Chunling Zhu, Xiaolong Chen

High Performance Work Systems and Employee Creativity: The Mediating Effect of Knowledge Sharing

Abstract Employee creativity is both the core element of a firm's innovation capabilities and the sources for its growth. To improve an organization's ability to innovate, it is necessary to improve the creativity of its employees. Based on theories from strategic human resource management, creativity and organizational learning, this paper investigates the relationship between high performance work systems and employee creativity and explores the role knowledge sharing plays in their relationship. A questionnaire is designed and administered to a group of part-time executive students in the winter of 2012. Two hundred students are invited to answer the survey questions with 117 valid responses. Data are collected and processed by using statistical regressions. The empirical findings reveal that high performance work systems positively affect knowledge sharing and employee creativity. Knowledge sharing plays a mediating role in the relationship between high performance work systems and employee creativity. Implications for practice and future research are discussed.

Keywords high performance work systems (HPWS), knowledge sharing, employee creativity

1 Introduction

The competitive advantage of a firm comes from its unique resources (e.g., Teece et al., 1997), including leading technology and highly committed employees (e.g., Guthrie, Spell, and Nyamori, 2002). Resources are firm-specific assets that are difficult to transfer among firms because of transactions and transfer costs, and
because the assets may contain tacit knowledge (Teece et al., 1997). Idea generation can be regarded as an important stage in the organizational innovation process (Herrmann and Felfe 2014; Litchfield, 2008). Employees who possess professional knowledge, technology capability, managerial skills are the core of the firm’s innovation (Leonard-Barton, 1992). They are both creators and practitioners of business value system. To improve the innovation ability of firms, employees’ creativity must be stimulated (Amabile et al., 1996).

High Performance Work Systems (HPWS) has been reported to have an effect on employees’ mindsets, behaviors, attitudes, abilities and knowledge, organizations’ communication skills and learning capacity (Shi and Li, 2011). Previous studies on HR management mainly focused on revealing the relationship between HPWS and organizational performance (Batt and Colvin, 2011) in strategic human resource management. Yet the extant literature on the intermediate linkage between HPWS and performance has yielded only limited insights into the influence of the use of HPWS on performance at the organizational level (Lee, 2012; Delaney and Huselid, 1996). Research on employee creativity mainly centers on the effects of high performance work systems on employee satisfaction, commitment, corporate identity and turnover intention (Grant and Berry, 2011; Shalley, 1995; Cummings and Oldham, 1997). To fully understand employee creativity, scholars also investigated the impact of single human resource management practice, such as performance pay (Zhang and Long, 2013), organizational justice (Xie, Wang, Chu, and Huang, 2013), rewards (Xu, 2012) etc. on employee creativity, and examined the mediating effects of self-efficacy of creativity (Zhang and Long, 2013), psychological empowerment, intrinsic motivation and cognitive style (Bock, Zmud, and Kim, 2005). Despite the importance of the causal relationship between these variables, the linkages of HPWS to employee outcomes and hence to organizational performance remain almost entirely untested (Lee, 2012).

While prior studies have advanced our understanding of the role of HPWS in organizational performance, gaps still remain. Although academics in strategic human resource management have developed rich literature on disclosing the linkage between HPWS and organizational performance, few has explored how they are linked to each other and how HPWS is connected to employee creativity. This paper examines the relationship of HPWS and employee creativity, and attempts to explain the mediating effects of employee knowledge sharing. To this
end, it examines the logic of the underlying theories or assumptions and reviews their applicability so as to establish the linkage among HPWS, employee creativity and knowledge sharing. An empirical research is designed to test the mediating role knowledge sharing plays in the relationship between HPWS and employee creativity. Hypotheses are built and tested to broaden our understanding of the relationship between high performance work systems and employee creativity.

2  Theory and Hypotheses

2.1  High Performance Work Systems and Employee Creativity

Since the 1990s, Scholars have observed a significant increase in academic research focused on human resource management (HRM) practices as “bundles” or the use of “high-performance work systems” (HPWS) and their impact on organizational performance (Becker and Huselid, 1998; Mihail, Links, and Sarvanidis, 2013). HPWS is conceptualized “as a specific combination of HR practices, work structures and processes”, which are integrated into “an overall system” in order to “enhance employee involvement and performance” (Snell and Bohlander, 2010). With the new challenges from market liberalization and the adoption of flexible production systems since the 1980s, firms around the world need to face new challenges, such as increasing global competition, managing change and new technology, and developing intellectual capital and containing costs at the same time (Mihail et al., 2013). Improving productivity is the one critical success factor in order to keep up with global competition. Thus, the HPWS model is embraced by organizations investing in employee involvement and participation instead of intense supervision, stable employment instead of job insecurity and fear, and high compensation based on superior performance instead of wage reduction (Snell and Bohlander, 2010).

Some scholars (e.g., Birkinshaw and Hood, 1997) define HPWS as a set of separate but interrelated Human Resources (HR) practices, such as, selection, compensation, training and performance appraisal, which are planned to improve employees’ effectiveness. Employees are no longer considered as commodities to be acquired and replaced in the market place. They become the important strategic resources for a firm to maintain its competitive advantage (Teece et al., 1997).
The essential characteristics of HPWS are the seven key dimensions identified by Jeffrey Pfeffer in his book *The Human Equation* (1998). These are: (1) Employment security; (2) Selective hiring of new personnel; (3) Self-managed teams and decentralization of decision making as the basic principles of organizational design; (4) Comparatively high compensation contingent on organizational performance; (5) Extensive training; (6) Reduced status distinctions and barriers, including dress, language, office arrangements, and wage differences across levels; and (7) Extensive sharing of financial and performance information throughout the organization.

HPWS helps guide employee participation in a firm’s management in an orderly manner and invest for employees’ development in the long term. At the same time, they protect the short-term interests of employees and motivate the employees’ performance, which make employees willing to share weal and woe with firms (Lee, 2012; Delaney and Huselid, 1996). The long-term investment and job security for employees, in return, form a high mutual input between an organization and its employees and inspire the behavior of knowledge sharing (Tsui, Pearce, and Porter, 1997). This set of human resource management model can fit well with corporate strategy and can be an opportunity to promote employees’ knowledge accumulation and skill acquisition. Eventually it brings the better performance, high growth and high development for firms (Mihail et al., 2013).

Research on high performance work systems in academia has yielded the following conclusions: first, high performance work systems consist of many unique human resource practices (Pfeffer, 1998; Becker and Huselid, 1998; Su, 2010; Lee, 2012); second, high performance work systems originate from corporate strategies and serve the goal of achieving corporate strategies (Tsui et al., 1997; Becker and Huselid, 1998; Guthrie, 2001); third, employees are at the core of high performance work systems. A firm enhances its performance through improving employees’ knowledge structure and technical skills (Delaney and Huselid, 1996; Tsui et al., 1997).

Views on creativity are varied. Personality traits theory believes that creativity refers to a special personality trait of some people (Amabile, 1997). The research focus is on the discovery of these potential personalities (Woodman, Sawyer, and Griffin, 1993). The process theory tends to explore the process of generating new ideas. They think that creativity is the process of individual’s discovering and
expressing new ideas (Leonard-Barton and Swap, 1999). Researchers in favor of results theory emphasize the generation of novel, potentially valuable ideas, and focus on the ideas themselves. These ideas are useful for product innovation, methods improvement and process optimization (Zhou and George, 2001). The ability theory suggests that creativity is the capacity of the individual to create new and applicable products (Sternberg and Lubart, 1991). They are trying to combine the theory of personality trait and the theory of results. We believe that creators are those with creation abilities and the creation process is the path of realizing the creation abilities. Thus, the ability to create new, potentially valuable ideas is the core element of creativity.

Amabile (1997) explains that creativity has three decisive components: staff expertise, creative thinking, and task motivation. He proposes that an organization affect the three decisive components of creativity through influencing organizational motivation of creation, organizational resources and management practice. The higher the three decisive components are, the better the level of fitting is, and the higher employee creativity will be. Matching with organizational strategy, HPWS includes many single human resource management practices.

Chinese scholars reveal that dimensions of high performance work systems in Chinese context which include job competition and discipline management, results-oriented assessment, strict recruitment, employee participation in management, training, salary management, internal labor market, and information sharing (Su, 2010). It should be pointed out that the human resources management practice along each dimension is not isolated, but closely linked and mutually coordinated.

For example, strict recruitment means that organizations will seek employees whose self-traits are closely linked to organizational characteristics (Epitropaki and Martin, 2005) and ensure that the selected employees have creative thinking abilities. Strict screening process also represents the maximum degree of human-position matching. Employees have a strong sense of identity for the position and hold a positive attitude towards the tasks to be completed. Extensive training is an investment in human capital. It can directly enhance staff expertise and creative thinking skills. Based on the principle of reciprocity of social exchange theory, the staff will not harm the benefit of his partner (Gouldner, 1960). They will produce a positive working attitude in return.
The internal labor market within an organization provides a wide range of choices of occupation and more promotion opportunities for employees, together with job competition under the management of strict discipline (Cummings and Oldham, 1997). Employees can obtain occupational development through both their own efforts and the fair procedures. Through voluntary efforts, employees can quickly accumulate expertise and get the skills of creative thinking (Guthrie et al., 2002). At the same time, bright prospects for development and extensive internal transfer opportunities motivate employees to connect the organizational success to personal occupational success (Mael and Ashforth, 1992). Hence, they become even more actively engaged in their work.

Results-oriented assessment brings objective and justice perception to employees. This will establish employees’ trust and affective commitment for the organization (Batt, 2002). Organizational affective commitment can induce positive intrinsic motivation and promote the acquisition of expertise and creative thinking skills. The salary management awards employees who complete the task or reach the goal, which have a direct effect on intrinsic motivation of employees.

Information sharing (Lu and Liang, 2009) can make it easier for employees to access the information needed in personal work or tasks. It will boost their confidence to complete the task and stimulate task motivation. Meanwhile, the staff can better understand the situation and development of organization. This facilitates the establishment of trust and timely adjustment of expertise. Employee participation in management will enhance their awareness of ownership and create high-level organizational identity (Bock et al., 2005). It also strengthens and exercises their expertise, trains their creative thinking skills and stimulates task motivation.

Hence, high performance work systems have a positive role in promoting three key components of creativity: staff expertise, creative thinking skills and task motivation. The higher level the three aspects are, the higher the level of employee creativity will be. Yet few studies empirically test this assumption. Drawing on these considerations, we propose:

**Hypothesis 1:** High performance work systems positively affect employee creativity.
2.2 High Performance Work Systems and Knowledge Sharing

High performance work systems effectively influence employees’ perception, attitude, and behavior by integrating different human management practices such as internal labor market, employee participation in management, and results-oriented assessment (Becker and Huselid, 1998; Mihail et al., 2013). On one hand, high performance work systems in the Chinese context emphasize the long-term relationship with employees and motivate them through organizational climate in which employees identify with organizational goals (Tsui et al., 1995). On the other hand, they guard employees’ short-term interests by ensuring that employees obtain the corresponding status, honors, and rewards. Therefore, high performance work systems motivate employees’ behaviors of bringing more benefits to the organization (Wood and Menezes, 1998). High performance work systems can be one type of organizational strategy for managing employee relations. All activities included are safeguards of employees’ interests and investment to their long-term development, which inspires knowledge sharing behaviors between employees and organization (Tsui et al., 1997).

From the perspective of market exchange, knowledge can be traded as a valuable commodity. Only when the knowledge owner’s perceived expected return is greater than the cost (which can be a teaching effort) can he be willing to exchange and share knowledge (Davenport and Prusak, 1998). This view is consistent with the “rational man” hypothesis which emphasizes individualized pursuit of maximized self-interest and can become the theoretical basis to build knowledge-sharing mechanism. From the view of employees’ interaction, participants share knowledge through formal or informal interaction (skills, experience, and know-how, etc.) under institutional framework (Kim and Lee, 2006). From the perspective of organizational learning, knowledge sharing is both a learning process and the creative process instead of being a simple process of knowledge transfer. To complete the whole process, knowledge owners need to help others to learn and to internalize the knowledge acquired, and eventually develop the ability to move (Senge, 1998). Some scholars regard the sharing of knowledge as the performance of organizational citizenship behavior (Bock et al., 2005). They hold the belief that knowledge sharing is voluntary, but not necessarily spontaneous.

Some studies show that there lies a relationship between knowledge sharing
behaviors and high performance work system. A lot of scholars study the effect of high performance work systems on the knowledge sharing behavior, including performance evaluation (McDermott and Dell, 2001), training and development (Bock et al., 2005), compensation incentives (Bartol and Sirvastava, 2002). In an empirical research, Collins finds that organization social atmosphere plays a mediating role in the relationship between high commitment work system and knowledge sharing behavior (Collins and Smith, 2006). Other studies also show that commitment of human resources practice significantly affect knowledge sharing, and social capital within the organization partially mediates the relationship (Yuan, He, and Peng, 2010). The perception of organizational support mediates the relation between developing human resource practice and knowledge sharing behavior as well as turnover intention (He, Yuan, and Peng, 2011).

Strategic human resource management theory believes that the human resource management practices as a whole affect employees’ abilities and behaviors (Delaney and Huselid, 1996), including knowledge sharing behaviors. We hypothesize:

**Hypothesis 2:** High performance work systems is positively related to knowledge sharing.

### 2.3 The Mediating Role of Knowledge Sharing

When numerous studies confirm that HPWS has a positive impact on organizational performance, scholars consider the question of how HPWS influences organizational performance. A number of frameworks have been established to further our understanding in this area (Becker and Huselid, 1998; Mihail et al., 2013). In this study, we believe that corporate strategy can drive top managers to design and implement a set of effective human resources management system to enhance knowledge sharing and to improve staff creativity, which will further propel the enterprise productivity, creativity and staff satisfaction. Thus it can develop and maintain its competitive advantage, and ultimately improve a firm’s performance. That is to say, high performance work systems affect a firm’s performance through a series of paths that inevitably cover the individual level variables.

Knowledge sharing is the interactive process of knowledge in a group, a team or an organization through specific channels within institutional constraints
(Yuan et al., 2010). This interactive process also represents the process of learning and creating knowledge, accompanied by knowledge transformation, diffusion and memorization (Collins and Smith, 2006). Knowledge sharing makes individual knowledge externalized and socialized. Other employees in the enterprise can take the opportunity to acquire and internalize their knowledge. The members in an organization can increase the accumulation of knowledge and experience through knowledge sharing with each other. So they can improve their ability and be more capable of their position (Senge, 1998). Some explicit knowledge can be encoded gradually to become organizational knowledge. In line with this, knowledge sharing not only promotes personal performance, but also brings about improved organizational performance.

Researchers have found that knowledge and skills are important factors of creativity, (Sternberg and Lubart, 1991; Woodman et al., 1993; Amabile, 1997). The existing research has proved that knowledge sharing is linked to employee creativity (Khazanchi and Masterson, 2011). Some Chinese scholars point out that knowledge contribution and knowledge collection play a role in the promotion of employee creativity (Wang, Zhu, and Wang, 2009).

Knowledge sharing behavior can give information receiver new knowledge and new skills. Based on the principles of reciprocity of social exchange theory, the receiver will provide positive feedback to the contributors (Khazanchi and Masterson, 2011). And in the work environment, the receiver feedback is likely to be other knowledge, skills or experience. Then contributors become the recipients of new knowledge. This encourages a virtuous cycle in which knowledge sharing behavior continues to occur. In the process of knowledge sharing, contributors and the receivers must have thoughts to exchange, which can broaden each other's knowledge horizons. This reciprocal process generates new ideas (Lu and Liang, 2009). At the same time, intensive knowledge sharing among employees leads to each other’s growing information and experience accumulation (Quinn et al., 1996).

Therefore, employees knowledge sharing continues to promote the transfer and diffusion of knowledge and skills and constantly collide with new ideas. So employee creativity is constantly stimulated. Hence, high performance work systems can promote knowledge sharing to improve the creativity of employees. Therefore, we propose:

**Hypothesis 3:** Knowledge sharing plays a mediating role in the relationship
between high performance work systems and employee creativity.

3 Research Methods

3.1 Variables and Measures

**Independent Variable.** In order to measure the high performance work systems, we adopt the operationalized scale from Su (2010) with appropriate adaptation. Based on the previous literature and combined with the analysis of interviews on human resources manager and newspaper magazine code, Su develops a scale of 25 items to assess high performance work systems in line with Chinese context. The original scale consists of 28 items, and the reliability test score reaches 0.864. All scale items are rated using a six-point response format anchored by 1 (strongly disagree) and 6 (strongly agree). These items are about a firm’s systematic internal training materials, training procedures, strict process in recruiting new employees, promotion and performance based pay. These questions form employees’ concerns and can be perceived by any individual in a firm.

**Mediating Variable.** Some scholars believe that knowledge sharing can be used as one whole concept while others divide knowledge sharing into knowledge sharing content, knowledge sharing scope and knowledge sharing effects to facilitate further research. According to the research problem and purpose, we adopt the eight-item measure developed by Lu (2006). This knowledge sharing behavior scale tests an employee’s initiative and willingness to teach co-workers related knowledge or share his or her work experience with others without any reservation.

**Dependent Variable.** Creativity refers to an individual’s ability to create new and potentially valuable ideas. In the field of organizational behavior, employee creativity is generally considered to be of a single dimension (Amabile et al., 1996; Zhou and George, 2001). This study also takes it as a single dimension measurement. The original scale developed by Zhou and George (2001) has the reliability test score of 0.96. With reference to their work, we form the employee creativity measure for this study, which includes seven items testing an individual’s ability to generate creative ideas, to come up with new problem solving solutions, or to make detailed progressive plans to make sure the implementation of new ideas.

**Control variable.** They include those at the enterprise level and the individual
level. The control variables at enterprise level are the firm’s age, size, ownership
type, area, listed or not, high-tech enterprises or not. The control variables of
individual level include gender and work experience.

3.2 Samples and Data

The questionnaire for this study was drafted in Chinese and modified several
times after inviting business executives to check each item carefully to ensure an
accurate understanding. We administered the survey to part-time executive
students at two universities in Beijing during the period from October to
November in 2012. The research team distributed questionnaires to students who
have classes on weekends. During the class break, the team instructed all
respondents on how to answer each question and guided the whole response
process. A total of 200 questionnaires were sent out, and 168 students returned
the completed survey, among which 51 were found to be ineligible due to
incompletion of the survey instruments. Our final sample size is 117, which
represents a response rate of 58.50%.

Among our respondents, 34.19% work in state-owned enterprises, 40.17% in
private enterprises, and 25.64% in foreign enterprises. 52.14% are males. 51.12%
come from small and medium-sized firms.

4 Analysis and Results

4.1 The Reliability and Validity Test of Variables

Reliability is an indicator to measure the consistency, stability, and reliability of
the evaluation results. In the empirical study, we selected Cronbach’s $\alpha$
coefficient to evaluate the reliability of Likert type scale. Specifically, the value
of Cronbach’s $\alpha$ is greater than at least 0.7. The greater the value of Cronbach’s $\alpha$
is, the higher the reliability of the scale is. Table 1 shows the results of reliability
test of the core constructs of this paper.

From Table 1 we can see that the Cronbach’s $\alpha$ coefficients of high-
performance work system, knowledge sharing and employee creativity are 0.937,
0.907 and 0.906 respectively, greater than 0.9. The reliability of the research
instrument can be accepted.
Table 1  Summary of Variables Reliability

<table>
<thead>
<tr>
<th>Variables</th>
<th>Number of Tested items</th>
<th>Cronbach's coefficient</th>
</tr>
</thead>
<tbody>
<tr>
<td>HPWS</td>
<td>25</td>
<td>0.937</td>
</tr>
<tr>
<td>Knowledge sharing</td>
<td>8</td>
<td>0.907</td>
</tr>
<tr>
<td>Employee Creativity</td>
<td>7</td>
<td>0.906</td>
</tr>
</tbody>
</table>

*Note.* HPWS = high performance work systems.

In this paper, we choose exploratory factor analysis method to analyze structural reliability because our research focus is to identify underlying relationships between measured variables. If the research is intended to develop a scale, then we should use exploratory factor analysis first before moving on to confirmatory factor analysis. Before analysis we need to conduct KMO samples measure and Bartlett sphere to test data. Table 2 gives cumulative explained variance items of concepts to illustrate the structure validity.

Table 2  Summary of Variables KMO and Bartlett Sphere

<table>
<thead>
<tr>
<th>Variables</th>
<th>KMO Score</th>
<th>Bartlett Sphere Test</th>
<th>Accumulative Explained Variance</th>
</tr>
</thead>
<tbody>
<tr>
<td>HPWS</td>
<td>0.881</td>
<td>0.000</td>
<td>68.892%</td>
</tr>
<tr>
<td>Knowledge sharing</td>
<td>0.864</td>
<td>0.000</td>
<td>62.107%</td>
</tr>
<tr>
<td>Employee Creativity</td>
<td>0.857</td>
<td>0.000</td>
<td>64.443%</td>
</tr>
</tbody>
</table>

*Note.* HPWS = high performance work systems.

The significance level of the value of KMO and Bartlett test of three constructs can satisfy the requirements of the exploratory factor analysis. The cumulative explained variances were 68.892%, 62.107%, 64.443% respectively, which indicate high construct validity.

4.2 The Descriptive Statistics of Variables

By analyzing the independent variables, mediating variable, dependent variables, control variables and standard deviation as well as Pearson correlation coefficient, we find that the average age of the enterprise is 26.91 years, the average size is 23, 683 (persons), the whole sample enterprise scale is relatively large. In addition, the average value of high performance work systems was 3.93, the average value of knowledge sharing is 4.89, and average value of employee creativity is 4.45. Compared to the maximum value of 6, the level is still high.
<table>
<thead>
<tr>
<th>Variable</th>
<th>Average</th>
<th>S.D.</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
<th>11</th>
<th>12</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Firm age</td>
<td>26.91</td>
<td>70.01</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Firm size</td>
<td>23,693.57</td>
<td>1.01E5</td>
<td>0.897**</td>
<td>1</td>
<td></td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>3. State-owned</td>
<td>0.34</td>
<td>0.48</td>
<td>0.030</td>
<td>-0.033</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. Private firms</td>
<td>0.40</td>
<td>0.49</td>
<td>-0.186</td>
<td>-0.154</td>
<td>-0.591**</td>
<td>1</td>
<td></td>
<td></td>
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<td></td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. East area</td>
<td>0.87</td>
<td>0.34</td>
<td>-0.006</td>
<td>0.064</td>
<td>-0.2097</td>
<td>0.001</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
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<td></td>
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</tr>
<tr>
<td>6. Listed firms</td>
<td>0.43</td>
<td>0.50</td>
<td>0.164</td>
<td>0.238*</td>
<td>0.028</td>
<td>-0.207*</td>
<td>-0.028</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>7. High-tech firms</td>
<td>0.41</td>
<td>0.49</td>
<td>-0.080</td>
<td>-0.017</td>
<td>-0.418**</td>
<td>0.096</td>
<td>0.216*</td>
<td>0.082</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8. Gender</td>
<td>0.53</td>
<td>0.50</td>
<td>-0.073</td>
<td>-0.116</td>
<td>0.035</td>
<td>0.029</td>
<td>0.046</td>
<td>-0.045</td>
<td>-0.149</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>9. Work years</td>
<td>4.23</td>
<td>4.54</td>
<td>0.011</td>
<td>-0.022</td>
<td>0.026</td>
<td>-0.112</td>
<td>0.085</td>
<td>0.043</td>
<td>0.124</td>
<td>-0.014</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10. HPWS</td>
<td>3.93</td>
<td>0.84</td>
<td>0.030</td>
<td>0.049</td>
<td>-0.045</td>
<td>-0.032</td>
<td>-0.028</td>
<td>0.187</td>
<td>0.017</td>
<td>-0.125</td>
<td>0.108</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>11. KS</td>
<td>4.89</td>
<td>0.72</td>
<td>-0.033</td>
<td>-0.056</td>
<td>-0.147</td>
<td>0.063</td>
<td>0.259**</td>
<td>0.008</td>
<td>-0.071</td>
<td>-0.084</td>
<td>0.096</td>
<td>0.113</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>12. Creativity</td>
<td>4.45</td>
<td>0.78</td>
<td>-0.107</td>
<td>0.012</td>
<td>-0.185*</td>
<td>0.054</td>
<td>0.133</td>
<td>0.027</td>
<td>0.113</td>
<td>0.048</td>
<td>0.118</td>
<td>0.192**</td>
<td>0.535**</td>
<td>1</td>
</tr>
</tbody>
</table>

*Note:* **p < 0.01; *p < 0.05; two-tail tests; HPWS = high performance work systems; and KS = knowledge sharing.
As shown in Table 3, we find that high performance work systems have significant positive correlation with employee creativity. In addition, knowledge sharing is positively related to employee creativity, and high performance work systems are positively related to knowledge sharing, which are in accordance with the our hypotheses.

4.3 Tests for Hypotheses and Discussions

According to the aforementioned theoretical analysis, hypotheses tests should include the test of main effect and the test of mediating effect. The test of the intermediary effect needs to meet the following requirements (Baron and Kenny, 1986): First, the independent variable has a significant influence on the dependent variable; Second, the independent variable has a significant impact on the intermediary variable; Third, the intermediary variable has significant effects on the dependent variable; Fourth, when we control mediating variables, if the dependent variable is not significantly affected by independent variables, then the intermediary variable fully mediates the relationship; However, if the dependent variable is significantly affected by independent variables, but the impact is insignificant, the intermediary variable then partially mediates the relationship. Thus, this test contains the following steps.

**The first step:** we use hierarchical regression method to verify the existence of main effect, namely, to test whether the hypothesis 1 is established.

**The second step:** we verify whether the relationship between the independent variable and the mediating variables is established, which is to test the hypothesis 2.

<table>
<thead>
<tr>
<th>Table 4</th>
<th>Results of Hierarchical Regression Analysis</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Employee Creativity</td>
</tr>
<tr>
<td></td>
<td>Model 1</td>
</tr>
<tr>
<td>Control Variables</td>
<td></td>
</tr>
<tr>
<td>Firm age</td>
<td>0.206</td>
</tr>
<tr>
<td>Firm size</td>
<td>−0.380</td>
</tr>
<tr>
<td>State-owned</td>
<td>−0.060</td>
</tr>
<tr>
<td>Private firms</td>
<td>−0.033</td>
</tr>
<tr>
<td>East areas</td>
<td>0.038</td>
</tr>
<tr>
<td>Listed firms</td>
<td>0.104</td>
</tr>
</tbody>
</table>

*(To be continued)*
High Performance Work Systems and Employee Creativity

(Continued)

<table>
<thead>
<tr>
<th>Employee Creativity</th>
<th>Knowledge Sharing</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Model 1</strong></td>
<td><strong>Model 2</strong></td>
</tr>
<tr>
<td>High Tech firms</td>
<td>0.021</td>
</tr>
<tr>
<td>Gender</td>
<td>0.013</td>
</tr>
<tr>
<td>Years of Work</td>
<td>0.195</td>
</tr>
<tr>
<td>Independent V</td>
<td></td>
</tr>
<tr>
<td>HPWS</td>
<td>0.303**</td>
</tr>
<tr>
<td>Mediating V</td>
<td></td>
</tr>
<tr>
<td>ZSGX</td>
<td>0.521**</td>
</tr>
</tbody>
</table>

$\Delta F$ | 0.979 | 8.304** | 32.284** | 27.650** | 1.707 | 7.004* |
$R^2$ | 0.092 | 0.172** | 0.331** | 0.375** | 0.150 | 0.214* |
$\Delta R^2$ | 0.092 | 0.080** | 0.239** | 0.203** | 0.150 | 0.064* |

Note: ** $p < 0.05$; *** $p < 0.01$; *two-tail tests; HPWS: high performance work system.

The third step: we test whether the mediating variable has significant effects on the dependent variables, and then add the mediating variables in the first step to test the relationship between independent variables and dependent variables, namely testing hypothesis 3.

In regression analysis, the first step is to add the control variable to form model 1. We add the variable of high performance work systems (HPWS) in the second step, to get model 2. As shown in Table 4, after adding variables, explanation power of the equations increased significantly, which indicates that high performance work systems have a significant positive effect on employee creativity ($\beta = 0.303, p < 0.01$). Hypothesis 1 is verified.

Now we need to separately check the influence of independent variable on the mediating variable and the dependent variable, and the influence of independent variable on dependent variable when the mediating variable is controlled. In order to verify the influence of HPWS on knowledge sharing, knowledge sharing is used as the dependent variable. The first step is to add the control variables to form model 5; the second step is to add high performance work systems to form model 6. Results show that, after adding independent variables, the explanation power of the equations is significantly enhanced. The independent variable has a significant positive impact on the mediating variable knowledge sharing ($\beta = 0.271, p < 0.05$). Hypothesis 2 is supported.

In order to test the effect of knowledge sharing on employee creativity, this
paper use employee creativity as the dependent variable. The first step is to add control variables shown in model 1. The second step is to add the mediator variable of knowledge sharing shown in model 3. Results show that, after adding the knowledge sharing, the beta coefficient variables of the influence of knowledge sharing on employee creativity is 0.521 and is significant at the $p < 0.01$.

After meeting all the prerequisites of the mediating effect, this paper uses employee creativity as the dependent variable. The first step is to add all controlled variables shown in model 1. Second, add high performance work systems (HPWS) as independent variable shown in model 2. Third, add the mediator variable of knowledge sharing to form model 4. Results show that, after joining the knowledge sharing, equation explanation power is significantly enhanced while the positive effect of high performance work systems on employee creativity is no longer significant ($p > 0.05$). Therefore, knowledge sharing plays the mediating role in the effect of high performance work systems on employee creativity. Thus, hypothesis 3 is supported.

5 Discussions and Future Research

In the present study, we seek to explore the relationship between high performance work systems and employee creativity and the mediating role of knowledge sharing. Through analyzing sample data, this paper draws the following conclusions: high performance work systems have significant positive effects on knowledge sharing and employee creativity. Knowledge sharing plays the mediating role in the relationship between HPWS and employee creativity.

5.1 Theoretical Implications

This paper contributes to the literature mainly in the following aspects: First, the existing literature rarely discusses the influence of human resource management practice system on employees’ creativity. The findings from this study provide some thoughts for future research in this area. Second, the existing research on the mediating effect of human resource management practice on employee creativity includes intermediary variable of self-efficacy of creativity, psychological empowerment, intrinsic motivation and cognitive style. The efforts to examine the issue from the perspective of knowledge sharing help fill the gap
in research. Third, this paper uses high performance work systems scale designed by Chinese scholars based on the understanding of Chinese context. The test items not only include western commitment-oriented high-performance work practices, but also have some local control-oriented human resource practices, which is more suitable for Chinese management practice research.

5.2 Managerial Implications

Based on findings from this research, we put forward the following advices for firms to cultivate and stimulate the creativity of employees. First, managers should recognize that employee creativity is the driving force of corporate development. If we want to understand the connotation and the dimensions of the high performance work systems, we should take active measures to establish a high performance work systems, and to establish corresponding system according to the specific situation of enterprises.

Second, enterprises should learn to leverage the system of human resource management practices to improve employee creativity. For example, implement strict employee recruitment, choose candidates who identity with organizational values and have the required expertise and thinking skills. Some effective measurement tools, such as psychological test and personality test etc., can be used to aid this process when necessary. For those who are recruited, firms should timely organize related training to enhance their expertise and creative thinking skills. Reasonable internal job rotation mechanism should be designed to ensure that the employees have the opportunity to choose suitable jobs. They should use the results-oriented assessment and design clear assessment indicators to ensure that employees can get competent job through a fair procedure. Scientific compensation management should be implemented to provide staff with competitive salary and guarantee high income of key personnel. It is necessary to offer timely feedback to employees about the personal and organizational information so that employees can adjust themselves to meet the requirements of enterprises. More opportunities should be created to get employees involved in decision-making and problem solving activities so as to cultivate their sense of ownership, and continuously improve their creative skills.

Third and last, enterprises should pay attention to the inherent process of high performance work systems on employee creativity and create conditions to
encourage knowledge sharing. Knowledge sharing behavior is a typical kind of organizational citizenship behavior, the degree of implementation of it is totally dependent on the individual voluntary. Therefore, enterprises should develop and use a variety of incentives and technical means to ensure the smooth and effectiveness of knowledge sharing behavior. They should guide the knowledge sharing participants to distinguish the nature of knowledge, the channels and methods suitable to complete the process of knowledge sharing, create organization atmosphere of encouraging individuals knowledge sharing, and support knowledge sharing behavior.

5.3 Limitations and Future Research

This study has limitations that should be addressed by further research in the future. In our study, we use self-report instruments to collect data and to evaluate both the antecedents and outcome variables from a single source of respondents, which is very likely to cause a methodological issue termed common method variance (CMV). Such CMV will inappropriately inflate the relationship between variables that we investigated, resulting in an increase of statistical significance. This is caused by the MBA class data collection approach. In the future, more respondents from the same company will be invited to avoid the problem of the common method variance. For assessing the dependent variable, creativity measure, respondents’ supervisors will be asked to help evaluate the respondents’ creativity instead of using self-reported creativity.

Second, due to the availability of respondents, the data collected mainly come from firms in Beijing. Firms in other areas should be invited to participate in the survey to increase the significance of research findings. Further studies should be based on a larger sample, preferably in more than one city or more than country.

Last, in fact, many other external and internal factors will also influence employee creativity to a large extent. Because of the limited aims of our study, this research is unable to integrate all the variables into our analytic framework, which could be a fresh start for the future research.

References


