

# Testing a Model of Strategic HRM in the Chinese Software Industry

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## *ABSTRACT*

This study tests a strategic HRM model by examining the relationship between HR practices and perceived firm performance in 39 software firms in China. Due to the small sample size, Partial Least Squares modelling was used to test the hypotheses as PLS was considered to be the most appropriate tool in explaining path modelling in small sample size. We found that the effectiveness of HRM can be explained by the paths from the perceived effectiveness of HR practices such as hiring and performance appraisal. The path from HR department effectiveness was positively linked to critical success factors, which led to perceived firm performance. Critical success factors mediate the relationship between the effectiveness of HR practices and firm performance. Research and practical implications will be discussed.

*Keywords:* strategic HRM, China, Software industry, Perceived firm performance

The People's Republic of China (PRC) has been set apart from the Western world due to the huge gaps in social ideology, political structure and levels of economic development. With the commencement of Deng's economic reform, great changes happened at the national, industry, organizational, and individual level. With the entry to WTO further pushes China into a new series of changes, especially for business organizations. The way how people are organized and managed in the workplace had to be changed in order to meet the above changes.

The information technology (IT) industry has been one of the fastest growing sectors in China. The industry has been acknowledged as one of Asia's largest PC markets (Warner, 1999). According to the Ministry of Information Industry, annual industry sales revenue reaches RMB 2655 billion, with an annual growth rate of 38%. The Chinese Government has recognised the importance of the IT industry, especially that of the software industry as critical in contributing to economic success (China 10<sup>th</sup> Five-Year Plan (2001-2005) cited in Saxenian (2003, 1). As reported in Yang, Ghauri, and Sonmez (2005, 67) the software industry employs over one million of employees and this represents an increase of 89 percent since 1998. Bartlett and Ghoshal (2002: 34) noted that "human, not financial, capital must be the starting point and ongoing foundation of a successful strategy".

It is widely acknowledged that the industry relies on human assets as the critical source of competitive advantage (Yang, Ghauri, and Sonmez, 2005; Saxenian, 2003). Yang and colleagues noted that 'in the short term, China faces a shortage of 'versatile talents with both technological and managerial ability, and system analysis and design skills' (2005, 67). Saxenian (2003, 32) citing figures from the China Software Industry Association, reported that there is big shortage of qualified Chinese applicants and part of the reason is caused by the brain drain of Chinese IT graduates going abroad (e.g., USA) to pursue higher degrees. A recent article in the China Daily HK Edition (2003) reported that Zhang Zhihong, the head of the games subsidiary of Kingsoft Software Co Ltd in China acknowledged the lack of qualified talents as his company's barrier in becoming one of the biggest games developers in China (Anonymous, 2003). In light of this, HRM is essential for the success of software development firms as these firms employ workers who are knowledge intensive and for these firms to be competitive, they have to implement HRM systems which will attract, retain and reward these scarce human capital.

Scholars such as Warner (2003: 29) observed a trend of convergence in its HRM in China. Traditional personnel management (PM) practices were increasingly replaced by market-oriented HR practices. However, most of the studies on HRM in China tend to adopt a comparative approach as most studies tend to examine the different choice of HRM practices in firms with different ownership structure, such as foreign versus state-owned enterprises (e.g., Zhu & Dowling, 2001). With the exception of Warner (1999), few studies adopt an industry focus to examine the nature of HRM.

Research has suggested that Chinese IT workers are quite similar to those in the USA. King and Bu's (2005, 46) study on Chinese IT recruits conclude that they hold similar beliefs to those in the USA on employer-employee obligations, including 'provision of high pay, job autonomy, long-term job security, financial reward for obtaining IT certificates, exciting projects and opportunities to work on leading-edge technology, and employees' obligations to work extra hours when needed, to be loyal and to volunteer to do non-required tasks'. Therefore, it would appear that a Western approach to HRM is appropriate for adoption in the Chinese IT industry. As noted by King and Bu's recent study, 'the process of economic reform has successfully transform many human resource practices in China to bring them closer to the market-oriented human resource management systems practised in the US'

(2005, 61). This finding provides support for other studies on HRM in China (e.g., Ding, Goodall, and Warner, 2000; Zhu and Dowling, 2002). Therefore the primary aim of this study is to investigate whether Chinese software firms adopt a strategic approach to HRM.

## **STRATEGIC HRM IN CHINA**

Warner's (1999) study on 'hi-tech' firms showed that these firms tend to use a labour workforce which is more highly skilled than the average state-owned enterprises (SOEs). These firms also tend to be smaller than firms in the electrical and electronics goods sector and diffuse ownership (Warner, 1999, 3). According to Yang and colleagues (2005), about 50 percent of the software firms were owned by Chinese government (SOEs) and collectively-owned. Private firms account for only approximately 20 percent. These firms also tend to be newer and open to change, especially in the adoption of HRM approach to their employment relations; thus, resulting in a HRM system which is more complex than other Chinese enterprises, with a hint of the traditional Chinese influence.

Storey defined HRM as "a distinctive approach to employment management which seeks to achieve competitive advantage through the strategic deployment of a highly committed and capable workforce, using an integrated array of cultural, structural and personnel techniques" (1995: 5). From such definition, the emphasis of "strategic" can be witnessed. Martell and Carroll (1995: 254) proposed three basic characteristics of strategic HRM as followed: a long-term focus, the linkage between human resource management and strategy processes, and the expectation that effective HRM policies should produce organizational benefits.

Prior to the economic reform, China was under a highly centralized planning economy system. Exact objectives such as production, distribution and the use of manpower, were arranged through the process of centralized planning (Laaksonen, 1988). Under such a system, labour were allocated to organizations by the government; reward was set by government across the whole nation; wage gaps were not substantial as equalitarianism was a top priority under "big pot" policy; and workers enjoyed life time employment. As a result, some HR activities such as recruitment and selection, HR planning did not exist; whilst some were practiced but exhibited typical Chinese features, such as politically oriented assessment criteria, cadre-centered appraisal and the 'transmission belt' role played by trade unions (Zhu, 2005).

Before the commencement of economic reform, HR departments in Chinese organizations tend to be administratively oriented. More importantly, they were set up to implement government policies (Zhu, 2005). White- and blue-collar employees were managed separately, in terms of their reward and welfare. During this period, personnel management was named as “people relation management” (ren-shi guan-xi guan-li) , the function of HR department was limited to the management of personal files and documents; which implied that employees were not recognized as organizational sources and the management of people was more likely a political issue.

Research has shown ownership structure has an influence over the adoption of HRM in China. Warner (2003) claimed there was a trend of convergence in the adoption of Western HRM practices in China. Convergence occurs as a result of the marketization process in China which caused a diffusion of the pragmatic, step-wide adoption of ‘strategic’ HRM norms and practices. Evidence had been found consistent with Warner’s hypothesis. Taylor (2005) claimed that Chinese government sources had encouraged the adoption of HRM towards both the Western and Japanese models. Ding and Akhtar (2001) argued that the convergence to the Western HRM practices was vital for Chinese organizations to develop human capital and survive. Zhu and Dowling (2001) concluded that certain HR practices from the West had been employed and emphasized in Chinese organization, especially by FIEs.

High performing organizations are characterized by the presence of an effective HR department (Becker & Huselid, 1998). Successful organizations can be achieved by aligning customer-oriented business and work processes with a consistent set of HR practices. Ulrich (1997) and others (such as Zhu et al., 2005) have advocated that HR departments must become more strategic by adding value to the strategic decision making process. There is a growing need for practitioners to be part of the top management team and engaging in a business partnership with line managers (Ulrich, 1997), especially as Chinese enterprises move towards a market-oriented approach to HRM. Therefore, the effectiveness of the HR department is considered to be critical in the process, especially in achieving the link between the people management function and the strategic management process. Hence, we expect organizations which are more strategic will adopt a strategic

approach to HRM. HR practices being adopted will have to be effective and we expect that the extent of effectiveness will have a positive impact on the perceived effectiveness of the HR department.

We propose the following hypotheses:

H1. Ownership status will have a positive influence over the effectiveness of HR practices as foreign-owned firms will be more effective than local firms.

H2. Larger firms will be more effective in their HR practices than smaller firms.

H3. Effectiveness of HR practices will have a positive influence over the performance of HR department.

H4. Organizations which have a set of effective HR practices will tend to have a positive influence over the critical success factors.

H5. HR departments which perform effectively will tend to have a positive influence over the critical success factors.

H6. HR department which performs effectively will be able to influence the level of perceived firm performance outcomes.

H7. Critical success factors will have a positive relationship with the perceived level of firm performance outcomes.

H8. Firms which have effective HR practices will tend to have a positive influence over its perceived level of firm performance outcomes.

## **METHODS**

During October and November 2005, survey questionnaires were mailed to 320 IT organizations randomly chosen from the China Foreign Enterprise Directory 2005. By the end of November, 32 responses were received. Despite several round of reminders, no additional response was received. In January 2006, 40 e-mails were sent through the first author's personal network in the Chinese IT industry. Seven responses were received by the end of January, which added up to a total number of 39, representing a response rate of 10.8 percent.

The survey questionnaire was adopted from Zhu's (2000) study on HRM in China (Zhu et al., 2005). The survey questionnaires were sent out with both English and Chinese copies. In order to be valid, both copies were adopted from Zhu's original work. Respondents were asked to choose the one

they were most comfortable with. The questionnaire consisted of four sections. The first section gathered information about the enterprises and the respondents, such as the enterprises' ownership structure, age, size in terms of number of employee, product life cycle stage, and background of the respondents. The second section was about the personnel/HR department, such as name of the department, number of staff and budget of the department. The third section covered HRM activities such as HR planning, hiring practices, performance appraisal, compensation and welfare, and training and development.

However, Zhu's study did not investigate the relationship between HR practices and organizational performance. From a strategic point of view, Martell and Carroll (1995) argued that effective HR policies should result in organizational performance benefits. Therefore, an additional section was included in the survey on organizational performance, in order to examine possible linkage between HRM and organizational performance. Questions in this fourth section included the annual rate of sales/profit growth (Park & Luo, 2001) benchmarking against competitors (Tan & Litschert, 1994).

## **Measures**

Effectiveness of HR practices (Reflective scale): This construct was comprised of a series of questions asking the respondents to evaluate the effectiveness of HR practices in staffing, training, compensation, performance appraisal and participation (Zhu et al., 2005). Sample items included 'Appraisal practices were used to ensure satisfaction of employees' and 'Hiring practices help our enterprise to have high-performing employees'.

HR department effectiveness (Reflective scale): This scale was adopted from Zhu et al. (2005), comprising of five items (sample items included 'Perceived as an important department' and 'Perceived as effective').

Critical success factors (Reflective scale): Respondents were asked to rate the importance of a list of 20 factors which are perceived to be critical to their organization's success (e.g., effective management of HR as a source of competitive advantage, competitive pricing, and innovation in marketing techniques and methods). The items were rated on a 5-point Likert scale, ranging from '1'=very unimportant to '5'=very important. These items were adopted from Zhu et al. (2005).

Perceived firm performance (Reflective scale): Following Johansson and Yip (1994), the dependent construct was set as having a reflective specification. Sample items included ‘Comparing with your competitors, how do you rate your organization’s annual growth in sales’ (Park & Luo, 2001) and perceived benchmarking against competitors in relation to operational efficiency (Tan & Litschert, 1994).

### **Model estimation and Data analysis**

Analysis of the hypotheses were carried out using the Partial Least Square (PLS) latent path model, a well-established technique for estimating path coefficients in causal models (e.g. Johansson and Yip, 1994). The conceptual core of PLS is an iterative combination of principal components analysis relating measures to constructs, and path analysis permitting the construction of a system of constructs (Barclay, Higgins, & Thompson, 1995). The PLS technique, compared with LISREL, has several advantages (for a detailed discussion please refer to Johansson & Yip, 1994). Among its’ advantages, PLS can accept smaller sample sizes because ‘each causal subsystem sequence of paths is estimated separately. ... and is particularly suitable for studies in the early stages of theory development and testing...’ (Anderson & Gerbing, 1988, cited in Johansson & Yip, 1994, 587).

In PLS, the path coefficients are standardized regression coefficients; the loadings are similar to factor loadings. The significance of the variables is then determined according to the bootstrap procedure packaged in the PLS-Graph Version 3 software (Chin & Frye, 2001).

### **Validity and reliability issues**

The aim of the current study is to further test and develop the constructs for the Chinese context, we followed Chin’s recommendation that the covariance based full-information estimation methods in PLS (i.e., Maximum Likelihood or Generalized Least Squares) are considered to be more appropriate (Chin, 1997). Harman’s ex post one-factor test was used to provide an additional check for common method variance (Podsakoff & Organ, 1986). All the variables used in the current study were entered into an unrotated factor analysis to determine the number of factors. If a single factor emerged from the factor analysis, that result would indicate that the data suffered from a common method variance problem. In the current study, factor analysis of the variables used in the study resulted in thirteen factors, which provided confidence that common method variance was not an issue.

## FINDINGS

There were three COEs, 13 IJVs, 11FIEs and 12 POEs in the sample. Over one-third of these organizations were established within the last five years. Eight of them were five to nine years old; six of them were ten to fourteen years old. There were seven organizations which had a history longer than fifteen years. Four of the respondents did not specify when the business was started. Most of the respondents are SMEs. There were 14 small organizations employed less than 50; 17 medium sized organizations with 50 to 200 employees; and five large organizations employing over 200 people.

Twenty-nine (85.3%, N = 34) enterprises claimed there is a separated personnel/HR department. Yet, only thirteen of them (68.4%, N = 19) called it 'human resource department'. Ten enterprises (35.7%, N = 28) allocated separated budget for their personnel / HR department, nine respondents (56.3%, N = 16) claimed that the budget is enough to support the department's activities.

All of the scales were used in the initial analysis. Scales which do not reflect the underlying meaning of the construct were deleted from the final analysis. Only those scales which has a t-statistics of greater than the  $p < .05$  significance level were retained in the model. PLS analysis was conducted on the adjusted model, after deleting those items which are not statistically significant in the model. The analysis shows that the path from Effectiveness of HR Practices to HR department effectiveness was positive and significant (coefficient=.607,  $t=4.8543$ ,  $p < .001$ ). The specific HR practices used were hiring and appraisal. These HR practices were used to ensure employee satisfaction, enhance organizational performance, and becoming a high performance organization. Similarly, the path from HR practices effectiveness to critical success factors such as goal setting at the group and organizational level (coefficient=.489,  $t=2.7912$ ,  $p < .01$ ). Critical success factors which are statistically significant are unique corporate culture, advertising, setting of strong performance goals for individual, group and organizational performance, and superior talent. The paths from Effectiveness of HR practices (coefficient=.399,  $t=2.4703$ ,  $p < .05$ ) and Critical success factors (coefficient=.407,  $t=2.9078$ ,  $p < .01$ ) were positive and significant, both leading to Firm Performance. This model explained 48.5 percent of the variation in the performance of Chinese software firms. We conducted the Sobel's test to examine the mediation effect of Critical Success Factors on the relationship between HR effectiveness and firm performance. This hypothesis was also supported as



Sobel's test=2.0136,  $p=0.044$ . Ownership status and firm size have no significant impact on the model tested.

## **DISCUSSION AND CONCLUSION**

The aim of the current paper was to develop a model of strategic HRM by establishing the relationships between effectiveness of HR practices, HR department performance, critical success factors and firm performance outcomes. While the sample is small, the purpose of the current study is to establish the relationships between constructs in order to further test the model in a larger sample. Contrary to literature, we did not find any differences in HRM adoption according to size and ownership structure.

There were several major findings. Firstly, we found that in order for HR practices to be perceived to be effective, HR executives have to implement hiring and performance appraisal practices which result in employee satisfaction. Hiring and appraisal practices have to be associated with organizational performance and job satisfaction (e.g., Zhu et al., 2005). Consistent with the literature, appraisal practices were used to ensure high performance (e.g., Huselid, 1995; Becker & Gerhart, 1996). These HR practices would then provide the HR department with the appropriate recognition within the organization and deemed to be one which is meeting organizational goals and objectives. Surprisingly, the performance of HR departments was not associated with firm performance outcomes, contrary to the literature (Zhu et al., 2005). While the presence of the HRM function is evident in the sample, the performance of the department was not strong enough to have any significant impact on firm performance outcomes. Based on the findings, the model suggests that only a small number of the HR practices were considered to be effective by senior line management respondents.

The second finding provides support for the positive influence of effective HR practices on an organization's critical success factors, which is consistent with the resource based view theory of strategic HRM (Wright, Dunford and Snell, 2001). In this study, several critical success factors were found to lead to firm performance in the software industry. These include unique corporate culture, advertising, setting of strong performance goals for individual, group and organizational performance, and superior talent. In addition, we also found that CSFs mediate the relationship between HR

practices and firm performance. This is an interesting finding, supporting the literature on strategic HRM, such as the human capital HRM model (e.g., Snell & Dean, 1992; Zhu, Chew & Spangler, 2005). The setting of performance goals at the individual, group and firm level could in part, due to the industry characteristics as software workers are expected to work in project teams. This finding can also be explained by the collectivistic societal culture in China where individuals viewed the importance of working in a harmonious relationship (e.g., Hofstede, 1984). While other HR practices such as training and development are critical in ensuring the creation of human talent (another CSF) in knowledge-based firms, software firms have to ensure that their staff are hired to fit into their team work culture and performance appraisal practices are then used to manage the performance of these employees in achieving organizational goals. From a strategic HRM perspective, the successful implementation of a unique culture as it's the intangible asset which allows software firms to sustain its competitive advantage. Hence, HR practice by itself is insufficient to contribute to firm performance; CSFs are crucial in explaining the significant relationship between the effectiveness HR practices and firm performance.

The third finding shows that HR practices which are deemed to be effective would result in a positive relationship with achieving performance outcomes. This finding supports the literature on strategic HRM in which HR practices have a direct path leading to firm performance (e.g., Huselid, 1995; Zhu et al., 2005). HR practices can thus contribute to firm performance by ensuring that its core competencies, such as knowledge, skills, and abilities and organizational capabilities are aligned (Lopez-Cabrales, Valle, and Herrero, 2006). This particular finding suggests that Chinese firms have achieved a link between HR practices and the organization's critical success factors, in line with the literature on strategic HRM (e.g., Huselid, Becker, and Ulrich, 2001). In a highly competitive industry such as software industry, management has to ensure that its HR practices could bring out the best of its employees. The adoption of a strategic approach to HRM is particular important in addressing the widely acknowledge problem in the Chinese IT industry, that of the brain drain of human talent (Wang, 2001; Yang, Ghauri, and Sonmez, 2005), especially in the software development industry (Anonymous, 2003). As indicated in Article 24 of the policies issued by the

State Council, companies have been urged to establish strategy for attracting talent globally as the way to address labour shortage within the industry and they have also been given the approval to set preferential policies for attracting these individuals. It highlights the importance of firms using selective staffing practices to hire these individuals and the implementation of performance appraisals techniques in order to reward the performance of these individuals as the means to retain them.

### **Future implications**

Generalizability of the findings is limited by the small sample size and the software development industry in China. However, Harmann's ex post one-factor test (Podsakoff & Organ, 1986) showed that there were 13 factors, which suggest that common method variance may not be an issue in the current study. The model should be further tested in other industry, especially with the inclusion of other HR practices such as those examined in the literature (e.g., Ding and Akhtar, 2001; Zhu et al., 2005).

The current study relied on subjective organizational performance indicators which have their limitations (see discussion in Wright et al., 2001). Future study should adopt objective performance indicators which are contextual specific. In this case, the number of new software programs being created and marketed and other creativity and innovation performance outcomes could be adopted. In addition, the study could not be generalized to state-owned enterprises as the sample did not include any respondents from this particular ownership type.

In conclusion, the current paper provides a theoretical model of strategic HRM in the Chinese software industry by establishing the relationships between effectiveness of HR practices, HR department performance, critical success factors and firm performance outcomes. While the sample size is small, the findings provided the empirical evidence to show that the relationship between HR effectiveness and firm performance was mediated by critical success factors.

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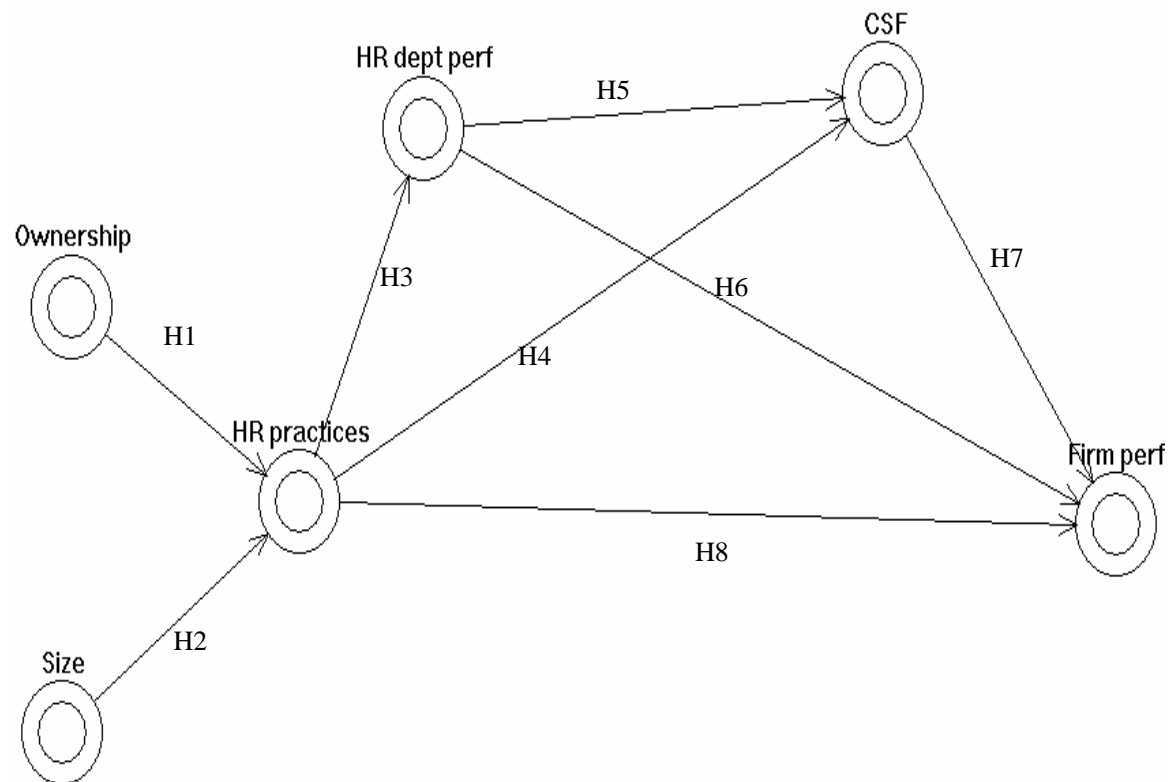
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Figure 1 A Model of Strategic HRM in the Chinese Software Industry



Note: CSF=critical success factors

Figure 2 Result of PLS Analysis: Strategic HRM in the Chinese Software Industry

