
Structural empowerment			0.287**	0.220**	0.075**	0.201**
Technology-driven org change (OC)					−0.628**	
HC*OC					0.326**	
Strategic importance of HC (SIHC)						−6.106**
HC* SIHC						1.515**
Inflate						
Constant	7.399**	7.217**	7.376**	7.209**	7.459**	8.214**
Firm size	−0.280**	−0.286**	−0.283**	−0.287**	−0.293**	−0.292**
Firm age	0.011	0.003	0.007	−0.001	−0.012	−0.010
Unionization	0.106	0.190	0.119	0.191	0.146	0.202
HPWS	−0.076*	−0.079*	−0.073*	−0.077*	−0.080*	−0.071*
ROA	−0.400	−0.427	−0.366	−0.397	−0.372	−0.365
Innovation climate	−0.829**	−0.756**	−0.807**	−0.743**	−0.757**	−1.008**
Observations	1,418	1,418	1,418	1,418	1,418	1,418
Number of zero	654	654	654	654	654	654
χ^2	121,604	122,802	121,994	123,026	125,591	124,712

Note(s): **p-value<0.01, *p-value<0.05, † p-value<0.1

Source(s): Created by authors

Table 4. Indirect effect of structural empowerment on innovation

Relationship	Effect	Boot SE	Boot LLCI	Boot ULCI
SE-HC-Innovation	0.023	0.013	0.003	0.035

Note(s): SE (structural empowerment), HC (human capital)

Source(s): Created by authors

Following the recommendations of D'Haultfœuille *et al.* (2021), and using the "*testex*" command in Stata, we confirmed that the Kolmogorov-Smirnov (KS) test results validated the instruments (KS statistic = 8.351, $p > 0.1$). The indirect effect of instrumented structural empowerment on innovation via HC was represented as 0.634 (S E. = 0.195, $p < 0.01$, Boot LLCI = 0.251, Boot ULCI = 1.017). Furthermore, the conditional indirect effect of instrumented structural empowerment on innovation—moderated by both technology-driven organizational change and the strategic importance of HC—were also statistically significant, as reported in Table 6.

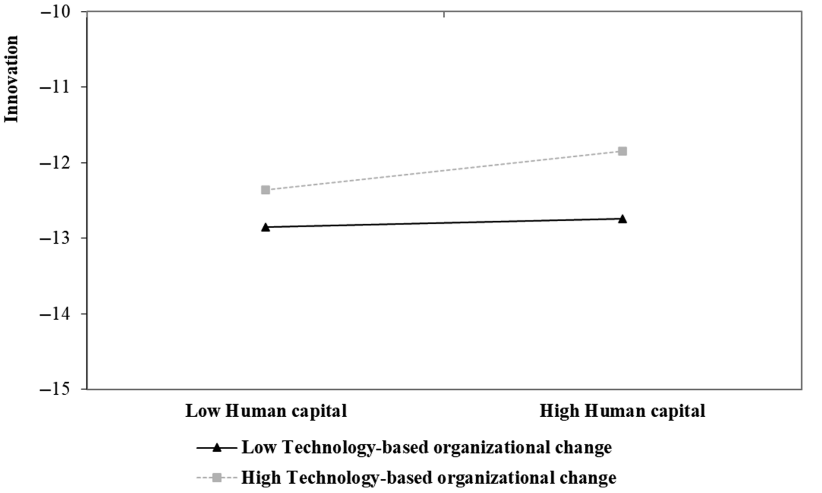

Figure 1. The two-way interaction between human capital and technology-based organizational change in predicting innovation. Source: Created by authors

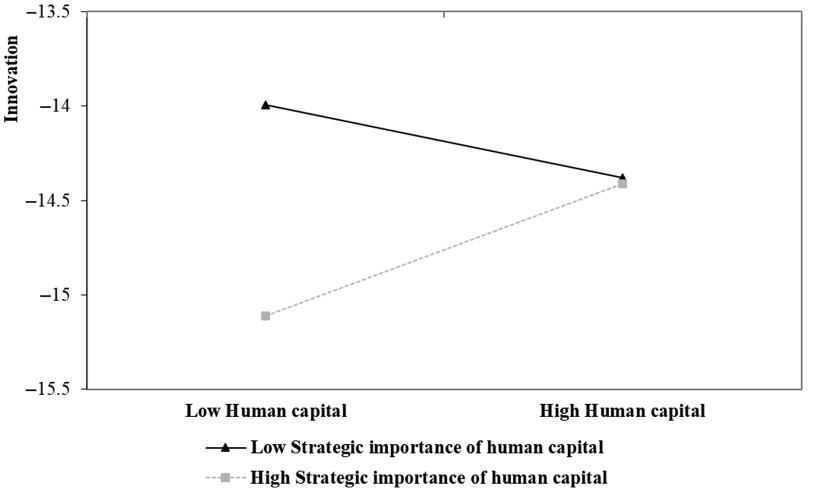

Figure 2. The two-way interaction between human capital and strategic importance of human capital in predicting innovation. Source: Created by authors

Discussion

Theoretical implications

The integration of workplace empowerment theory with HCR theory offers a compelling framework for understanding the interplay between empowerment and organizational outcomes. This theoretical convergence invites a deeper exploration of how structural empowerment can unlock the potential of HC, serving as a crucial driver of innovation. By examining the mechanisms and contextual contingencies surrounding the empowerment and innovation linkage, our study significantly deepens theoretical discourse.

This study makes a significant contribution to the empowerment literature by addressing a critical gap in the understanding of how structural empowerment influences organizational

Table 5. Conditional indirect effect of structural empowerment on innovation

Relationship	Moderator	Condition	Effect	Boot SE	Boot LLCI	Boot ULCI
SE-HC-Innovation	TOC	Low	0.005	0.026	−0.044	0.055
		High	0.023	0.014	0.001	0.027
	SIHC	Low	−0.017	0.003	−0.024	−0.011
		High	0.032	0.016	0.027	0.049

Note(s): SE (structural empowerment), HC (human capital), TOC (technology-driven organizational change), SIHC (strategic importance of human capital)

Source(s): Created by authors

Table 6. Conditional indirect effect of instrumented structural empowerment on innovation

Relationship	Moderator	Condition	Effect	Boot SE	Boot LLCI	Boot ULCI
Instrumented SE-HC-Innovation	TOC	Low	0.443	0.357	−0.255	1.142
		High	0.790	0.354	0.096	1.484
	SIHC	Low	−0.271	0.852	−1.942	1.400
		High	1.004	0.271	0.473	1.535

Note(s): SE (structural empowerment), HC (human capital), TOC (technology-driven organizational change), SIHC (strategic importance of human capital)

Source(s): Created by authors

outcomes. While prior research has extensively explored the individual-level effects of empowerment (e.g. Dennerlein and Kirkman, 2023), the collective mechanisms by which structural empowerment drives desirable organizational outcomes have been relatively underexplored (e.g. García-Juan *et al.*, 2023). By shifting the focus to these collective mechanisms, our study reveals how structural empowerment enhances individual KSAOs and facilitates the emergence of HC as a collective organizational resource that promotes innovation. This approach provides a more comprehensive view of workplace empowerment, showing that it has the potential to drive organizational-level outcomes, which are crucial for sustained competitive advantage, rather than just individual-level benefits.

Furthermore, our research underscores the importance of examining structural empowerment as an independent HR practice. Previous studies that bundled empowerment with other HRM practices risked masking its unique contributions to organizational performance, such as innovation. By isolating structural empowerment, we highlight its distinct role in cultivating HC and generating innovation, clarifying why organizations should strategically emphasize empowerment practices. These insights are essential as they offer a clearer pathway for organizations seeking to leverage empowerment not just for immediate employee outcomes but for long-term, organization-wide success.

The significance of our study lies in demonstrating how structural empowerment facilitates the development and aggregation of individuals as organizational resources, as emphasized in HCR literature (Nyberg *et al.*, 2014). While HCR studies have made substantial progress in explaining how individual KSAOs contribute to organizational performance, they have yet to fully explore the boundary conditions that enhance this process. Our findings demonstrate that technology-driven organizational change and the strategic importance of HC serve as critical enablers of HCR emergence. By introducing these contextual moderators, we advance HCR theory by identifying the conditions under which HC is most effectively mobilized for innovation, offering a more dynamic understanding of resource emergence and amplification in organizations.

Managerial implications

Our study provides actionable insights for organizations aiming to enhance HC and drive innovation through structural empowerment. First, organizations should establish clear systems that provide employees with access to the information, resources, and autonomy. Transparent communication about organizational goals and progress is essential for ensuring alignment with the broader mission. Managers can strengthen structural empowerment by promoting collaboration, open dialogue, and continuous feedback, thereby fostering a culture of learning and innovation. Empowerment initiatives should also be tailored to unit-specific needs, ensuring employees receive the support most relevant to their roles.

Our findings show that the effectiveness of structural empowerment is amplified during periods of technology-driven organizational change and when HC is viewed as strategically important. Managers should leverage times of change, such as restructuring or technology adoption, to reinforce empowerment initiatives. This includes establishing adaptive structures that help employees navigate uncertainty while feeling empowered to contribute meaningfully. Moreover, treating HC as a strategic asset by investing in training, resources, and leadership support ensures that employees' skills and knowledge are continuously developed, supporting both short-term performance and long-term innovation. Similar empowerment-based mechanisms have been shown to be effective in both Korean and Western organizational contexts, reinforcing the practical relevance of our findings across diverse cultural and institutional settings.

Beyond formal policies, managers should cultivate a culture of empowerment rooted in accountability. Empowered employees thrive when they feel responsible for their contributions to organizational success. This requires a balance of autonomy with clear expectations and performance accountability. Recognizing and rewarding innovative behaviors further strengthens this culture, ensuring employees feel valued and motivated. By fostering such an environment, firms can achieve measurable gains in both HC and innovation, thereby enhancing overall organizational effectiveness.

Our findings also offer implications for senior executives and policymakers. Structural empowerment can be used as a strategic lever to enhance workforce agility and national innovation capacity. Public agencies, HRD institutions, and corporate leadership teams should consider embedding empowerment principles into organizational systems, talent development programs, and policy frameworks. Institutionalizing autonomy, capability-building, and inclusive decision-making across organizations can help build resilient and innovation-ready HC in dynamic and uncertain environments.

Limitations and suggestions for future research

Despite its theoretical and managerial contributions, our study has limitations. While we used multi-sourced longitudinal data from Korean manufacturing firms, the industry- and country-specific context may constrain generalizability. That said, Korea's innovation-driven manufacturing sector—under intense pressure to remain competitive in a knowledge-intensive economy—offers a theoretically appropriate setting for examining empowerment-based mechanisms. Cultural and institutional factors may influence how empowerment is enacted (Seibert *et al.*, 2011), but the mechanisms we identify—namely, the transformation and amplification of HC—are rooted in broadly validated theories applied across diverse contexts. Specifically, our framework integrates Workplace Empowerment Theory and Human Capital Resource Theory, both of which have been widely applied across national and industrial settings, including North America and Europe. Future research could explore subsample analyses by industry or organizational change intensity to assess boundary conditions. Our findings may be particularly relevant to similarly structured firms in high-income countries that emphasize employee participation and knowledge-based innovation.

Second, although we adopted a one-year lag based on prior HRM research to examine the relationship between structural empowerment and innovation, this time frame may not fully capture longer-term effects—especially in sectors where innovation unfolds over extended

cycles. As Boon *et al.* (2025) point out, HRM research has often under-theorized temporal dynamics, and single-lag models may overlook nonlinear or delayed outcomes. Relatedly, while our main focus was on moderation and moderated mediation effects, we acknowledge that this does not diminish the importance of considering non-linear dynamics in both theory and analysis. Future studies could adopt more disaggregated analyses, such as industry- or size-specific comparisons, to explore boundary conditions more deeply. Additionally, future research could implement more sophisticated temporal methods—such as cross-lagged panel models or latent growth curve modeling—to better capture the onset, trajectory, and evolving nature of empowerment-driven innovation.

Third, although our study emphasizes employees' capabilities as mechanisms linking structural empowerment to innovation, we did not explore the psychological processes that may also underlie this relationship. Prior studies have emphasized the role of employee engagement, positive work attitudes, and proactive behaviors in improving organizational outcomes (e.g. Wong and Laschinger, 2013), yet these remain outside the scope of our analysis. Future research could extend our findings by identifying specific attitudinal or behavioral mediators, and by adopting multi-level research designs to clarify how individual-level perceptions and behaviors interact with organizational structures. This would offer a more nuanced view of the micro-foundations of structural empowerment.

Acknowledgments

Chanhyuk Shin and DuckJung Shin appreciate the insightful comments provided by the editor and two anonymous reviewers. Chanhyuk Shin also acknowledges Dr Ji Hyun Kim (KYUNG HEE UNIVERSITY) and Jihun Choi (Korea University) for their constructive feedback during the development of this manuscript.

References

Aiken, L.S. and West, S.G. (1991), *Multiple Regression: Testing and Interpreting Interactions*, Sage, Newbury Park, CA.

Alpkan, L., Bulut, C., Gunday, G., Ulusoy, G. and Kilic, K. (2010), "Organizational support for intrapreneurship and its interaction with human capital to enhance innovation capability", *Management Decision*, Vol. 48 No. 5, pp. 732-755, doi: 10.1108/00251741011043902.

Bell, B.S. and Kozlowski, S.W. (2002), "A typology of virtual teams: implications for effective leadership", *Group and Organization Management*, Vol. 27 No. 1, pp. 14-49, doi: 10.1177/1059601102027001003.

Bonavia, T. and Marin-Garcia, J.A. (2011), "Integrating human resource management into lean production and their impact on organizational performance", *International Journal of Manpower*, Vol. 32 No. 8, pp. 923-938, doi: 10.1108/01437721111181679.

Boon, C. (2008), "HRM and fit: survival of the fittest?", Dissertation, Erasmus Research Institute of Management (ERIM), Rotterdam.

Boon, C., Jiang, K. and Eckardt, R. (2025), "The role of time in strategic human resource management research: a review and research agenda", *Journal of Management*, Vol. 51 No. 1, pp. 172-211, doi: 10.1177/01492063241264250.

Brooks, K. and Nafukho, F.M. (2006), "Human resource development, social capital, emotional intelligence: any link to productivity?", *Journal of European Industrial Training*, Vol. 30 No. 2, pp. 117-128, doi: 10.1108/03090590610651258.

Byström, K. and Järvelin, K. (1995), "Task complexity affects information seeking and use", *Information Processing and Management*, Vol. 31 No. 2, pp. 191-213, doi: 10.1016/0306-4573(95)80035-R.

Chang, W. and Huang, T. (2005), "Relationship between strategic human resource management and firm performance: a contingency perspective", *International Journal of Manpower*, Vol. 26 No. 5, pp. 434-449, doi: 10.1108/01437720510615125.

Chen, J.C., Silverthorne, C. and Hung, J.Y. (2006), "Organization communication, job stress, organizational commitment, and job performance of accounting professionals in Taiwan and America", *Leadership and Organization Development Journal*, Vol. 27 No. 4, pp. 242-249, doi: 10.1108/01437730610666000.

Clegg, C., Unsworth, K., Epitropaki, O. and Parker, G. (2002), "Implicating trust in the innovation process", *Journal of Occupational and Organizational Psychology*, Vol. 75 No. 4, pp. 409-422, doi: 10.1348/096317902321119574.

Crocker, A. and Eckardt, R. (2014), "A multilevel investigation of individual-and unit-level human capital complementarities", *Journal of Management*, Vol. 40 No. 2, pp. 509-530, doi: 10.1177/0149206313511862.

Crook, T.R., Todd, S.Y., Combs, J.G., Woehr, D.J. and Ketchen, D.J., Jr (2011), "Does human capital matter? A meta-analysis of the relationship between human capital and firm performance", *Journal of Applied Psychology*, Vol. 96 No. 3, pp. 443-456, doi: 10.1037/a0022147.

Delery, J.E. (1998), "Issues of fit in strategic human resource management: implications for research", *Human Resource Management Review*, Vol. 8 No. 3, pp. 289-309, doi: 10.1016/S1053-4822(98)90006-7.

Delery, J.D. and Doty, D.H. (1996), "Modes of theorizing in strategic human resource management: tests of universalistic, contingency, and configurational performance predictions", *Academy of Management Journal*, Vol. 39 No. 4, pp. 802-835, doi: 10.5465/256713.

Dennerlein, T. and Kirkman, B.L. (2023), "The forgotten side of empowering others: how lower social structural empowerment attenuates the effects of empowering leadership on employee psychological empowerment and performance", *Journal of Applied Psychology*, Vol. 108 No. 11, pp. 1856-1880, doi: 10.1037/apl0001100.

D'Haultfœuille, X., Hoderlein, S. and Sasaki, Y. (2021), "Testing and relaxing the exclusion restriction in the control function approach", *Journal of Econometrics*, Vol. 240 No. 2, 105075, doi: 10.1016/j.jeconom.2020.09.012.

Eckardt, R. and Jiang, K. (2019), "Human capital resource emergence: theoretical and methodological clarifications and a path forward", in Nyberg, A.J. and Moliterno, T.P. (Eds), *Handbook of Research on Strategic Human Capital Resources*, Edward Elgar Publishing, Cheltenham, UK, pp. 77-112.

Fuller, J.B., Marler, L.E. and Hester, K. (2006), "Promoting felt responsibility for constructive change and proactive behavior: exploring aspects of an elaborated model of work design", *Journal of Organizational Behavior*, Vol. 27 No. 8, pp. 1089-1120, doi: 10.1002/job.408.

García-Juan, B., Escrig-Tena, A.B. and Roca-Puig, V. (2023), "Structural empowerment and organisational performance: the mediating role of employees' well-being in Spanish local governments", *The International Journal of Human Resource Management*, Vol. 34 No. 10, pp. 1907-1939, doi: 10.1080/09585192.2020.1859581.

Gelade, G.A. and Ivery, M. (2003), "The impact of human resource management and work climate on organizational outcome", *Personnel Psychology*, Vol. 56 No. 2, pp. 383-404, doi: 10.1111/j.1744-6570.2003.tb00155.x.

Hambrick, D.C. and Abrahamson, E. (1995), "Assessing managerial discretion across industries: a multimethod approach", *Academy of Management Journal*, Vol. 38 No. 5, pp. 1427-1441, doi: 10.2307/256864.

Hayes, A.F. (2018), "Partial, conditional, and moderated moderated mediation: quantification, inference, and interpretation", *Communication Monographs*, Vol. 85 No. 1, pp. 4-40, doi: 10.1080/03637751.2017.1352100.

Jeong, I. and Shin, S.J. (2019), "High-performance work practices and organizational creativity during organizational change: a collective learning perspective", *Journal of Management*, Vol. 45 No. 3, pp. 909-925, doi: 10.1177/0149206316685156.

Jiang, K., Lepak, D.P., Hu, J. and Baer, J.C. (2012), "How does human resource management influence organizational outcomes? A meta-analytic investigation of mediating mechanisms", *Academy of Management Journal*, Vol. 55 No. 6, pp. 1264-1294, doi: 10.5465/amj.2011.0088.

Jiang, K., Takeuchi, R. and Lepak, D.P. (2013), "Where do we go from here? New perspectives on the black box in strategic human resource management research", *Journal of Management Studies*, Vol. 50 No. 8, pp. 1448-1480, doi: 10.1111/joms.12057.

Kanter, R.M. (1977), *Men and Women of the Corporation*, Basic Books, New York.

Kim, Y. and Ployhart, R.E. (2018), "The strategic value of selection practices: antecedents and consequences of firm-level selection practice usage", *Academy of Management Journal*, Vol. 61 No. 1, pp. 46-66, doi: 10.5465/amj.2015.0811.

Kim, K.Y., Atwater, L., Patel, P.C. and Smither, J.W. (2016), "Multisource feedback, human capital, and the financial performance of organizations", *Journal of Applied Psychology*, Vol. 101 No. 11, pp. 1569-1584, doi: 10.1037/apl0000125.

Kozlowski, S.W., Gully, S.M., Nason, E.R. and Smith, E.M. (1999), "Developing adaptive teams: a theory of compilation and performance across levels and time", in Pulakos (Ed.), *The Changing Nature of Work Performance, Implications for Staffing, Personnel Actions, and Development*, pp. 240-292.

Laschinger, H.K., Read, E. and Zhu, J. (2016), "Employee empowerment and organizational commitment", in *Handbook of Employee Commitment*, Edward Elgar Publishing, Northampton, MA, pp. 319-332.

Lee, H.W. and Kim, E. (2020), "Workforce diversity and firm performance: relational coordination as a mediator and structural empowerment and multisource feedback as moderators", *Human Resource Management*, Vol. 59 No. 1, pp. 5-23, doi: 10.1002/hrm.21970.

Lin, N. (2001), *Social Capital: a Theory of Social Structure and Action*, Cambridge University Press, New York, NY.

Nyberg, A.J., Moliterno, T.P., Hale, D., Jr and Lepak, D.P. (2014), "Resource-based perspectives on unit-level human capital: a review and integration", *Journal of Management*, Vol. 40 No. 1, pp. 316-346, doi: 10.1177/0149206312458703.

Ployhart, R.E. and Moliterno, T.P. (2011), "Emergence of the human capital: a multilevel model", *Academy of Management Review*, Vol. 36 No. 1, pp. 127-150, doi: 10.5465/amr.2009.0318.

Ployhart, R.E., Nyberg, A.J., Reilly, G. and Maltarich, M.A. (2014), "Human capital is dead; long live human capital resources", *Journal of Management*, Vol. 40 No. 2, pp. 371-398, doi: 10.1177/0149206313512152.

Regan, S., Laschinger, H.K. and Wong, C.A. (2016), "The influence of empowerment, authentic leadership, and professional practice environments on nurses' perceived interprofessional collaboration", *Journal of Nursing Management*, Vol. 24 No. 1, pp. 54-61, doi: 10.1111/jonm.12288.

Roca-Puig, V., Bou-Llusar, J.C., Beltrán-Martín, I. and García-Juan, B. (2019), "The virtuous circle of human resource investments: a precrisis and postcrisis analysis", *Human Resource Management Journal*, Vol. 29 No. 2, pp. 181-198, doi: 10.1111/1748-8583.12213.

Rogg, K.L., Schmidt, D.B., Shull, C. and Schmitt, N. (2001), "Human resource practices, organizational climate, and customer satisfaction", *Journal of Management*, Vol. 27 No. 4, pp. 431-449, doi: 10.1016/S0149-2063(01)00102-7.

Seibert, S.E., Wang, G. and Courtright, S.H. (2011), "Antecedents and consequences of psychological and team empowerment in organizations: a meta-analytic review", *Journal of Applied Psychology*, Vol. 96 No. 5, pp. 981-1003, doi: 10.1037/a0022676.

Shin, D. and Konrad, A.M. (2017), "Causality between high-performance work systems and organizational performance", *Journal of Management*, Vol. 43 No. 4, pp. 973-997, doi: 10.1177/0149206314544746.

Spreitzer, G.M. (1995), "Psychological empowerment at the workplace: dimensions, measurement, and validation", *Academy of Management Journal*, Vol. 38 No. 5, pp. 1442-1465, doi: 10.5465/256865.

Spreitzer, G.M. (2008), "Taking stock: a review of more than twenty years of research on empowerment at work", in Barling, J. and Cooper, C.L. (Eds), *Handbook of Organizational Behavior*, SAGE, London, pp. 54-72.

Subramaniam, M. and Youndt, M.A. (2005), "The influence of intellectual capital on the types of innovative capabilities", *Academy of Management Journal*, Vol. 48 No. 3, pp. 450-463, doi: 10.5465/amj.2005.17407911.

Sung, S.Y. and Choi, J.N. (2014), "Do organizations spend wisely on employees? Effects of training and development investments on learning and innovation in organizations", *Journal of Organizational Behavior*, Vol. 35 No. 3, pp. 393-412, doi: 10.1002/job.1897.

Tyler, T.R. and Blader, S.L. (2003), "The group engagement model: procedural justice, social identity, and cooperative behavior", *Personality and Social Psychology Review*, Vol. 7 No. 4, pp. 349-361, doi: 10.1207/S15327957PSPR0704_07.

Vuong, Q.H. (1989), "Likelihood ratio tests for model selection and non-nested hypotheses", *Econometrica*, Vol. 57 No. 2, pp. 307-333, doi: 10.2307/1912557.

Whitener, E.M., Brodt, S.E., Korsgaard, M.A. and Werner, J.M. (1998), "Managers as initiators of trust: an exchange relationship framework for understanding managerial trustworthy behavior", *Academy of Management Review*, Vol. 23 No. 3, pp. 513-530, doi: 10.5465/amr.1998.926624.

Wong, C.A. and Laschinger, H.K. (2013), "Authentic leadership, performance, and job satisfaction: the mediating role of empowerment", *Journal of Advanced Nursing*, Vol. 69 No. 4, pp. 947-959, doi: 10.1111/j.1365-2648.2012.06089.x.

Xue, Y., Bradley, J. and Liang, H. (2011), "Team climate, empowering leadership, and knowledge sharing", *Journal of Knowledge Management*, Vol. 15 No. 2, pp. 299-312, doi: 10.1108/13673271111119709.

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