

Impact of Organizational Characteristics, CEO Education, and Firm Ownership on the Adoption and Effectiveness of High Performance Work System in Vietnam

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Abstract. *In spite of tremendous research on the relationship between HPWS and firm performance, a paucity of them has examined the antecedent of HPWS. Data were collected from CEOs and HRM managers from 311 firms including state-owned, private and foreign invested enterprises. Multiple regression analysis suggests that (1) firm characteristics (firm capital, firm age) and CEO's education were positively associated with the adoption of Ability-Motivation-Opportunity bundles of HPWS, (2) HPWS were positively associated with firm performance, and (3) ownership style moderates the relationship between HPWS and firm performance in different manners. Theoretical and practical implications were discussed.*

Keywords: *high performance work system, organizational characteristics, firm ownership, adoption, Vietnam.*

Introduction

High performance work system (HPWS) plays a critical role in promoting organizations' competitive advantage and enhances their performance (Becker & Huselid, 1998; Bello-Pintado, 2015; Boxall & Macky, 2007; Delery & Shaw, 2001; Huselid & Becker, 1997; Joyti & Rani, 2017; Rabl, Jayasinghe, Gerhart, & Kühlmann, 2014). High performance work system has attracted numerous research in the past two decades focusing on both Western and developed countries (Collings, Demirbag, Mellahi, & Tatoglu, 2010; Bae & Lawler, 2000; Muduli, 2015) and developing and emerging con-

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texts such as India (Muduli, Verma, & Datta, 2016; Kundu & Gahlawat, 2018, Azmi, 2011, Muduli, 2015), China (Sun, Aryee & Law, 2007; Cooke, Cooper, Bartram, Wang, & Mei, 2016), Turkey (Gurbuz & Mert, 2011; Coolings et al., 2010), Malaysia (Lee, Werner & Kim, 2016, Maroufkhani, Nourani, & Boerhannoeddin, 2015) and Korea (Bae & Lawler, 2000; Rhee, Oh & Yu, 2016). In spite of the enormous research, there are four limitations in the current HPWS literature. First, most of the study focuses on testing the relationship between the HPWS and individual and organizational outcomes, while the antecedents of HPWS adoption have been largely overlooked (Qiao, Wang & Wei, 2015). Shijaku, Larraza-Kintana and Urtasun-Alonso (2015, p. 280) argued that “little is still known about the factors that influence HPWS utilization”. Liu, Guthrie, Flood, and Maccurtain (2009) argued that exploring the factors that limit or support the adoption of HPWS is important for both theoretical and practical reasons. Second, while research attention has turned into exploring the mechanism through which HPWS improves firm performance referred to as the “black box”, few studies focused on the potential moderators of the relationship between HPWS and organizational outcomes. Combs et al. (2006), based on meta-analytic findings, reported that a large proportion of variance between studies about the effect size was explained by other factors rather than statistical artifacts. Therefore, Rabl et al. (2014, p. 1011) proposed the need to investigate the important contextual moderators of the HPWS–business performance relationship. Third, research on the impact of firm ownership on the adoption and effectiveness of HPWS is scarce. While some research investigated the HPWS adoption level among different types of organizations (Demirbag, Tatoglu & Wilkinson, 2016; Foley, Ngo & Loi, 2012), few studies examined the impact of firm ownership on HPWS effectiveness. According to Wood and Lane (2012), although HPWS may be adapted into many different settings, sustainability of such systems is dependent on contexts, for example, firm ownership. Fourth, the adoption and effectiveness of HPWS in the developing countries remains a topic for debate (Osman, Ho & Galang, 2011; Horwitz, Kamoche, & Chew, 2002; Muduli, Verma, & Datta, 2016). Bae and Lawler (2010) took evidence from Korea and asserted that the effectiveness of HPWS may be dependent on cultural traits, and that the cultural characteristics distinguish Eastern countries, including Korea, from the United States and other Western countries in terms of HPWS adoptability. Boxall and Macky (2007) argued that some practices that work well in Western context may not be welcomed and thus are much less effective in more collectivist or hierarchical cultures. Horwitz et al. (2002) noticed the differences among Asian countries and suggested that there is no “Asian model” of HRM except some cultural similarities. Paik, Vance and Stage (2000) provided support for divergence perspective in performance management practice among 4 South-East Asian countries (Indonesia, Malaysia, the Philippines, and Thailand) which are in the same “traditional cluster”. In the context of Vietnam, there is a paucity of empirical research on HPWS among firms. The current study aims to address these limitations and contributes to the literature in three important ways.

First, in the current study, firm's registered capital is examined as an antecedent of HPWS adoption. Furthermore, while previous research agreed that firm age was linked with evolution or adoption of HR practices (Guthrie, 2001; Zhang, Akhtar, Bal, Zhang & Talat, 2018), none have explicitly tested the impact of firm age on HPWS adoption, which is one of the foci of this study. Finally, owners or CEOs of the firms may have decisive influence on the adoption of HPWS. If managers know about the impact of HRM practices, they are more likely to adopt those practices (Kroon, Van De Voorde, & Timmers, 2013). CEO educational level is examined in this study as a determinant of HPWS implementation.

Second, although a number of studies has explored the moderating variables of the relationship between HPWS and firms' performance (Fu, Ma, Bosak, & Flood, 2015; Jeong & Choi, 2016; Zhu, Liu, & Chen, 2018), the possible moderating role of ownership types on HPWS-firm performance linkage, however, has not been studied, which signifies the contribution of this study.

Third, as the effectiveness of HPWS might vary among countries, we extend the external validity of such research through exploring the HPWS implementation in Vietnam where a limited scope of HPWS research has been conducted and reported.

Theoretical Background and Hypotheses

High performance work systems

Previous research generally supports a positive relationship between high performance work system (HPWS) and firm performance, however, little consensus exists among researchers regarding the specific practices to be included in HPWS configuration (Sun, Aryee & Law, 2007; Collins & Smith, 2006; Datta et al., 2005). Fortunately, literature indicates that numerous HR practices found in various HPWS studies can be categorized into several sub-dimensions (Jiang et al., 2012; Shaw, Gupta, & Delery, 2005). One of the ways to decompose HPWS practices is through the Ability-Motivation-Opportunity (AMO) framework (Appelbaum, Bailey, Berg, & Kalleberg, 2000; Boselie, Dietz & Boon, 2005; Lepak, Liao, Chung & Harden, 2006). The ability-motivation-opportunity theory proposed that an individual's job performance is a function of three interdependent components: ability, motivation, and opportunity to perform. Ability refers to the individuals' knowledge and skills needed to perform the required tasks. Motivation deals with the individual's intensity and persistence of effort directed to the task. Finally, opportunity to perform is concerned with the work environment in which individuals utilize their abilities and motivation. Recent research on HPWS using the AMO framework has yielded significant results across national and industrial context (Jaskiene, 2015; Pruneda, 2015; Kundu & Gahlawat, 2018; Shah & Beh, 2016). In the current study, HPWS is operationalized in three categories: ability enhancing practices, motivation enhancing practices and opportunity enhancing practices with specific

practices adopted from previous literature (Appelbaum et al., 2000; Jiang et al., 2012; Bello-Pintado; 2015; Delery & Gupta, 2016; Kundu & Gahlawat, 2018). Ability-enhancing practices include selective hiring and extensive training; motivation-enhancing practices contain participative performance appraisal, performance-based compensation and promotion; and opportunity-enhancing practices encompass career support, participative decision-making, and delegation.

Influence of firm characteristics on the use of HPWS

Firm's capital

Although the positive impact of HPWS on firm performance has received support from a wide range of research (Combs et al., 2006; Jiang et al., 2012), there is evidence that the effectiveness of such practices is dependent on the fit between HPWS and organizational characteristics (Datta et al., 2005; Sun et al., 2007; Wu, Hoque, Bacon & Llusar, 2015). Resource is one of the organizational characteristics that may influence the adoption of HPWS by businesses. Previous research reported the differences in the adoption of HRM practices between small and large firms (Wiesner & McDonald, 2001). In their study about HPWS in small firms, Kroon et al. (2012) found that HPWS was adopted to a smaller extent in small firms. Using the resource poverty perspective, Welsh and White (1981) argued that small firms are constrained by the limited availability of financial resources and time, as compared to larger firms. However, by using the term "small firms", Kroon et al. (2012) actually referred to the availability of resources associated with firm size. Similarly, other research advocated that limited resources constrain firms from hiring HR experts to ensure successful implementation of HPWS (Messersmith & Guthrie, 2010; Patel & Conklin, 2012). Huselid and Becker (2011) investigated the influence of micro and macro domains on the designing of HR systems. They supported the importance of aligning HPWS with firms' strategy. Moreover, Huselid and Beck (2011) argued that expenditure on HPWS accounts for a very significant part of a firm's investment, and that most firms do not have adequate time and resources to adopt HPWS for all positions. Kaufman (2010) and Kaufman and Miller (2011) treated HRM as an input in a firm's output function together with capital and labor and found that the marginal return of HRM is contingent upon other inputs, that is, the adoption of HRM is more extensive in capital-rich firms. Therefore, it can be hypothesized that:

H1: *Firms' registered capital is positively associated with the implementation of HPWS including ability-enhancing practices, motivation-enhancing practices and opportunity-enhancing practices.*

Firm age

Literature suggests that firms go through several stages during their development. Moreover, the focus is now on the long-term needs of the organizations. Smith, Mitchell and Summer (1985) reported that as firms move through various stages of develop-

ment, different management skills are needed to address different problems. Organizational growth and development model (Baird & Meshoulam, 1988) proposed that HRM practices, as a component of the organizations, must also change to meet the needs of the organizations. The authors suggested five stages of HRM practices development: initiation, functional growth, controlled growth, functional integration and strategic integration. At the initial stages, HRM practices focus mainly on basic salary and benefit administration and housekeeping. At the growth stages, new HR programs and practices are added into the portfolio such as training, budgeting and management control. Finally, at the integration stages, HRM requires the integration of activities, with the introduction of productivity improvement, change management and succession planning. Baird and Meshoulam (1988) proposed that HRM practices in later stages of development should incorporate previous stages and thus are more complex than in earlier stages. Based on OGD model, Wu et al. (2015) argued that at the initial stage (Stage 1) the owner is mainly responsible for all HR decisions thus limiting the potential gains from introduction of HPWS. At the functional growth stage (Stage 2), because of the increased workforce, the owner-manager may not be able to manage all HR related decisions, the introduction of formal HR systems may be required to coordinate all personnel in the desired way. Therefore, as firms grow, the adoption of HPWS is more likely. In HPWS literature, some authors acknowledged the impact of firm age on the adoption of HPWS practices. Guthrie (2001, p. 184) argued that “firm age was included to control for any advantages associated with increased time for the evolution or adoption of high-involvement work practices”. Similarly, Zhang et al. (2018, p. 6) also stated that “firm age was involved with evolution or adoption of HR practices”. Therefore, we hypothesized that:

H2: *Firm age will be positively related to the adoption of HPWS including ability-enhancing practices, motivation-enhancing practices and opportunity-enhancing practices.*

CEO's education

Research indicated that the owners or CEOs of the firms may have decisive influences on the adoption of HPWS. Colbert, Rynes and Brown (2005) asserted that CEO's lack of awareness of the academic research findings about the positive impact of HRM practices was one of the reasons why many firms ignore the application of HPWS. Reasons for low level of awareness may include information overload that causes top management to undermine keeping up with research findings and the tendency of CEOs to view academic research as impractical and thus look for other sources of information (Offermann & Spiros, 2001). Colbert et al. (2005) proposed that the more the top managers agree with research findings, the greater the likelihood that they put these findings into practice. Kroon et al. (2013) argued that if managers know about the impact of HRM practices, they are more likely to adopt those practices. Colbert et al. (2005) suggested that top managers might gain better understanding of research find-

ings through relational or non-relational information search in which non-relational source of information refers to academic journals or popular business press. It can be expected that higher levels of education like master's or doctoral degree require more extensive information search including non-relational sources, which leads to better understanding of HRM practices. More directly, Graham and Harvey (2002) found that highly educated CEOs are more determined to employ what they learned into management practice. Thus, CEOs with a higher level of education are more likely to adopt HPWS if they understand the potential benefit of these practices.

Previous research has provided support for the positive influence of CEO education on firm performance (Cheng, Chan & Leung, 2010; Darmadi, 2013). Wiersema and Bantel (1992) argued that higher level of education is associated with innovation, openness to change and likelihood of making change in corporate strategy. Herrmann and Datta (2005) suggested that highly educated CEOs are more open to change, have the ability to seek new opportunities, possess higher information processing capabilities. Thus, it can be expected that CEO education can increase the likelihood of HPWS adoption.

In a qualitative research of HPWS adoption in Chinese small firms, Qiao et al. (2015, p. 195) found that owners who hold higher educational degrees (i.e. MBA) tended to put HPWS into practice. The authors also proposed that it could be attributed to the education or management training that the owners had, or to the knowledge in HRM field acquired from readings. Qiao et al. (2015, p. 195) also suggested that future research should focus on the impact of owners' characteristics such as education on HPWS utilization. The third hypothesis is therefore:

H3: *CEO' educational level will be positively related to the implementation HPWS consisting of ability-enhancing practices, motivation-enhancing practices and opportunity-enhancing practices.*

The impact of HPWS practices on firm performance

Literature provides support for the classification of HPWS into three dimensions of ability-enhancing practices, motivation-enhancing practices and opportunity-enhancing practices (Subramony, 2009; Zhang & Morris, 2014; Fabi, Lacoursière, & Raymond, 2015). Ability enhancing practices, including staffing and training, improve the knowledge, skills and ability of the employees, the collective human capital of the staff, which in turn positively influences firm's performance (Subramaniam & Youndt, 2005). Motivation-enhancing practices enhance employee's goal directed efforts and provide them rewards necessary to maintain high levels of performance. Motivation-enhancing practices such as participative performance appraisal, performance-based compensation and promotion would maintain individual's high level of performance, which in turn positively influences organizational outcomes (Purcell & Swart, 2006; Subramony, 2009). Opportunity enhancing practices such as career support, participative decision making, and delegation aim at delegating decision-making authority and facilitat-

ing employee participation. These practices enhance the opportunity to apply learned knowledge and skills, boost employee's self-efficacy, foster flexibility and commitment, and increase team performance by fostering collective belief of effective team-working (Mathieu, Gilson & Ruddy, 2006; Parker, Williams, & Turner, 2006).

Jiang et al. (2012) found that the three components of HPWS were positively related to various measures of organizational outcomes. Jyoti and Rani (2017) tested the influence of each of the A-M-O dimensions on knowledge management and found that all three dimension-wide effects were significant. Kundu and Gahlawat (2018) also explored the impact of A-M-O practice separately and found that all three dimensions of HPWS significantly and positively predicted firm performance. Shin and Konrad (2017, p. 15) used longitudinal data from Canadian firms and concluded that "most of the HPWS components positively predicted productivity". We also hypothesize that:

H4: *Ability, Motivation and Opportunity bundles of HPWS positively influence firm performance.*

The moderating impact of firm ownership on the relationship between HPWS and firm performance

Research in HPWS recognized the influence of organizational context on the effectiveness of HPWS. For example, Datta et al. (2005) proposed that the effectiveness of HPWS was dependent on industry contextual characteristics such as growth, capital intensity and differentiation. Similarly, Combs et al. (2006) meta-analyzed the effect of HPWS on firm performance and concluded that the size of the positive effect was larger in manufacturing firms than in service organizations. HPWS literature also recognized the role of ownership forms. Ownership types have been found to influence the adoption of HPWS in Turkey (Demirbag et al., 2016), in which the level of adoption was higher in subsidiaries of Multinational Companies than in other types of firms. The moderating impact of ownership forms in the HPWS-performance has also been reported. Yalabik, Chen, Lawler and Kim (2008) studied the HPWS and its relationship with organizational turnover in 4 East and South East Asian countries. The authors found that the influence of HPWS on turnover was stronger in locally owned companies than in subsidiaries of Western and Japanese multinational companies. Zhang and Morris (2014) found that ownership types moderated the impact of HPWS on firm performance in China. Specifically, the impact was stronger in State Owned Enterprises (SOE) than in Privately Owned Enterprises (POE), with the effect size smallest in Joint Ventures (JVs).

In Vietnam, the impact of ownership forms on HRM adoption has been recognized (Thang & Quang, 2005; Bartram, Stanton & Thomas, 2009). Kamoche (2001) pointed out the differences in HRM practices adopted by SOEs and Foreign Invested Enterprises (FIE) including Joint-venture companies (JVs) and wholly owned foreign enterprises (WOFEs) in Vietnam in his case study. Specifically, he found that in terms of

recruitment, there were similarities among firms in that they used interview as the only formal method. SOEs, however, stressed discipline and harmonious long-term relationship rather than business outcomes. Managers of FIEs, on the other hand, emphasized individual potential but admitted that the application of Western practices faces challenges from these “selection constrains” popular in SOEs. Zhu et al. (2008) studied 32 enterprises of 4 different ownership forms including SOE, Private-owned enterprise (POE), JV and WOFE. The results indicated that recruitment and selection was decentralized to line managers in almost all JVs and WOFEs while to a lesser extent in SOEs and POEs. The author concluded that such practices as lifetime employment remain strong within the SOE system, which reduces the effectiveness of selective hiring. More recently, Stanton and Pham (2013) found from an interview with a manager of an SOE that SOEs are not attractive to external managers because of low salaries, rigid working conditions and poor working relations. Similarly, Nguyen and Bryant (2004) indicated that POEs were the least desirable employers among types of ownership as perceived by job seekers. These constrains may hinder the outcomes of ability-enhancing practices such as selective hiring.

In terms of training, Kamoche (2001) found that although the importance of training was well documented in all types of firms, FIEs invested more resources in training and management development. The main driver for this came from the expatriate managers who acknowledge the lack of skills in the local country. Training at these companies did not focus only on current required skills such as marketing but also on long-term capacity development program such as MBA programs abroad. Results also provide evidence that employees were more willing to learn when the career path was clearly defined (Kamoche, 2001). In this regard, FIEs are more likely to offer a clearer career path than the other types of firms. In the survey of SOEs in Vietnam, Tran, Fallon and Vickers (2016) reported that promotion did not depend on skills and qualification but was based on people skills and exemplary attitude. Moreover, promotion and appointment may be made by the government, not by the company’s staff. Similarly, according to Webster (1999), private firms were ranked lowest among ownership types due to their instability, lack of job security, few career development and training opportunities. Thus, it can be hypothesized that:

H5a: *Controlling for Motivation and Opportunity enhancing practices, the positive impact of Ability enhancing practices on organizational outcomes will be stronger in FIEs than in SOEs and POEs.*

Previous research in Vietnam provided evidence for diversity among ownership forms regarding the application of performance management system. Kamoche (2001) found that among the four surveyed firms, periodical performance appraisal (PA) was done only at one foreign company. In that company, the management team tried to standardize the evaluation process using 360-degree performance appraisal. On the other hand, performance evaluation at SOEs was influenced by desired social outcomes

such as harmony, and thus the results of performance appraisal were contingent upon agreeableness between the subordinate and the supervisor. The application of performance-pay system in SOEs was also difficult due to the tradition of egalitarianism. Zhu et al. (2008) also found that in all 8 SOEs surveyed, government wage scale was used for wage determination, which limits the use of performance appraisal as a form of salary determination. Government wage scale was also adopted in 3 of the 8 POEs and in none of the FIEs. Survey results by Stanton and Pham (2013) showed that in SOEs, the appraiser-appraisee relationship, lack of PA training and resistance by senior employees prevented PA to be an effective tool to improve the quantity and quality of work performance. Moreover, the use of PA results for promotion, transfer, termination, remuneration was hindered by government's wage systems. Furthermore, managers in SOEs were said to accept low salary in exchange for stable and low competitive working environment. Recently, Tran et al. (2016) reported that SOE employees in Vietnam were not changing themselves to suit with new market-driven system and showed no effort to increase their productivity, mainly due to the lack of performance based rewards and punishment system. They also indicated that employees in SOEs did not want to work, and that they had little motivation to do so with the influence of the old egalitarianism ways of working and low paid systems. Therefore, it is hypothesized that:

H5b: *Controlling for Opportunity and Ability enhancing practices, the positive impact of Motivation enhancing practices on organizational outcomes will be stronger in SOEs than in POEs and FIEs.*

Literature in Vietnamese context claimed that in the state-owned sector, close supervision with a great deal of direction was adopted by most managers to ensure that the work is finished (Quang & Vuong, 2002). Managers were unlikely to consult subordinates' opinions before making decision. Moreover, managers of SMEs were also less willing to provide autonomy and delegation to their staff in work-related issues. Zhu (2005) concluded that JVs and WOFEs tended to flatten the organizational structure and give more autonomy to employees, while SOEs emphasized harmony and egalitarianism. Kamoche (2001) suggested that management practices in SOEs followed traditional approaches based on social hierarchy, obedience, and loyalty to the firm and job security. He also indicated that there was a lack of environment needed for employees to perform. Specifically, he found that employees were reluctant to take risks and utilize new knowledge and skills for fear of failure. It can be expected that with the same level of ability and motivation, giving more opportunity for employees to perform would yield better results when lack of opportunity is prevalent. Therefore, it is hypothesized that:

H5c: *Controlling for Motivation and Ability enhancing practices, the positive impact of Opportunity enhancing practices on organizational outcomes will be stronger in SOEs than in POEs or FIEs.*

Method

The survey was conducted from July to September 2016. Self-administered questionnaires were e-mailed to 700 companies from the list of the enterprise database published by the Vietnam General Statistics Office (GSO). We first made a telephone call to HR managers (or directors) or general managers in these companies and invited them to participate in the HPWS survey. A total 498 enterprises accepted the request and later received the questionnaires sent by us. After one month, there were 343 questionnaires returned by the surveyed firms, with a response rate of about 69%, an acceptable rate for sociological surveys. After eliminating incomplete responses (15) and questionnaires that were not completed by senior executives or the director/ head of human resources function (17 observations), the dataset used for the analysis included responses from 311 companies.

Of the 311 companies, the shortest firm age was 2 years and the longest was 27 years. The average age of the companies in the sample was 12.8 years. The average registered capital of the firms at the time of survey is equivalent to USD 376,000, of which the lowest capital is USD 75,000 and the highest of over USD 220 million. The average number of employees in the survey sample is 94, with the lowest being 9 and the highest 6403 at the time of the survey. In the sample, there were 169 POEs (57%), 49 SOEs (16%) and 93 FIEs (27%).

Measures

High performance work system (HPWS): the instrument asked the manager to respond to the degree to which the practices of HPWS were implemented at their respective companies. Response to these items ranged from 1: “to a very little extent” to 5: “to a very large extent”. In the current study, HPWS was categorized into 3 components: ability-enhancing practices, motivation-enhancing practices and opportunity-enhancing practices. This study adopts HRM practices covering the three components that were used in previous research (Appelbaum et al., 2000; Jiang et al., 2012, Kroon et al., 2013). Ability enhancing practices consisted of 5 items focusing mainly on selective hiring and extensive training. The first two items measured the number of rounds in the hiring process and application-per-placement ratio. The remaining three items concerned the extent of training including budget for training, training for current needs and training for future needs. The reliability for this scale was 0.864.

Motivation enhancing practices referred to the application of participative performance appraisal, fair performance rating, the degree of pay-for-performance, the extent of performance based promotion and competitive compensation. This 5-item scale had good reliability (Cronbach’s alpha 0.733).

Opportunity enhancing practices referred to the degree of delegation at work and the extent of participation in the decision-making process. The scale consisted of 5 items. The first two items measured the degree to which the employees have autonomy

at work through the mechanism of delegation. The next two items concerned the employees' awareness and participation in the decision making process at work. The final items mentioned the support offered to employees by the organization. The reliability for this scale was 0.772.

Firm capital: In the current study, we used the firm's registered capital at the time of survey in thousands of USDs.

Firm age (Age): In this study, the total time in years from the establishment of the companies was used to measure firm age.

CEO's education (Education): CEO's education was measured by the highest degree that the manager achieved with 5= PhD degree, 4= Master's Degree, 3= University/college degree, 2= High school/vocational school diploma, 1 = less than high school and 0= did not go to school. Years of schooling is a convenient and effective variable to measure a person's education. This study chooses education attainment to measure CEO's education because of the following reasons: First, Vietnam's education is arranged on a national level by the Ministry of Education and Training following the typical education system, ranging from primary school to a doctoral degree. The Vietnam Household Living Standards Survey (VHLSS) conducted by the Vietnamese General Statistics Office (GSO) also measures education level using the national level from primary school to a doctoral degree. Second, in Vietnam, people tend to keep working while obtaining a second bachelor's degree, a master's degree or a PhD (e.g., by taking classes at night, after work, and/or weekends). Sometimes, companies pay for their employees to obtain a degree and allow a flexible schedule for them to study while working. Because of the part-time education, it may take longer for them to finish their degrees. Thus years of schooling may not accurately reflect educational attainment. Third, a person in Vietnam may have both a regular and a vocational degree, year of schooling may not reflect their educational level. When a person has a secondary education (or lower) and vocational degree, then the vocational credentials are counted. Otherwise, if a person has both a vocational degree and tertiary education (college, university, and higher), the latter is listed as her educational level. The highest attainment as a measure of educational level has been used in many previous studies both in Vietnamese and foreign contexts (Trinh & Korinek, 2017; Chen, 2018; Choi, Chung, & Truong, 2019; Duc Hong Vo, Loan Thi-Hong Van, Dai Binh Tran, Tan Ngoc Vu & Chi Minh Ho, 2019).

Ownership: In the current study, SOEs were defined as companies in which the state's capital accounts for at least 51% of the share. POEs are privately owned companies, including limited liability enterprises, proprietary firms and joint-stock companies. FIEs are foreign-invested companies, including JVs (companies created by two or more parties, with at least one overseas party, and WOFEs (100% foreign invested companies). Two dummy variables (SOE and FIE) were created to measure ownership, with POE used as reference.

Firm performance: The author could not obtain objective measures of firm performance as the respondents refused to reveal the "confidential" figures. A subjective mea-

sure of overall firm performance was developed for the current study using a three-item scale which asked the manager to give his/her opinions about the overall company performance. An example item was “Overall, my company is performing well”. The reliability of this scale was 0.785.

Results

Descriptive statistics including the mean, standard deviation and correlations between pairs of variables are shown in Table 1. There were significant relationships between pairs of HPWS bundles. Furthermore, significant correlations were observed between firm performance and the 3 bundles of HPWS practices.

TABLE 1: Means, standard deviations and correlations between variables

Variable	Mean	SD	1	2	3	4	5	6
1. Firm age	12.81	4.92						
2. Capital	376	161.54	.12					
3. Education	3.42	.60	-.08	.17**				
4. Ability	3.81	.86	.30**	.48**	.12			
5. Opportunity	4.24	.50	-.03	.25**	.21**	.28**		
6. Motivation	3.97	.60	.02	.22**	.31**	.18**	.37**	
7. Firm performance	3.98	.52	.10	.22**	-.05	.32**	.17*	.16*

Notes: N=311. *, ** Correlation significant at the .05, and .01 levels respectively (two-tailed)

Reliability and validity of the research constructs

TABLE 2: Reliability and validity

Variable	CR	AVE	MSV
Ability	.867	.570	.401
Motivation	.843	.521	.398
Opportunity	.845	.524	.266
Firm performance	.861	.686	.375

CR= Composite Reliability, AVE= Average variance extracted; MSV= maximum shared squared variance

A confirmatory factor analysis (CFA) was performed to test the reliability and validity of the research constructs. The measurement model consisted of four latent variables: Ability, Motivation, Opportunity, and Firm performance. The 4-factor model showed a good fit to the data ($\chi^2=195.1$, $df=120$; CFI= .973; GFI= .934; TLI=.966; RMSEA= .045). The one-factor model (all items) and two-factor model (all HPWS

items and firm performance) were inferior to the 4-factor model ($\chi^2=438.2$, $df=126$; CFI=.726; GFI=.748; TLI=.764; RMSEA=.090 and $\chi^2=312$, $df=125$; CFI=.893; GFI=.857; TLI=.888; RMSEA=.070). Furthermore, any 3-factor model resulting from combination of the 4 constructs (Ability, Motivation, Opportunity, and Firm performance) also showed worse fit indices compared to the proposed model (the best fit indices were $\chi^2=291.8$, $df=123$; CFI=.901; GFI=.900; TLI=.907; RMSEA=.066). In addition, to test the reliability and validity of the measurement model, the loadings for each item and the composite reliabilities (CR) were examined. Item reliability specifies the correlations of the items with their respective construct, which is indicated by the item's loading. As reported in Table 2, the composite reliability values for all latent variables were higher than the cut-off value of 0.70. The average variance extracted (AVE) was calculated to examine the convergent validity of the constructs. Convergent validity refers to the degree to which scores on one scale correlate with scores on other scales designed to assess the same construct. For convergent validity, AVE should be equal or greater than 0.50 and lower than Composite Reliability (CR). As indicated in Table 2, all the AVE scores were above the 0.5 threshold and lower than CR, confirming convergent validity. Discriminant validity is confirmed if average variance extracted (AVE) is greater than maximum shared squared variance (MSV) and average shared squared variance (ASV). Figures in Table 2 showed that the MSV and ASV values were lower than the AVE, thereby confirming the discriminant validity of the constructs.

Common method bias

Because the data were collected from only one source, common-method variance needed to be checked to ensure that the data had no major problem with response bias. The test for checking common-method variance used in this study was Harman's single-factor test, as suggested by Podsakoff et al. (2003). Common method bias is considered to be a problem if one factor contributes more than 50 percent of total variance. All 18 items were inserted in a principal component analysis and forced to load into one factor. Our analysis with one factor solution suggested that this factor accounts for only 28.46 percent of the total variance. Furthermore, more than 50 percent of the items suffered from poor factor loadings that fell below 0.5. This suggests that common method bias is not a serious problem with this dataset.

Hypothesis testing

The first three hypotheses predicted the influence of organizational characteristics such as firm capital, firm age and CEO educational level on the adoption of HPWS by business. The results of the multiple regressions are shown in Table 2.

Hypothesis 1 proposed that firm' capital would have positive influence on the implementation of all three bundles of HR. Results of multiple regression indicated that the firm's capital had significant impact on the implementation of all three bundles of

HPWS: ability ($\beta=.679, p<.001$), motivation ($\beta=.208, p<.01$) and opportunity practices ($\beta=.181, p<.05$). Therefore, the data provided full support for Hypothesis 1.

TABLE 3: **Influence of CEO Education and organizational characteristics on the adoption of HPWS**

Independent	Model 1 Ability enhancing practice		Model 2 Motivation enhancing practice		Model 3 Opportunity enhancing practice	
	Coefficient	VIF	Coefficient	VIF	Coefficient	VIF
Constant	1.020		3.277		7.03	
CEO Education	.094*	1.05	.142**	1.05	.287***	1.05
Firm age	.074**	1.04	.037*	1.04	.044*	1.04
Firm capital	.679***	1.03	.208**	1.03	.181*	1.03
F (3, 307)	42.41***		11.49***		14.88***	
R ²	.293		.101		.127	

Note: N=311, * $p<.05$, ** $p<.01$, *** $p<.001$.

Hypothesis 2 suggested that firm age will have positive impact on the firm's investment on bundles of HRM practices. The figures in Table 3 indicate that with firm capital and CEO educational level controlled, firm age has positive influence on ability enhancing practices ($\beta=.074, p<.01$), motivation enhancing practices ($\beta=.037, p<.05$) and opportunity enhancing bundle of HRM ($\beta=.044, p<.05$). Therefore, H2 was supported by the data.

Hypothesis 3 which predicted that CEO's educational level would positively influence the implementation of all three bundles of HPWS practices also received support from the data ($\beta=.094, p<.05$ for ability), ($\beta=.142, p<.01$ for motivation) and ($\beta=.287, p<.001$ for opportunity).

Analysis results for hypotheses 4 and 5 are detailed in Table 4. In Step 1 of the models, firm performance was regressed on the three bundles of HPWS. The results indicate that all three bundles have significant positive impact on firm performance. Therefore, H4 is supported.

In Step 2 of the models, the moderation effects of firm ownership on the relationship between HPWS bundles and firm performance were analyzed. Model 1 tested the moderating impact of ownership on the link between ability-enhancing practices and firm performance, Model 2 and Model 3 investigated the moderation of firm ownership on the association between motivation and opportunity bundles and firm performance, respectively. The interaction terms between ownership variables and HPWS bundles (FIE, SOE) were entered in the models. The results showed that ability-en-

hancing practices were more effective in FIEs than in POEs ($\beta=.467$, $p<.001$, R square change= 0.028, $p<.05$, effect size = 0.05 larger than Cohen (1988) threshold of 0.02 for small effect). On the other hand, motivation-enhancing practices and opportunity enhancing practices were more fruitful in SOEs than in other firms ($\beta=.324$, $P<.05$ and $\beta=.380$, $p<.01$, respectively). The effect sizes of the interaction terms in the two models were 0.033 and 0.04, respectively, which are larger than the 0.02 threshold for small effect (Cohen, 1988). Therefore, Hypothesis 5 was supported.

TABLE 4: Influence of HPWS on firm performance and the moderating impact of ownership

Variable	Model 1 (H5a)		Model 2 (H5b)		Model 3 (H5c)	
	β (Step 1)	β (Step 2)	β (Step 1)	β (Step 2)	β (Step 1)	β (Step 2)
Step 1						
Ability enhancing	.197*	.178*	.197*	.210*	.197*	.190*
Motivation enhancing	.176*	.189*	.176*	.180*	.176*	.175*
Opportunity enhancing	.526***	.438***	.526***	.499***	.526***	.363***
Step 2						
SOE		-.069		-.063		-.072
FIE		.024		.031		.032
Ability*SOE (model 1)		.202				
Ability*FIE (model 1)		.467***				
Motivation*SOE (model 2)				.324*		
Motivation*FIE (model 2)				.065		
Opportunity*SOE (model 3)						.380**
Opportunity*FIE (model 3)						.247
Step 1, R-square	.422					
Step 1, F (3, 307)	74.702***					
R-square change	.028**		.019*		.022*	

Note: N=311, * $p<.05$, ** $p<.01$, *** $p<.001$. Dependent variable: Firm Performance

Discussion

The results of analysis suggest that organizational capital has profound impact on HPWS application. Implementation of such practices as comprehensive training, pay-for-performance and providing support and opportunity are often accompanied by high costs. Enterprises that have the financial resources are more likely to invest in

HPWS than those with lesser financial capability. The finding was consistent with previous research (de Kok & Uhlaner, 2001; Kroon et al., 2012; Patel & Conklin, 2012). These studies, however, addressed the relationship between the adoption of HPWS and firm size, in which small enterprises were associated with lower level of resources. This study, on the other hand, investigates the direct impact of firm capital on the implementation of HPWS. The findings confirm the model proposed by Kaufman and Miller (2011) in which HPWS was treated as an input in the production function of the firms. The gain in output from HPWS would be higher in firms with higher capital.

Data indicate that CEO's level of education plays an important role in the adoption of HPWS in the Vietnamese context. The findings extent previous knowledge on the positive impact of CEO education on firm performance (Cheng, Chan & Leung, 2010; Darmadi, 2013). The results also add support for the finding by Qiao et al. (2015), who found that CEOs who hold an MBA degree claimed to introduce HPWS. Although the authors labeled this as "coincidence", it could be explained by the fact that education is often regarded as a variable representing knowledge, human capital, or intellectual ability. Highly educated CEOs are more open to change and more likely to seek for new opportunities (Herrmann & Datta, 2005). They tend to have better understanding of the potential benefits of HPWS due to management training or extensive information search by readings. Highly educated CEOs are also more aggressive in applying learned knowledge into practice (Graham & Harvey, 2002). Thus, CEOs with higher degree of education tend to adopt HPWS.

Firm age has been found to influence the implementation of HPWS. The results provide empirical support for the application of OGD model (Baird & Meshoulam, 1988) and extend the finding of Wu et al. (2015). The results also supply supporting evidence for Guthrie (2001) and Zhang et al. (2018), who acknowledge the potential impact of firm age on HPWS implementation and include firm age as a control variable. Enterprises that survived a long period are usually those that have the ability to adapt to the ever-changing environment. Because older enterprises are often large in scale and more complex, formal human resource management practices are needed to improve efficiency and reduce costs. Therefore, enterprises with longer operating times are more likely to apply HPWS.

The impact of HPWS on firm performance was also verified and confirmed in this study. In particular, ability-motivation-opportunity bundles of HPWS had positive impact on firm performance. The results provide more evidence to support the generalizability of the positive relationship between HPWS and firm performance across different contexts. The unique cultural, political and economic characteristics of Vietnam provide insights for the application and effectiveness of HPWS across countries.

Finally, results confirmed the importance of ownership in the HPWS-performance linkage. Previous research acknowledged the difference in HRM practice implementation across ownerships (Demirbag et al., 2016). The current study confirmed that the effectiveness of HPWS also varies across firms of different ownership. The findings were

also in line with previous research in a similar topic (Yalabik et al., 2008; Zhang & Morris, 2014). The results provided support for the configurational view of HPWS, which asserted that the adoption of these practices should be contingent upon organizational characteristics, in contrast to the universalistic view, which suggested that some HRM practices may enhance firm performance in all situations. Rhee et al. (2016) came to a similar conclusion as they found the moderating influence of organizational culture on the relationship between HPWS and organizational outcomes in Korea.

Theoretical contribution

While research on HPWS is abundant in Western context and is getting more popular in other contexts in Asia such as Malaysia, Korea, China and India, similar research in Vietnamese context is extremely rare. To the best knowledge of the author, there is only one research in the topic (Luu, 2019). The research contributes to the current understanding of the impact of HPWS on performance in an emerging economy of Vietnam.

Second, the current research responds to the call for more research effort in identifying the factors that influence HPWS adoption (Liu et al., 2009; Shijaku et al., 2015; Qiao et al., 2015; Lawler, Chen, Wu, Bae, & Bai, 2011). Previous research has identified some firm characteristics such as firm size (Kroon et al., 2012), union coverage (Shin, 2014), country of origin (Foley et al., 2012), and ownership types (Demirbag et al., 2016) as determinants of HPWS implementation. However, few studies examined the role of firm age and firm capital on the adoption of HPWS. Moreover, few studies investigated the influence of owners' characteristics on HPWS implementation, and Qiao et al. (2015) emphasized the importance of these factors for future studies.

Practical implication

CEO's education has been found to influence the application of HPWS. The reason for lack of HPWS implementation could be partly attributed to the lack of awareness about the potential impact of HPWS. Cooperation between businesses and universities, in general, and between academia and managers, in particular, would be of mutual benefit for both parties. In fact, many universities in Vietnam are organizing short courses on management practices or Executive MBA programs for top managers and owners who wish to gain up-to-date knowledge in the management field. Besides, invited lecturers who are top managers and owners can share their experience with next generation management on the application of contemporary management practice, which may improve students' awareness of best practices in management. Vietnamese government has put forward numerous efforts into fostering start-up activities. The results indicate that as firms go through different stages, the adoption of HPWS is beneficial. Owners/managers of newly founded business should also keep themselves updated with advances in management practices such as HPWS.

The effectiveness of HPWS was contingent upon firm ownership, therefore, SOEs, POEs and FIEs can selectively adopt some bundles of HRM practices that have the largest positive impact on firm performance. Because HPWS may incur cost, cost-benefit is an important factor for firms in the implementation of these practices.

Limitation of the current study and direction for future research

The first limitation of the current study was its sample as the companies in the survey may not be the best representatives of the population. While it is estimated that there are over 600,000 enterprises in Vietnam, data were obtained from only 311 enterprises. With a 95% level of confidence and 5% of margin error, the sample size should be at least 384. These weaknesses reduced the generalizability of research findings.

The second limitation was that data were collected only from subjective source, i.e. human resources manager or top management in charge of human resources. The data may be biased because the opinion of these people may or may not reflect the real situation of the firm performance. Application of multiple data sources, both objective and subjective, would be much better. On the other hand, Wall, Michie, Patterson, Wood, Sheehan, Clegg and West (2004) examined the validity of the objective and subjective measures of company performance and confirmed the convergent validity, discriminant validity and construct validity of the subjective measures.

The final limitation lies in the cross-sectional research design. Because it may take time for the application of HPWS to influence performance, cross-sectional design was unable to test this influence. It is difficult to identify the date at which HPWS practices were initially applied. Therefore, longitudinal research may yield more interesting results.

Although this research suggested that registered capital can be a predictor of HPWS adoption, how firms distribute capital should be more important than firms' registered capital in influencing the implementation of HPWS. For example, investment in human capital could be an important determinant of HPWS implementation. Furthermore, if top managers attach greater importance to strategic HRM, firms' capital can have stronger effect on the adoption of HPWS than if top managers attach less importance to strategic HRM. Thus, we can expect that firms' registered capital is more strongly related to the adoption of HPWS for firms that attach more importance to HRM values. These are potential directions for future research.

Conclusion

This study supplements significant empirical support for the link between high-performance work systems and firm performance in the Vietnamese context. Moreover, some organizational characteristics were found to influence the application of HPWS in organizations. Finally, forms of ownership influenced the effectiveness of HPWS in Vietnamese firms.

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