**High-performance work systems as a remedy for growing pains: Evidence from South Korean organizations**

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**Abstract**

Drawing on literatures from a contingency perspective of strategic human resource management and a dynamic resource-based view, this study examines dynamic patterns of investment in high-performance work systems (HPWS) to support labor productivity of growing organizations. We analyzed a four-wave panel dataset from 267 establishments in South Korea and found that higher usage of HPWS at a prior point in time and increasing usage of HPWS over time led to consistently improved labor productivity when the employment size of establishments continued to grow. Our theory and findings provide new insight into the dynamic fit between HPWS and organizational performance over time in growing organizations.

**Keywords**: High-performance work system; labor productivity; strategic human resource management; employment size; organizational growth.

**Key points:**

1. HPWS can benefit the labor productivity of organizations constantly increasing their employment size.
2. Constantly growing organizations can improve their labor productivity by increasing usage of HPWS over time.
3. An HPWS is an effective internal structure to address the growing pains of organizations and realize productive growth.

Although many organizations strategize growth (e.g. expanding their employment size, operations, or market segments) in order to gain a competitive advantage, growth does not always yield advantages for every organization. Indeed, the realization of profitable growth can compromise organizational efficiency (Winn 1997) and increase resource demands (Hite and Hesterly 2001). Among constraints on growing organizations, demands on human capital resources and their extra contribution may be particularly taxing (Penrose 1959; Bennett and Levinthal 2017; Wiklund and Shepherd 2003). Thus, growing organizations should establish an effective management structure to leverage human capital resources and achieve successful internal growth.

Despite the significance and prevalence of organizational growth, the strategic human resource management (HRM) literature remains largely silent regarding this organizational phenomenon. In the strategy field, Barringer et al. (2005) reported qualitative evidence that high-growth organizations devote investments toward certain HRM practices (e.g. training and development, incentives, and stock options). Their work illuminated differences in use of certain individual HRM practices between high-growth and low-growth organizations. Also, Bennett and Levinthal (2017) found that the growth rates of firms have significant implications for employee incentives. In contrast to the strategy literature, surprisingly little is known regarding how a broader set of relevant HRM practices help organizations grow internally and achieve better external performance.

This study aims to assist in filling this conspicuous gap by exploring how HRM practices contribute to the labor productivity of internally growing organizations over time. Although organizational growth and performance are typically driven by a myriad of internal and external factors (e.g. new technology, market opportunities) beyond HRM practices, we cannot overlook the effects of HRM practices helping to acquire and develop valuable human capital resources supporting internally growing organizations. We thus focus on high-performance work systems (HPWS), which have been widely investigated in the extant literature (Jackson et al. 2014). These systems conceptually represent organizational attempts to improve long-term performance in ways that attract, motivate, enhance, and retain human capital resources (Lepak et al. 2006). Given that the competitive advantage that organizations gain by using effective HRM systems evolves over time (Wright and Haggerty 2005), we delve into the performance effects and changing patterns of use of HPWS in growing organizations. Drawing from contingency theory and a dynamic fit perspective (Wright and Snell 1998), organizational growth is derived as a dynamic organizational contingency, and whether HPWS invested at a certain point in time consistently contribute to greater labor productivity of growing organizations over time is investigated. In addition, based on a dynamic resource-based view (Helfat and Peteraf 2003), we explore how and why the increase in HPWS usage may help to realize improved productivity and overcome the internal managerial challenges incurred in constantly growing organizations. Finally, we provide empirical knowledge on the proposed model by analyzing a four-wave panel dataset of 267 establishments in South Korea. Our findings are unique and will contribute to the strategic HRM literature, which is primarily filled with empirical evidence cultivated by analyzing non-longitudinal datasets on Western workplaces. In contrast, our dataset is longitudinal and contains information on HRM practices, business outcomes, and general information collected from multiple raters and an archival source of South Korean establishments.

The principal contribution of this research is to provide unique insight into the contingent and dynamic nature of HPWS utilization using the interactive effects between organizational growth and HPWS usage at multiple points in time. We examined temporal dynamics by delineating whether organizational growth alters the HPWS-productivity linkage, as well as how an increase in use of HPWS supports the performance of constantly growing organizations. Our work goes above and beyond the prior static or time-lagged studies by illuminating the change in HPWS usage corresponding to the change in internal organizational contingency. This approach also expands the prior contingency view of HPWS (Boxall and Purcell 2016; Jackson and Schuler 1995; Kaufman 2010; Kaufman and Miller 2011), such that this study broadens our understanding of the role of internal structure for organizational growth, highlighting that not all organizations, but rather those constantly seeking internal expansion, may achieve productivity effects from initial and continuous use of HPWS.

**Theoretical background and hypotheses**

**Previous research on HPWS and a dynamic fit perspective**

HPWS is defined as a set of distinct and interconnected HRM practices implemented in concert to improve employee skills and effort (Datta et al. 2005; Huselid 1995; Takeuchi et al. 2007). Assuming that employees are potentially strategic resources for an organization (Barney and Wright 1998), HPWS serves to transform organizational members into organizational strategic resources, and thereby support organizational competitive advantage by enhancing employee contributions to organizational performance (Huselid 1995). Prior research has typically incorporated employment security, information sharing, participation in decision-making, developmental performance appraisals, incentives, employee ownership, extensive training, and selective hiring into HPWS (Huselid 1995; Pfeffer 1998; Posthuma et al. 2013).

Empirical studies have consistently indicated that organizations adopting HPWS tend to attain better organizational outcomes. For instance, organizational productivity has been acknowledged to be one of the most pertinent and immediate outcomes of HPWS usage (e.g. Datta et al. 2005; Huselid 1995). Also, it has been found that HPWS can benefit organizations by increasing service quality (Liao et al. 2009) and decreasing employee turnover (Sun et al. 2007). Furthermore, a series of meta-analytic reviews (e.g. Combs et al. 2006; Jiang et al. 2012) have substantiated the positive linkage between HPWS usage and financial performance. This is the universalistic perspective of HPWS which argues that certain HRM practices work better than others and always lead to positive performance of an organization.

While the existing literature has widely supported the universalistic perspective (Jackson et al. 2014), a group of researchers have also indicated a contingency perspective on the effect of HPWS on firm performance. For example, researchers have examined how contingent factors such as corporate strategies (e.g. Chênevert and Tremblay 2009; Michie and Sheehan 2005), labor flexibility (e.g. Michie and Sheehan 2005), and industry conditions (Datta et al. 2005) influence the effects of HPWS on organizational performance, suggesting that the dynamic fit between HPWS usage and environmental contingencies contributes to organizational success. However, regardless of the theoretical lenses, prior research has predominantly explored the performance effects of HPWS at a certain point in time, and thus much less is known about how the utility of HPWS may vary in a dynamic environment. We attempt to complement the existing contingency-based HPWS research with a dynamic fit perspective, which asserts that HRM practices and their effectiveness can vary across diverse situations; thus, organizations need to achieve a dynamic fit between relevant HRM practices and the changed circumstances requiring different employee skills and behaviors (Wright and Snell 1998). Dynamic fit points to the likelihood that the best fit may change according to changes in organizational contingencies (Boxall and Purcell 2016). In this vein, it is imperative to examine whether HPWS usage improves organizational labor productivity in a dynamic contingency, and furthermore how organizations faced with changing situations change the intensity of HPWS usage in order to sustain their competitive advantage.

**Organizational growth as a dynamic organizational contingency**

Inspired by the dynamic fit perspective, we delve into a dynamic organizational contingency and focus on organizational growth, particularly internal expansion by hiring more employees (Kimberly 1976). Organizational growth reflects some phases of the organizational life cycle and triggers significant changes in organizational structure, which may result in certain problems and opportunities that HRM strategies need to respond to (Baird and Meshoulam 1988). Particularly, as Weinzimmer et al. (1998: p. 235) noted, “Organizational growth is inherently a dynamic measure of change over time.” Hence, internal organizational growth is a changing organizational contingency pertinent to our investigation on the productivity effects of HPWS and the dynamic patterns of using HPWS.

Although organizational growth produces economies of scale and scope by increasing the size of organizational workforce, growing organizations may encounter uncertainty and complexity, which can cause critical organizational problems (Barringer et al. 2005; Hambrick and Crozier 1985). As organizations rapidly achieve internal growth, it will likely become more difficult and costly for them to monitor, control, and regulate the activities of their employees (Jones and Wright 1992). This may generate managerial problems with regard to (1) miscommunication or lack of coordination through internal turmoil and conflict, (2) demotivation of employees through disaffection and stress, and (3) deficiencies in human capital resources through organizational uncertainty and complexity.

First, the expanded employment size usually incurs coordination and communication problems, which are detrimental to the performance of growing organizations (Penrose 1959). Ineffective communication and coordination among employees primarily stem from internal turmoil and conflict in growing organizations (Hambrick and Crozier 1985). As organizational growth promotes vertical and horizontal specialization, employees are more prone to accumulate information regarding only their specialized tasks (Arrow 1974). Also, if employment size increases continuously, insufficient or inaccurate information is likely to cause tardy and low-quality decision-making (Milgrom and Robert 1992).

Second, employees within internally growing organizations may experience negative feelings when adapting to new organizational contexts. The advanced specialization discussed above may increase the calculative orientation for self-interest and decrease the moral involvement of employees. In fact, Kotter and Sathe (1979) found that an increase in work units and specialization impedes cross-functional coordination, while a surge in new hires causes concern among existing employees about decreased career opportunities. In rapidly growing organizations, employees are required to adapt not only to a modified work structure with new colleagues, but also a subsequent adjustment in their performance management process. Individual adaptation to organizational changes typically arouses disaffection and stress (Hambrick and Crozier 1985; Kotter and Sathe 1979), which may reduce work motivation.

Finally, growing organizations may confront a lack of qualified human capital resources, because the employees who had recently joined the organizations could not have equipped the company-specific human capital. This may disrupt organizational performance. Continuously growing organizations tend to have a high demand for the human capital resources needed to fully utilize organizational assets and capital (Barringer et al. 2005; Hambrick and Crozier 1985). Thus, growing organizations should sustain a sufficient pool of valuable human capital resources by acquiring and developing valuable talent.

**HPWS as an effective management structure for growing organizations**

We propose that HPWS is instrumental to address the internal challenges within constantly growing organizations, including coordination/communication problems, demotivation, and deficiency of human capital resources. The process of organizational growth demands not only resources, but also effective management of those resources (Penrose 1959; Bennett and Levinthal 2017; Wiklund and Shepherd 2003). As growing organizations suffer from a variety of HRM issues (Rutherford et al. 2003), formalized procedures are required (Sirmon et al. 2011) to effectively manage employees and ultimately realize profitable growth. HPWS may support organizational growth dynamics by enhancing social interactions and developing human capital resources in order to maximize employee contributions (Takeuchi et al. 2007). In this regard, our investigation of how HPWS promotes organizational labor productivity over time is intended to provide implications for internally growing organizations.

HPWS can establish an internal organizational structure wherein employees are interconnected and collaborate with one another. Empirical studies have indicated that HPWS is positively related to the degree of relationships among employees with different functions (Gittell et al 2010) and social exchanges between employees and employers (Takeuchi et al. 2007) within establishments. By fostering employee-employee relationships, HPWS allows employees to coordinate their tasks in a timely and accurate manner, thereby overcoming the silos of high-growth organizations (Gittell et al. 2010). These enhanced social relationships promote collaboration and knowledge sharing among organizational members (Pfeffer 1998). The internal social structure built on HPWS leads to administrative (Evans and Davis 2005) and work efficiency (Gittell et al. 2010), both of which are of particular importance to growing organizations.

Second, HPWS is designed to enhance human capital resources and motivation of employees (Huselid 1995). In organizations where HPWS is intensively used, employees are skilled, motivated, and empowered (Liao et al. 2009). The extent of HPWS usage is positively related to the level of collective human capital resources at the establishment level (Takeuchi et al. 2007). In addition, HPWS is effective for increasing employee motivation and enriching their work (Jiang et al. 2012). In high-growth organizations that are less structured, systematized, and formalized, employees who are skilled and motivated to perform their jobs are more likely to contribute to labor productivity, as employees with higher human capital are better able to address task complexity and uncertainty (Wright and Snell 1998). Thus,

Hypothesis 1: Organizational growth moderates the relationship between HPWS and labor productivity, such that the relationship is stronger when organizational growth is higher.

**Change in HPWS for growing organizations**

Although it is presumed that high-growth organizations that intensively utilize HPWS achieve better labor productivity by minimizing potential problems related to organizational growth, increasing HPWS usage over time may be required to follow the pace and scope of organizational growth, constantly resulting in greater labor productivity. While other environmental factors can drive organizational growth and performance, investment in HPWS can be a critical vehicle because growing organizations require more unique human capital resources to achieve successful organizational change (growth) and performance. That is, in order to create strategic value, organizational practices for managing human capital resources should not only respond to a certain phase of organizational structure, but also adapt to changes in internal and external circumstances (Baird and Meshoulam 1988; Boxall 1998). Based on the resource life cycle within the dynamic resource-based view (Helfat and Peteraf 2003), we suggest that growing organizations may need to ensure additional strategic investment in order to further mitigate internal problems, strengthen strategic human and social capital resources, and consistently contribute to labor productivity over time. Helfat and Peteraf (2003) argued that the value of strategic resources changes over time due to environmental influences and the shelf life of these resources, proposing that strategic resources have inherent limitations that prevent them from exhibiting consistent effectiveness over time. For example, Ployhart et al. (2009) suggested that the value of human capital resources diminishes over time, following an “experience” curve. In this sense, growing organizations will have additional problems related to a dearth of coordination and communication, demotivation, and valuable human capital deficiency regardless of high HPWS usage at a prior point. Because the value of the strategic human and social capital resources that HPWS yielded at a previous point is not sustained over time, organizations that pursue internal growth may need to continuously intensify HPWS utilization over time. This increasing usage of HPWS over time may serve as a managerial remedy for the inevitable internal problems incurred by organizations that intend to continuously grow their employment size.

Taken together, it is presupposed that HPWS is an effective management structure for growing organizations. The major components of HPWS and their complementarity have been shown to motivate and coordinate employee efforts and activities, and thus produce valuable human capital resources for improved productivity of continuously growing organizations. We further suggest this considering a dynamic pattern of HPWS usage, such that as organizations grow over time, they need to continue intensifying their HPWS usage in order to elicit better productivity from their expanded employees. Thus,

Hypothesis 2: Organizational growth moderates the relationship between HPWS change and labor productivity, such that the relationship is stronger when organizational growth is higher.

**Methods**

**Sample and procedures**

We analyzed longitudinal data from 267 establishments that participated in Workplace Panel Surveys (WPS). The WPS dataset was collected by the Korea Labor Institute (KLI), which is funded by the South Korean government, in order to investigate the HRM practices and labor relationships of organizations and to determine implications for governmental labor policies. We employed the full dataset from 2005 to 2013. The initial WPS 2005 sampling frame encompassed 4,275 establishments, including 3,916 private and 359 government-owned establishments across different industries. A total of 1,905 establishments (1,615 in the private sector and 290 in the public sector) responded to the 2005 survey, resulting in a response rate of 44.56%. The establishments participating in the 2005 WPS survey were used as the sampling frame for the 2007, 2009, 2011, and 2013 surveys. A total of 960 establishments participated in the five-wave survey, resulting in a total panel maintenance rate of 50.39%. Among those participants, we excluded the following: 99 public establishments that have different operational and competitive contexts from profit-making organizations; and 14 establishments in the electricity, gas, and water industry; 25 establishments in the finance and insurance industry; and 13 establishments in the communication service industry because the surveys in these industries were collected at the firm level instead of the establishment level. In addition, 417 establishments were excluded as they only reported their performance metrics (e.g. sales and profit) at the firm level rather than at the establishment level. Finally, we excluded 24 establishments merged or acquired by other organizations between 2005 and 2013 and 101 establishments nested in education and health/social welfare where sales may not be generated. Therefore, our analysis included 267 establishments.

Because our predictors and dependent variables were lagged two years and two-year lagged performance data for HPWS in 2015 were not available, we used four-wave datasets. Thus, our final sample consisted of 267 establishments representing 1,068 establishment-year observations. This included 110 establishments in manufacturing, six in recycling and environmental purification, 18 in construction, 11 in wholesale trade and retail, 61 in transformation, 3 in hotels and restaurant, 13 in broadcasting and information services, 3 in leasing services, 15 in science and technology services, 17 in facility maintenance and business support services, 4 in arts, sports, and leisure services, and 6 in repair and personal services.

The WPS was administered as follows. Survey packages comprising a survey brochure, official letter, and questionnaires were mailed to contact persons predetermined to manage survey administration in participant establishments. Each contact person then delivered parts of the questionnaire to the most pertinent informants within the establishment. In doing so, HRM managers responded with information about HRM practices and business strategies; labor relations managers provided information pertaining to the establishments’ labor relations policies; financial managers provided financial information about the establishments; and employee representatives or union officials provided information about labor union policies. A sufficient survey response rate was achieved by providing multiple survey administration methods (e.g. paper-and-pencil surveys, web-based surveys, and computer-assisted personal interviews). As our proposed model consists of HPWS, HPWS change, organizational growth, and organizational performance growth over time, we primarily focused on information provided by HRM managers and financial managers.

**Measures**

HPWS and HPWS change were measured by incorporating nine HRM practices (i.e. autonomous staffing decisions by teams, formal training, newcomer socialization, result-oriented performance appraisal, group-based incentives, pay level, job security, self-managed teams, and communication) from the WPS 2005, 2007, 2009, and 2011 into composite HPWS indexes. These HRM practices have been predominantly examined by previous HPWS studies (Posthuma et al. 2013) particularly in the South Korean context (e.g. Rhee et al. in press). Since the 1997-1998 financial crisis, HPWS has been diffused in South Korean organizations (Frenkel and Lee 2010) in an effort to adopt so-called best practices originating from leading U.S. firms for overcoming problems with existing approaches in managing employees and thereby establishing performance-oriented management (Lee and Kim 2006). Despite the fact that South Korea is different from the U.S. in terms of the cultural and institutional environment, a work system eliciting commitment from employees granted competitiveness and flexibility to South Korean organizations (Bae and Lawler 2000), because these practices tend to universally benefit organizations and some of them (e.g. group-based incentives and training) fit the collectivistic and Confucian values of South Korea (Kraeh et al. 2015; Yang 2006). The WPS measured these HRM practices in three ways. First, the utilization of five HRM practices, including formal training (“Does your establishment conduct or invest in training and development to improve employees’ task-related abilities?”), newcomer socialization (“Does your establishment conduct a training and orientation program for new hires?”), result-oriented performance appraisal (“Does your establishment use management by objectives [MBO] as an individual performance appraisal tool?”), group-based incentives (“Does your establishment conduct incentive schemes that provide incentives based on group performance?”), and job security (“Does your establishment have a managerial policy or agreement that employees are not terminated for managerial reasons [e.g. organizational performance decline]?”), were rated as a dummy variable of “yes” (1) and “no” (0). Second, three HRM practices, including pay level (“What is the compensation level in your establishment compared to the market rate in your industry?”: “very low” [1] to “very high” [5]), self-managed teams (“To what extent is a work group or work team in your establishment allowed autonomy in deciding its work procedures and methods?”: “none” [1] to “to a great extent” [4]), and autonomous staffing decisions of teams (“To what extent is a work group or team in your establishment allowed autonomy in deciding new hires?”: “none” [1] to “to a great extent” [4]), were rated on 5- or 4-point Likert scales. Third, communication was measured by the total number of communication tools (e.g. direct communication between the CEO and employees, Intranet). In line with prior studies (e.g. Batt 2002), we standardized values for the nine HRM practices in the 2005, 2007, 2009, and 2011 HPWS, and then produced the mean value of the *z*-transformed scores in order to create the HPWS indexes for sample establishments.

Three analyses were conducted to verify whether our HPWS indexes have sufficient validity. First, we conducted exploratory factor analysis with Varimax rotation and found that individual HRM practice items in 2005, 2007, 2009, and 2011 loaded onto one factor with an eigenvalue over 1.00.

Second, we examined the extent to which our HPWS indexes relate to other HRM-related constructs. Among the diverse candidates, the strategic involvement of HRM departments was chosen due to data availability and its association with HRM and business outcomes (Kim et al. 2017). The strategic involvement of HRM departments (α = .77 in 2005, .82 in 2007, .82 in 2009, and .85 in 2011) was measured by HRM managers’ responses (1 = strongly disagree to 5 = strongly agree) on four items: (1) “Are HRM-related issues closely related to business strategy in your establishment?”, (2) “Do HRM managers in your establishment highly contribute to the development of business strategy?”, (3) “Do employees recognize your HRM department as a change agent and important business partner?”, and (4) “Does HRM in your establishment support the achievement of strategic goals?”. The results showed that HPWS had a significant positive relationship with the strategic involvement of HRM departments over time (2005: *r* = .21, *p* < .05; 2007: *r* = .35, *p* < .05; 2009: *r* = .28, *p* < .05; 2011: *r* = .29, *p* < .05), suggesting that extensive use of HPWS is likely to be found in organizations where HRM departments have been actively involved in formulating and executing business strategies.

Finally, we assessed whether the HPWS indexes are consistently related to one another over time. We found that inter-correlations among HPWS indexes in 2005, 2007, 2009, and 2011 range from .31 (minimum) to .53 (maximum), indicating medium correlation coefficients. Although the medium correlations among HPWS indexes in different years may arouse reservation on the reliability of the HPWS measures, it is probable that HPWS has actually changed over time due to changes in organizational strategic directions and/or environmental conditions. For example, the 2008 recession dramatically disrupted organizational performance and strategic value of HRM practices (Kim and Ployhart 2014). Since our data encompasses the time period between 2005 and 2013, internal and external environmental factors are likely to have influenced HRM practices through adaptation to rapidly changing consumer markets and environments. Thus, it is necessary to operationalize a change measure of HPWS and its effects on organizational performance.

We operationalized HPWS change as the change in HPWS usage over a two fiscal-year period. Following the calculation of difference scores (e.g. Nyberg et al. 2010; Zatzick and Iverson 2006), we first subtracted each HR practice in the current year (*t*) from the subsequent year’s (*t*+2) HR practice, indicating whether the utilization of individual HR practices increased or decreased over time. Next, we standardized the nine HR practices and computed the mean of the standardized difference scores of individual HR practices to operationalize the HPWS change. This approach is appropriate for our research analyzing HPWS change including some objective measures (Call et al. 2015), and focusing on the difference scores in HPWS across time (Nyberg et al. 2010).

Organizational growth was measured by calculating change in total employment size. Following previous studies on industry growth (e.g. Dess and Beard 1984; McNamara et al. 2008), we first regressed the total number of employees in each year on a year counter variable (0 = Time 1 [*t*]; 1 = Time 2 [*t*+1]; 2 = Time 3 [*t*+2]). This regression analysis generated change scores (regression coefficients) of employment size over three years in each establishment. Next, organizational growth was measured as the regression coefficients to average employment size measures (i.e. average total employment size during three years). For example, if an establishment’s employment size was 10 (year 1), 20 (year 2), and 30 employees (year 3), we first regressed the employment size on a time counter variable (0 = year 1; 1 = year 2; 2 = year 3). From this calculation, we obtained 10 as the regression coefficient of employment size change predicted by the time variable. Then, we divided 10 by 20 (mean of 10, 20, and 30) to compute organizational growth; thus, the final value turned out to be .50. This measure can reflect whether establishments increased or decreased their employment size over time. The average observed organizational growth was -.02.

Labor productivity was calculated as total sales minus total labor costs divided by average number of employees during a fiscal year, which helps control for potential labor costs and expenditures (Chadwick et al. 2012). Among diverse organizational outcomes, labor productivity is crucial to growing organizations. Organizations typically attempt internal growth in order to increase sales opportunities, but most growing organizations face operational inefficiency and may experience subsequent declines in market and financial performance, particularly if they fail to increase labor productivity (Winn 1997). The average labor productivity was 226.48 million won.

The control variables used in this research pertained to industry and organizational characteristics. Following previous studies (Datta et al. 2005; Dess and Beard 1984; McNamara et al. 2008), we controlled for industry growth and dynamism in order to prevent potential industry effects. We produced these variables in the following ways. First, we used industry sales[[1]](#footnote-1) during each three-time period (i.e. 2005-2007, 2007-2009, 2009-2011, and 2011-2013) in each industry section, and then created three year-counter variables (0 = Time 1 [2005, 2007, 2009, and 2011]; 1 = Time 2 [2006, 2008, 2010, and 2012]; 2 = Time 3 [2007, 2009, 2011, and 2013]). We then regressed the change in industry sales over three time periods on the year-counter variables. Industry growth was calculated using the regression coefficients from the relationship between the year-counter variables and the change in industry sales for each industry divided by the mean value of industry sales during the three time periods. Industry dynamism was calculated based on the standard error of the regression coefficients for each industry divided into the mean value of industry sales. For example, if manufacturing industry sales in 2005, 2006, and 2007 were 20 (Time 1 = 0), 20 (Time 2 = 1), and 30 (Time 3 = 3) and we predicted sales using the Time variable, the regression coefficients and standard error of the regression coefficients were 5 and 2.89, respectively. To operationalize industry growth and dynamism, we divided the scores by the mean sales value over the three time periods (mean = 23.33); thus, the value of industry growth in the manufacturing industry was .21 (= 5 / 23.33), while the value of industry dynamism was .12 (= 2.89 / 23.33). On the other hand, due to their potential influences on HRM and/or organizational performance (Shaw et al. 1998; Wright et al. 2005), we controlled for a series of organizational variables, including prior labor productivity in time (*t*), organizational size (the number of employees in each establishment) at the beginning of time (*t*), voluntary turnover rate (the number of employees who voluntarily left the establishment divided by the number of employees in each year), capital intensity (total tangible and intangible assets divided by total sales), innovation strategy (0 = No; 1 = Yes), and three time dummy variables.

**Analyses and results**

Table 1[[2]](#footnote-2) shows the mean, standard deviation, and correlation among HPWS, HPWS change, organizational growth, labor productivity, and control variables. As expected, HPWS was positively and significantly related to labor productivity (*r* = .09; *p* < .05), whereas HPWS change was not significantly associated with labor productivity. We also found that HPWS was positively and significantly related to organizational growth (*r* = .07; *p* < .05). This weak correlation is similar to Zatzick and Iverson (2006), who reported a weak correlation (mean *r* = .05) between change in workplace size and high-involvement work practices. These results suggest that other internal and external factors may influence organizational growth simultaneously. Because our model includes time-varying variables such as HPWS change and organizational growth, we further checked how many establishments follow different change patterns. We found that 131 (2005-2007), 133 (2007-2009), 120 (2009-2011), and 139 (2011-2013) establishments used more HPWS over time. The findings also showed that 108 (2005-2007), 122 (2007-2009), 121 (2009-2011), and 120 (2011-2013) establishments grew over time.

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Insert Table 1 about here

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To test our hypotheses, we used fixed effects regression over four time periods to generate unbiased regression coefficients (Greene 2000). Our conceptual model to test the relationship between HPWS and performance is as follows:

*Labor productivity j(t+2) = f(three time dummies + industry growth j(t, t+1, t+2) + industry dynamism j(t, t+1, t+2) + prior labor productivity j(t) + organizational size j(t) + voluntary turnover j(t) + capital intensity j(t) + innovation strategy j(t) + HPWS j(t) + HPWS change j((t+2) – t)) + organizational growth j(t, t+1, t+2))*

where *j* is the establishment, *t* is the time period, and *t*+1 and *t*+2 are the subsequent time periods. This econometric model was employed to test all hypotheses.

Next, we assessed whether a fixed effects or random effects model was appropriate in our analysis. We conducted the Hausman test to check the null model, in which the coefficients estimated by the fixed effects regression are the same as those estimated by the random effects regression. The results showed that the null hypothesis was rejected (*p* < .05), suggesting that the fixed effects regression was more appropriate for our analysis. Fixed effects regression not only control for unobservable organizational effects and time effects but also reduce the concerns for heteroscedasticity and autocorrelation (Finkel 1995); therefore, fixed effects regression is more conservative (Cannella et al. 2008). We used the “xtreg” procedure with the “robust” option in Stata 13. Following Aiken and West (1991), we mean-centered HPWS, HPWS change, and organizational growth, which constituted the interaction terms, in order to reduce multicollinearity in all models.

Table 2 revealed the results of the fixed effects regression analyses[[3]](#footnote-3). Model 1 presented the basic model including only control variables. Model 2 showed that HPWS and HPWS change did not directly influence labor productivity, implying that the presence of environmental contingencies disrupted the main effects of HPWS on labor productivity over time and highlighting the need for a contingency view for investigating the dynamic patterns and performance impacts of HPWS.

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Insert Table 2 about here

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In Hypothesis 1, organizational growth moderates the relationship between HPWS and organizational performance, such that the relationship is stronger when organizational growth is higher. Model 3[[4]](#footnote-4) demonstrated that organizational growth significantly strengthened the linkage between HPWS and labor productivity (*ß* = 393.56, *p* < .05). As illustrated in Figure 1a, organizations with higher HPWS achieved greater labor productivity when organizational growth increased over time. We further conducted a simple slope test to ascertain the moderating effect based on a recommendation from Aiken and West (1991) and Preacher et al. (2006). The simple slope test showed that the slope with high organizational growth was not significant in SD +1 (simple slope *ß* = 51.67, *p* = .23), but was significant in SD +2 (simple slope *ß* = 116.54, *p* < .05). However, it was more positive (SD +1: *z* = 2.03, *p* < .05; SD +2: *z* = 3.07, *p* < .05) than the simple slope with low organizational growth (SD -1: simple slope *ß* = -78.08, *p* = .10; SD -2: simple slope *ß* = -142.96, *p* < .05). Therefore, we concluded that growing organizations with higher HPWS generate greater labor productivity, supporting Hypothesis 1.

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Insert Figure 1 about here

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Hypothesis 2 predicted that organizational growth moderates the relationship between HPWS change and organizational performance, such that the relationship is stronger when organizational growth is higher. Model 3 indicated that organizational growth significantly strengthened the positive relationship between HPWS change and organizational labor productivity (*ß* = 341.01, *p* < .05), and the predictors explained .85 percent of total variance[[5]](#footnote-5) in the organizational performance. As seen in Figure 1b, organizations with higher HPWS change achieved greater labor productivity when they grew over time. A simple slope test was performed to confirm the moderating effect. We found that although the slope with high organizational growth (SD +1: simple slope *ß* = 35.24, *p* = .33; SD +2: simple slope *ß* = 91.45, *p* = .07) was not significant, it was more positive (SD +1: *z* = 2.17, *p* < .05; SD +2: *z* = 3.12, *p* < .05) than the simple slope with low organizational growth (SD -1: simple slope *ß* = -.77.19, *p* < .05; SD -2: simple slope *ß* = -133.40, *p* < .05). These findings articulated that high-growth organizations need to use more HPWS over time for greater labor productivity, supporting Hypothesis 2.

**Discussion**

This study aimed to examine how internal contingency (i.e. the expansion of employment size) alters the value of HPWS and change in HPWS on organizational performance. Our fixed effects regression analysis of 267 establishments in a multi-source four-wave panel dataset revealed that organizational internal growth intensified the positive relationship between HPWS and labor productivity. The same pattern was also found with increased use of HPWS over time. These results suggest that the labor productivity of growing organizations can benefit from their use of HPWS and, furthermore, their continuous investment in HPWS over time.

**Theoretical implications**

This research provides several theoretical implications for the strategic HRM literature. First, our findings illuminate the contingent value of HPWS under the phenomenon of organizational growth. Huselid (1995) previously suggested that the performance effects of adopting HPWS can be realized under particular contingencies surrounding organizations. The meta-analytic review by Combs et al. (2006) reported an estimated HPWS effect size of .28 on organizational performance, and called for future research examining potential moderators that account for variance in the HPWS effect size reported by previous research. Although a fit perspective is a compelling means of better understanding the effects of HPWS on organizational performance, it remains a key issue that should be embraced in the strategic HRM field (Jiang et al. 2013). We found that fast-growing organizations that increased their employment size can positively leverage the effects of HPWS on labor productivity. These findings revealed that high-growth organizations may experience greater organizational performance through reliance on HPWS, which is theoretically expected to offset the coordination and communication problems, employee demotivation, and human capital deficiencies that growing organizations are likely to face. These findings suggested that HPWS may have the best fit with organizational growth by addressing the demands and characteristics of actively growing organizations.

One might be concerned with the effects of diverse growing stages that may encourage or discourage organizations to further grow their employment size. For example, larger organizations may not need further organizational growth because they have already grown too much, whereas smaller organizations might actively pursue organizational growth to achieve economies of scope and scale. That is, internal organizational growth may be determined by the organizational size at a given starting point. In order to reflect these different growing phases in our empirical investigation, we first controlled for employment size at a starting point (*t*) and found the same results. Next, we checked whether employment size at time (*t*) is correlated to organizational growth and found that the relationship was positive but not significant (*r* =.02, *n.s.*), suggesting that small organizations may not always attempt to expand their employment size over time. We further tested how employment size moderates the effect of organizational growth on the relationship between HPWS or HPWS change and labor productivity and found non-significant three-way interactions among these variables. Based on these results, we concluded that different organizational growth stages do not matter to our findings, at least in our dataset. Nonetheless, future research may need to directly identify how organizational growth phases affect linkages among organizational growth, HPWS, and organizational performance.

Another meaningful contribution of our research is consideration of time issues, which are less developed in the existing literature (Wright and Haggerty 2005), in delineating the strategic value of HPWS for labor productivity in growing organizations. Taking into account the dynamic fit perspective suggested by Wright and Snell (1998), we found that enhancing HPWS usage over time positively relates to the labor productivity of internally growing establishments. Although our findings showed that HPWS change is not directly related to organizational performance, we found that the effect of HPWS change on organizational performance is eventually leveraged by organizational growth. The adoption of HPWS theoretically promotes organizational performance from a universalistic perspective, but these findings suggest that use of HPWS should evolve over time corresponding to changes in organizational context (i.e. employment size change in this research) in order to sustain or heighten the performance level that organizations have achieved through their prior investment in HPWS. As Wright et al. (2001) noted, few studies have attempted to test the relationship between HRM systems and organizational performance from a dynamic perspective. To date, a handful of studies have adopted longitudinal study designs in investigating the linkages between HRM systems and organizational performance (e.g. Birdi et al. 2008; Kim et al. 2013); however, their theoretical stances were based on a static perspective. Research in this field still requires an articulation of the temporal dynamics of HPWS and their lagged effects on organizational performance (Pitariu and Ployhart 2010). This research goes beyond prior research by applying a dynamic fit perspective to examine the effect of dynamic HPWS usage and organizational growth on labor productivity.

Our findings are comparable to Zatzick and Iverson (2006). While we found that HPWS change can benefit the organizational performance of internally growing organizations, Zatzick and Iverson (2006) showed that even organizations conducting layoffs can avoid organizational performance reduction through continuously investing in high-involvement work systems (equivalent to HPWS in our study). Although our theoretical model and analytical approach are slightly different from their study, the key arguments between the two studies are comparable and have theoretical implications. Both studies suggested that enhancing HPWS usage or maintaining a high level of HPWS usage over time may benefit growing or shrinking organizations. These apparently contradictory results may have several explanations. For example, cultural differences within the samples might influence the direction of effects. Zatzick and Iverson (2006) used data from Canadian workplaces, while our work analyzed data from Korean establishments. Contrary to predictions based on national culture literature (e.g. House et al. 2004), a meta-analysis by Rabl et al. (2014) indicated that HPWS-performance linkages are stronger in countries with greater power distance and collectivism (e.g. South Korea) than in lower power distance and individualism (e.g. Canada). These different cultural contexts might influence HPWS-performance linkages among growing and declining organizations. The question of whether the effects of HPWS change on organizational performance under organizational growth vary across cultural contexts could provide an intriguing direction for future research.

**Practical implications**

Our findings offer practical implications for high-growth organizations. As supported by this study, investing in HPWS over time can be an effective remedy for growing pains, suggesting that effective management structures are required for high-growth organizations in order to reduce the potential problems followed by organizational growth. In this vein, it has been suggested that HRM departments create strategic partnerships in order to effectively manage organizational growth by shaping proper internal structures and work systems (Mohrman 2007). This research demonstrates that sustaining a high level of HPWS and fostering more HPWS usage over time are effective ways for high-growth organizations to achieve improved performance.

**Limitations and directions for future research**

As with other studies, this research has certain limitations. First, our results might not be generalizable to other settings as our data were collected only from South Korean establishments and may not be entirely representative due to the large proportion (about 41.20%) of manufacturing establishments. We framed our theoretical model based on non-culturally specific literature, and our findings are consistent with the theory and evidence presented in that literature. Nonetheless, future research should replicate our proposed model with data collected from different countries and diverse industries.

Second, due to the fact that South Korean organizations have adopted the advanced and sophisticated practices that prevail among leading U.S. firms (Lee and Kim 2006), our operationalization and measurement of HPWS was based more on the U.S. model. HPWS has expanded in South Korean workplaces over the last two decades. Although the initial version of South Korean HPWS was similar to the U.S. one, the new version consists of different HRM practices that have been increasingly shaped by cultural values and social trends in the South Korean context. Thus, we encourage future research to frame a Korean model of HPWS or other versions of HPWS according to diverse cultural contexts.

Third, although our multi-rater four-wave panel dataset was useful for examining our proposed model, the HPWS measures are somewhat problematic. We used both dichotomous (i.e. use vs. non-use) and single-item (continuous) measures to construct a HPWS index that may cause reliability issues. In addition, because HRM and financial managers provided information about the extent of using HRM practices and labor productivity, the dataset might entail potential response biases and single-rater reliability issue. These limitations affected prior studies (e.g. Zatzick and Iverson 2006) employing longitudinal datasets collected by government institutions. In our dataset, HRM and financial managers were most knowledgeable about each of those variables. Furthermore, on behalf of their establishments, they responded to the relevant survey items based on official and objective materials. In order to mitigate this concern, we provided some alternative evidence from validity tests on HPWS, but those results did not directly indicate a reliability score for our HPWS measures. Accordingly, future research may attempt more stringent tests with continuous and more reliable HPWS and performance measures.

Fourth, we used labor productivity as a measure of establishment performance, but this performance metric may be affected by noise. We subtracted labor expenditures from total sales to operationalize productivity. However, sales can be influenced by internal (e.g. maintenance breakdown, marketing strategy) and external (e.g. economic recession) factors. Hence, future research needs to parsimoniously compute and use profit metrics that are less likely to be affected by environmental factors.

Finally, it is possible that individual respondents within establishments changed over the course of these surveys. To collect panel datasets, KLI staff sought to contact the same respondents that participated in previous surveys. However, if the respondents (as a HRM or financial manager) left the establishment or changed roles, KLI staff tried to find a new respondent in an HRM or financial manager role. Thus, the same respondents may not have completed all surveys. Information on variation in respondent ratings is not available in the current dataset, but KLI confirmed that some establishments had different respondents for the abovementioned reasons. Collecting panel datasets is challenging due to changes in respondents (Zatzick and Iverson, 2006). Nonetheless, future research should strive to contact the same respondents when administering follow-up surveys in order to achieve sufficient validity across years.

**Conclusion**

This research is among the first to examine growth and time issues with respect to the HPWS-performance linkage. Our findings illuminate the contingent and dynamic HPWS-productivity linkage. Specifically, a high level of HPWS use and increased use over time promote labor productivity of organizations by mediating growing pains as they continue to expand their employment size. We revealed the valuable role of HPWS as an effective management structure for growing organizations and encourage subsequent research into other contingencies.

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**Table 1** Descriptive statistics and correlations

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Variables** | **M** | **SD** | **1** | **2** | **3** | **4** | **5** | **6** | **7** | **8** | **9** | **10** | **11** |
| 1. Industry growth | .10 | .08 | - |  |  |  |  |  |  |  |  |  |  |
| 2. Industry dynamism | .03 | .03 | .25\* | - |  |  |  |  |  |  |  |  |  |
| 3. Prior labor productivitya | 201.70 | 295.53 | -.11\* | -.04 | - |  |  |  |  |  |  |  |  |
| 4. Organization size | 202.34 | 581.73 | .06\* | -.01 | -.10\* | - |  |  |  |  |  |  |  |
| 5. Voluntary turnover | .22 | .39 | -.04 | -.03 | -.04 | .01 | - |  |  |  |  |  |  |
| 6. Capital intensity | 1.07 | 2.76 | -.02 | .04 | .14\* | -.06 | .20\* | - |  |  |  |  |  |
| 7. Innovation strategy | .39 | .49 | -.04 | .01 | .06 | -.00 | .06 | .01 | - |  |  |  |  |
| 8. HPWS | -.08 | .45 | .05 | .02 | .07 | .10\* | -.01 | -.05 | .16\* | - |  |  |  |
| 9. HPWS change | -.00 | .38 | .06 | -.01 | -.02 | .03 | -.03 | .02 | -.06 | -.53\* | - |  |  |
| 10. Organizational growth | -.02 | .16 | .05 | .03 | .02 | .02 | .03 | -.06 | -.03 | .07\* | -.02 | - |  |
| 11. Labor productivity | 226.48 | 337.28 | -.08\* | -.05 | .83\* | -.10\* | -.05 | .06 | .07 | .09\* | -.02 | .01 | - |

*Note. N* = 267 establishments representing 1,068 establishment-year observations (range of establishment-year observations: 662-1,068 because of missing values).

The correlation is based on establishment-year observations. HPWS = High-performance work system.

aThe monetary unit is 1 million won (1,200 won is approximately USD$1).

\**p* < .05.

**Table 2** Results of fixed effects regression analyses

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Variables | Model 1 | | Model 2 | | Model 3 | |
| *ß* | SE | *ß* | SE | *ß* | SE |
| Intercept | 206.41\* | (75.14) | 206.44\* | (75.74) | 205.55\* | (71.63) |
|  |  |  |  |  |  |  |
| ***Time dummies*** |  |  |  |  |  |  |
| Time (2005) | -96.46\* | (28.83) | -96.47\* | (28.88) | -94.98\* | (28.11) |
| Time (2007) | -39.20 | (21.31) | -40.10 | (21.64) | -42.62\* | (20.17) |
| Time (2009) | -36.07 | (26.46) | -37.09 | (26.62) | -33.81 | (24.09) |
|  |  |  |  |  |  |  |
| ***Controls*** |  |  |  |  |  |  |
| Industry growth | 316.43\* | (157.12) | 322.70\* | (157.91) | 290.03 | (155.82) |
| Industry dynamism | -82.15 | (244.08) | -84.24 | (245.03) | -51.23 | (258.99) |
| Prior labor productivity | .24 | (.29) | .24 | (.30) | .22 | (.28) |
| Organization size | -.02 | (.02) | -.02 | (.02) | -.01 | (.01) |
| Voluntary turnover | -1.27 | (8.11) | -1.87 | (8.12) | -1.36 | (10.06) |
| Capital intensity | .72 | (2.46) | .84 | (2.43) | 1.01 | (2.81) |
| Innovation strategy | 22.32 | (11.66) | 21.90 | (11.69) | 29.50\* | (10.23) |
|  |  |  |  |  |  |  |
| ***Independent predictors*** |  |  |  |  |  |  |
| HPWS |  |  | -.33 | (32.55) | -13.21 | (33.31) |
| HPWS change |  |  | -21.30 | (27.44) | -20.98 | (26.95) |
| Organizational growth |  |  |  |  | 40.99 | (47.51) |
|  |  |  |  |  |  |  |
| ***Two-way interactions*** |  |  |  |  |  |  |
| HPWS × Organizational growth |  |  |  |  | 393.56\* | (179.16) |
| HPWS change × Organizational growth |  |  |  |  | 341.01\* | (161.99) |
|  |  |  |  |  |  |  |
| *R*2 | .8479 | | .8483 | | .8530 | |
| *F* | 5.23 | | 4.45 | | 4.52 | |
| △*R*2 |  | | .0004a | | .0047\*b | |

*Note. N* = 640 establishment-year observations; a Compared to Model 1; b Compared to Model 2. \**p* < .05.

1. We collected industry sales data from the Korea Information Service, a leading credit rating agency in South Korea, equivalent to Standard & Poor’s or Moody’s in the U.S. (Chang and Hong 2002: p. 266) based on the two-digit Korean Standard Industrial Classification. [↑](#footnote-ref-1)
2. In Table 1, we found that industry growth is negatively correlated to prior (*r* = -.11, *p* < .05) and subsequent (*r* = -.08, *p* < .05) productivity. Although establishments in high-growth industries may have more market opportunities and flexibility to influence establishment performance (Hambrick and Finkelstein 1987), they can also face uncertain and complex factors leading to inefficiency (Datta and Rajagopalan 1998). Indeed, Datta, Guthrie, and Wright (2005) similarly found that industry growth is negatively related to productivity (*r* = -.08, n.s.), suggesting that industry growth may disrupt labor productivity due to increased managerial problems. [↑](#footnote-ref-2)
3. Our results show changes in *R*2 between regression models are relatively small, but still significant. The low *R*2 may be derived from data points with high variability from a fitted regression line, suggesting that the hypothesized direct and interaction effects in our data may be contingent on various environmental factors. Although the low change in *R*2 may be problematic for precise predictions, the results are still useful because the effect sizes are significant and regression coefficients significantly and clearly estimate the positive interaction effect in the regression model. [↑](#footnote-ref-3)
4. Model 3 in Table 2 shows that HPWS, HPWS change, interaction terms, and controls explained 85 percent of the total variance in labor productivity. [↑](#footnote-ref-4)
5. The incremental increase of the proportion of variability (change in *R*2) between Models 2 and 3 (including organizational growth and two interaction terms) is .47%. Although it is a small *R*2 change, the difference between two models is significant and the interaction effects are significantly estimated in the fixed-effect panel regression model. [↑](#footnote-ref-5)