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Untangling the Relationship between Human Resource Management and Corporate Entrepreneurship: The Mediating Effect of Middle Managers' Knowledge Sharing

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Abstract: Although there is a growing body of literature linking human resource management (HRM) and corporate entrepreneurship (CE), there is still insufficient understanding of the mechanisms underlying this relationship. This paper focuses on middle managers' knowledge-sharing behavior as an important mediator in the HRM–CE relationship. We test our hypotheses using data collected from 163 Malaysian middle managers. The paper finds that about a third of the relationship between High-Performance Human Resource Practices and CE can be accounted for by middle managers' knowledge-sharing behavior. The findings provide quantitative empirical support for theoretical claims of the importance of middle managers' knowledge sharing in fostering CE, and for the importance of HRM in fostering such knowledge sharing. The study contributes to the literature on the HRM–CE relationship by disentangling the underlying mechanisms and by providing empirical support for this relationship in a Malaysian context.

Keywords: human resource practices, corporate entrepreneurship, knowledge sharing, middle managers

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1 Introduction

With increasing competition, firms are becoming more reliant on identifying and exploiting entrepreneurial opportunities (Ireland, Covin, and Kuratko 2009; McMullen and Shepherd 2006; Shane and Venkataraman 2001). Firms that are willing to take risks and act proactively and innovatively are more likely to identify and exploit entrepreneurial opportunities than firms that are not (Lumpkin and Dess 1996). Such proactive behavior has been conceptualized as corporate entrepreneurship (CE) (Sharma and Chrisman 1999). Accordingly CE is recognized as a fruitful approach to improved organizational performance (Zahra 1995).

Considerable scholarly interest has been devoted to understanding the drivers of CE (Belousova and Gailly 2013; Rigtering and Weitzel 2013; Phan et al. 2009). A small but increasing number of studies have focused on the important relationship between human resource management (HRM) and CE (Dabic, Ortiz-De-Urbina-Criado, and Romero-Martínez 2011). While such studies have found a positive relationship between HRM and CE, existing research into the relationship has not provided sufficient knowledge about the mechanisms underlying it (Hayton 2005; Montoro-Sánchez and Soriano 2011). This constitutes an important gap because organizational outcomes arise not out of HRM practices directly, but instead through employee efforts resulting from HRM practices (Liao et al. 2009). While there is reason to believe that there are several underlying mechanisms linking HRM and CE (Hayton 2005), a recent comprehensive literature review (Dabic, Ortiz-De-Urbina-Criado, and Romero-Martínez 2011) identifies relationship building in order to spur knowledge flows within the organization as an important yet insufficiently researched link between HRM and CE. Contemporary case studies support this finding (Castrogiovanni, Urbano, and Loras 2011). This paper follows up on this strand of research through taking the first steps toward quantifying the mechanisms linking HRM and CE, specifically focusing on discretionary knowledge-sharing behaviors within the organization.

Although knowledge sharing is important at all levels of the organization, middle managers are structurally well positioned to engage in knowledge sharing in support of CE, as they can synthesize knowledge from all levels of the organization and share it with both upper and front-line managers (Nonaka and Takeuchi 1995; Floyd and Lane 2000; del Mar Benavides-Espinosa and Roig-Dobón 2011). Thus, knowledge sharing reflects one fundamental mechanism through which middle managers can contribute to knowledge application and exploitation, innovation, strategic renewal, and ultimately CE. Furthermore, the

absence of knowledge sharing from middle managers will severely retard knowledge exchanges both horizontally and vertically in the organization, which in turn will hamper CE initiatives. Firms can support middle managers' knowledge-sharing behaviors through appropriate HRM practices (Scarborough and Carter 2001). Knowledge sharing is more likely to take place when factors generated through HRM practices, such as skilled workforce, trust, and commitment to shared goals, are present (Ensign and Hébert 2009; Szulanski 1996). Therefore we theorize that HRM practices reinforce the knowledge-sharing behaviors of middle managers, which in turn contributes to CE. Thus we hypothesize that middle managers' knowledge-sharing behavior constitutes an important mediator in the relationship between HRM and CE.

This paper explicates the theoretical rationale for this hypothesis and shows initial support for it. We test our argument using data collected from 163 middle managers in Malaysia. Our findings contribute to the existing literature in several important ways. Firstly, we provide a quantitative assessment of the importance of HRM practices in fostering middle managers' knowledge-sharing behavior. Secondly, our study represents one of the few efforts to empirically examine and link the outcomes of middle managers' knowledge sharing to CE. Our paper is structured as follows. Firstly we discuss our theoretical background and develop our hypothesis based on the previous literature. Next we describe our method before presenting our results. Finally we consider the theoretical and managerial implications of our findings and identify some areas for future research.

2 Theoretical Background and Hypothesis Development

2.1 Corporate Entrepreneurship (CE)

Corporate Entrepreneurship (CE) has attracted scholarly interest because it directs firms to recognize and exploit new opportunities (Ireland, Covin, and Kuratko 2009) through innovative and proactive behavior (Dess, Lumpkin, and McGee 1999) that can revitalize and increase the innovativeness of existing organizations (Covin and Miles 2007; Ireland, Covin, and Kuratko 2009; Zahra, Jennings, and Kuratko 1999). CE is necessary for firms in turbulent, dynamic or highly volatile environments, wherein strategic flexibility and innovativeness are needed to maintain competitive advantages and respond to environmental pressures (Yiu and Lau 2008).

Defined as a “*process whereby an individual or a group of individuals, in association with an existing organization, create a new organization or instigate renewal or innovation within that organization*” (Sharma and Chrisman 1999: p. 18), CE is associated with the pursuit of opportunities by an established organization. It is the internal environment of the organization that creates the preconditions for CE activities that in aggregate result in entrepreneurial firm behavior. Entrepreneurial firms can thus be identified by their tendency to take risk, to engage in innovation and to challenge their competitors with new processes and products (Covin and Slevin 1989, 1991).

2.2 Middle Managers

Managerial strategic actions and behaviors which are often discretionary, spontaneous and beyond explicit role requirements are considered to lie at the very heart of CE (Smith and Di Gregorio 2002). To date, researchers have focused attention on the actions of middle managers as they tend to be most involved in the CE activities within established companies (Hornsby, Kuratko, and Zahra 2002, 2009; Kuratko et al. 2005; Wakkee, Elfring, and Monaghan 2010). There are variations in how middle managers are conceptualized (Csepregi 2012), from focusing the type of workflow middle managers are responsible for (e.g. Floyd and Wooldridge, 2007), to focusing on the location in the managerial hierarchy (e.g. Eaves 2014). For the purpose of this study, we define middle managers as those managers who are not part of the top management team, but still have subordinates reporting to them, which imply that their organizations must be sufficiently large to make use of at least two managerial levels (cf. Csepregi 2012). The organizational positioning of middle managers has also been described as critical for the generation of entrepreneurial ideas and actions. For example, middle managers can facilitate the sharing of knowledge internally and externally because of their unique position in receiving and sharing information (Ghoshal and Bartlett 1994; Mustafa, Richards, and Ramos 2013; Nonaka and Takenuchi 1995), and they can thus play a critical role in organizational change initiatives (Conway and Monks 2011).

2.3 High-Performance Human Resource Practices and Corporate Entrepreneurship

Throughout the past decade, there has been a growing interest among Human Resource (HR) scholars in understanding how human capital management can

foster positive organizational outcomes (Subramony 2009). Researchers have thus identified high-performance human resource practices (HPHRP) as a means of driving organizational effectiveness (e.g., Combs et al. 2006). HPHRP refer to “*groups of separate but interconnected human resource (HR) practices designed to enhance employees’ skills and effort*” (Takeuchi et al. 2007, 1069). Operationalizations of HPHRP often include practices and measures related to the promotion workforce ability and skills, motivation, opportunity seeking, and discretionary efforts (Appelbaum 2000; Sun, Aryee, and Law 2007).

Specifically this study adopts (Sun, Aryee, and Law 2007) conceptualization of HPHRP, which include “*provision of job security, extensive skills training, promotion from within, results-oriented appraisal, and broad career paths*” (p. 560). An organization’s investment in HPHRP signals its intention to invest in the skills and opportunities of its employees and to develop a long-term relationship with them (Sun, Aryee, and Law 2007). HR practices can thus positively influence and inspire employees’ attitudes and work behaviors, which in turn can affect organizational outcomes (Kehoe and Wright 2013; Messersmith et al. 2011). However, attitudinal and behavioral consequences of HR practices largely depend on the extent to which employees perceive HR practices within their organizations (Kehoe and Wright 2013).

Various studies have demonstrated the positive association between HR practices and CE (Schmelter et al. 2010; Zhang and Jia 2010; Zhang, Wan, and Jia 2008). Hayton (2005) argues that HRM encourages CE through parameters such as decentralization of authority, cooperation, organizational learning, knowledge sharing, trust and encouragement of risk taking. Adopting a systems approach to HR practices, studies have examined the relationship between HPHRP and CE. These studies have found positive empirical links between HPHRP and CE (Zhang and Jia 2010; Zhang, Wan, and Jia 2008). Furthermore, perceived organizational support and organizational citizenship behavior were identified as mediators in HPHRP–CE relationship. From a social exchange theory (Blau 1964) perspective, HPHRP create a climate in which employees reciprocate perceived support through discretionary and strategic actions. There is, however, little guidance in these studies as to which specific employee actions or behaviors’ fostered CE.

In summary, there are strong theoretical arguments and empirical findings that HPHRP are positively related to CE. Although the theoretical approach suggests that organizational learning in general and knowledge sharing in particular are important links between HPHRP and CE (Hayton 2005), there is little quantitative empirical support for such claims.

2.4 High-Performance HR Practices and Middle Managers' Knowledge-Sharing Behavior

Knowledge represents a critical resource through which organizations can develop sustainable competitive advantages (Davenport and Prusak 1998; Grant 1996). To properly identify and fully utilize their knowledge resources, organizations need to understand how to pass knowledge and skills from experts to novices and to ensure that complementary pieces of knowledge are matched (Damodaran and Olphert 2000). Knowledge sharing among organizational members in the form of *“provision of task information and know-how to help others and to collaborate with others to solve problems, develop new ideas, or implement policies or procedures”* (Wang and Noe 2010, 117) is an important mechanism for utilizing knowledge within organizations. Knowledge sharing, as conceptualized in this study, includes the sharing of explicit knowledge in the form of externalized sources, such as reports and documents, as well as implicit knowledge in the form of embodied knowledge, such as expertise, know-how and know-whom (Bock et al. 2005). Knowledge sharing is a relational act which involves asynchronous reciprocal exchanges among individuals (van den Hooff and de Leeuw van Weenen 2004; Lundmark and Klofsten 2014). Knowledge represents a resource which is often highly personalized and difficult to express, and thus, employees' motivation to share their knowledge cannot be taken for granted (Bock et al. 2005; Cabrera and Cabrera 2005; Szulanski 1996). Rather, employees are likely to regulate their knowledge-sharing behaviors based on an analysis of costs and benefits and the existence of trust (Currie and Kerrin 2003; Lundmark and Klofsten 2014).

Individual knowledge-sharing behavior can be fostered through HR practices (Camelo-Ordaz et al. 2011; Scarbrough 2003; see Wang and Noe 2010 for a review). Through a combination of HR practices, firms can influence middle managers' perceptions of a supportive organizational environment that motivates knowledge sharing (Scarborough and Carter 2001). For example, research has shown that employees are more likely to share their knowledge with co-workers if they perceive them to be competent and if they have been exposed to training programs that equip them with innovative skills (Lin and Lee 2004; Mooradian, Renzl, and Matzler 2006; Wu, Hsu, and Yeh 2007). Thus, through people flow (e.g. mobility, extensive skills training, and selective staffing), HPHRP help firms in selecting, training, and motivating qualified employees, thereby increasing the likelihood that middle managers will engage in knowledge sharing.

Additionally, HPHRP can create work environments which facilitate the interaction through, for example, flexible job assignments, broad job descriptions

and encouraging participation in decision making. Interaction is not only a prerequisite for knowledge sharing but also an important fundament for building trustful relationships, which is an important precondition for knowledge sharing (Foss et al. 2009).

HPHRP also signal the firm's recognition of employee contributions and behaviors (Shore and Shore 1995). Employee appraisals, which consist of clear long-term goals, provide accurate and timely feedback, clearly link efforts to rewards, have been found to also encourage individual knowledge-sharing behaviors (Cabrera and Cabrera 2005). Consequently, if middle managers believe that their efforts are appropriately recognized by the organization, they are more likely to engage in knowledge sharing (Leana and Van Buren 1999). According to the above reasoning we propose the following hypothesis:

Hypothesis 1: HPHRP are positively related to middle managers' knowledge-sharing behavior.

2.5 Middle Managers' Knowledge-Sharing Behavior – Linking HPHRP and CE

Hayton (2005) argues that knowledge sharing represents an important mechanism through which HR practices translate to CE. Hayton's (2005) argument is generally congruent with this paper's arguments that HPHRP are likely to encourage middle managers' knowledge-sharing behavior and that this is likely to be positively related to CE. Although we agree with Hayton (2005) that knowledge sharing would generally be expected to have a positive effect on CE, middle managers' central position makes their knowledge-sharing behavior particularly important to CE as it involves communicating the strategic direction from top-level managers as well as championing new ideas from the operative core and from external sources (Floyd and Lane 2002; Nonaka and Takeuchi 1995; Raes et al. 2011). Thus middle managers play a more important role than other organizational actors not only in regard to CE (Hornsby, Kuratko, and Zahra 2002; Kuratko et al. 2005) but also in regard to knowledge flows (del Mar Benavides-Espinosa and Roig-Dobón 2011). Through collecting external knowledge and distributing it internally, middle managers' knowledge-sharing behavior can enhance a firm's innovation capability, lead to the generation of new ideas, expedite successful completion of projects, and improving existing products and processes thus facilitating CE initiatives (Lin and Lee 2006; Lin 2007; Liebowitz 2003).

Furthermore, it is widely acknowledged that organizational learning lies at the heart of CE (e.g., Crossan and Berdrow 2003; Hayton 2005; Lin 2007), and

from an organizational learning perspective, middle managers' organizational positioning allows them to synthesize and disseminate new and existing forms of knowledge. Such strategic actions are likely to lead to the enhanced idea generation, problem solving and the ability to spot new opportunities (Lumpkin and Lichtenstein 2005; Nonaka and Takeuchi 1995). Therefore, through their knowledge-sharing behavior, middle managers can enable the transformation of knowledge into new products, services and processes in order to exploit opportunities, which constitute central aspects of CE. In essence, middle managers' knowledge sharing provides strategic alignment of initiatives and it creates an awareness of operational-level problems and opportunities among top-level managers. Furthermore, if middle managers do not engage in knowledge sharing, the link between the top and the bottom of the organization is cut and horizontal knowledge sharing is severely retarded. In addition, as knowledge sharing both within and between organizations is based on reciprocal exchanges (Ensign and Hébert 2010), middle managers' knowledge sharing is likely to influence and reflect the over-all knowledge sharing in an organization.

Therefore, the relational aspects of favorable organizational conditions, fostered through HPHRP, such as trust and cooperation, which are manifested in middle managers' willingness to share their knowledge, represent an underlying mechanism through which HPHRP are translated into CE. Based on the above reasoning we propose the following hypotheses:

Hypothesis 2: Middle managers' knowledge-sharing behavior relates positively to CE.

Hypothesis 3: The positive relationship between HPHRP and CE is mediated by middle managers' knowledge-sharing behavior.

3 Methodology

3.1 Data Collection and Sample

We adopted a similar strategy to Hornsby, Kuratko, and Zahra (2002, 2009) regarding data collection concerning middle managers' actions and CE. As part of our data collection strategy, we specifically targeted middle managers attending either MBA or executive MBA courses at private and public institutions. While there are many higher education service providers in Malaysia, we specifically targeted 12 institutions (Eight public and four private) which were awarded the highest quality ranking by the Malaysian Ministry of Higher Education.

In early September 2013, a total of 600 survey packages were distributed to 12 higher education institutions. Each survey package contained a cover letter explaining the objectives of the study and ensuring the respondents confidentiality. Additionally, the cover letter also stated clearly that only those individuals identified as middle managers were to complete the attached questionnaire. In addition to the cover letter and questionnaire, the survey package also contained a self-addressed envelope as respondents were asked to mail their completed questionnaires to the authors.

The questionnaire consisted of four main parts, namely the background information of the respondent, their perceptions of their organizations' CE-related activities, their perceptions of the HPHRP that their organization uses, and the extent of their knowledge-sharing behavior. In the end a total of 182 questionnaires were returned to the authors, representing a response rate of 30%. Removing incomplete questionnaires, final data were obtained from 163 middle managers. Table 1 presents the characteristics of the final respondents.

Table 1: Demographic characteristics of the sample.

	<i>N</i> = 163	%
Gender		
Males	77	47.20
Females	86	52.80
Highest Educational Attainment		
Diploma	11	6.70
Bachelor's Degree	109	66.70
Master's Degree	37	23.00
PhD	3	1.90
Others	1	0.60
Skipped Question	2	2.10
Tenure		
Less than 1 year	35	21.50
1–5 years	93	57.10
6–10 years	29	14.10
More than 10 years	12	7.40

Research in the area of the HRM–CE relationship predominantly involves Western organization settings. Differences may exist in the organizational practice environments of Asia and the West and cultural factors can influence the adoption and diffusion of Western HR practices in non-Western contexts (Chew 2005; Schaaper et al. 2013; Schneider 1988). The prior literature has tended to suggest that the collectivist emphasis of Malaysian cultural values may work

against innovation and the adoption of Western-based HR practices (Chew 2005; Juhdi, Pa'wan, and Hansaram 2013). However, since the late 1990s Malaysia has been experiencing a shift in HR policy (Othman and Teh 2003). There is an increasing emphasis on human resource development rather than cost-cutting practices, and the utilization of talented employees as drivers of superior firm performance (Ngo, Lau, and Foley 2008). Collectively, such evidence suggests that the HR principles and practices of Malaysian firms are consistent with those in Western countries (Zhu, Warner, and Rowley 2007). The utilization of scales developed for a western setting in this study thus represents further test of the applicability of these scales in a Malaysian context (Hornsby, Peña-Legazkue, and Guerrero 2013; Zhang and Jia 2010).

3.2 Measures

3.2.1 High-Performance Human Resource Practices

We measured HPHRP using Sun, Aryee, and Law (2007) 27-item scale. The scale measures eight dimensions: selective staffing, extensive training, internal mobility, employment security, broad job design, results-oriented appraisal, rewards, and participation. All items in the scale were rated a five-point Likert scale (1 = strongly disagree to 5 = strongly agree). In line with Becker, Huselid, and Becker (1998), an additive index was used to represent a single comprehensive measure of an HR system. According to Sun, Aryee, and Law (2007), systems of HR practices as opposed to separate and isolated practices constitute the most appropriate level of analysis. A high score on this measure indicates that middle managers perceive that their firms adopt and invest in HPHRP. This study reported an overall Cronbach's α of 0.86 for the HPHRP measure.

3.2.2 Middle Managers' Knowledge-Sharing Behavior

Bock, Zmud and Kim's (2005) five-item scale was used to measure middle managers' knowledge-sharing behavior. All items were measured using a five-point Likert scale (1 = strongly disagree to 5 = strongly agree). The scale consists of two dimensions: Intention to share explicit knowledge and intention to share implicit knowledge. Two items measured middle managers' intention to share explicit knowledge and three items measured middle managers' intention to share implicit knowledge. The five items were initially proposed as two separate factors but, in line with Chow and Chan (2008), were combined into

a single factor by the factor analysis. In this study, the scale had a Cronbach's α of 0.82.

3.2.3 Corporate Entrepreneurship

CE was measured using Covin and Slevin's (1989) nine-item scale. The scale measures a firm's entrepreneurial activities with respect to innovation, venturing, and strategic renewal. Innovation denotes the introduction of new products, services, and processes. Venturing refers to expansion into new or existing markets, while strategic renewal refers to changes in firm scope and competitive approaches. The higher the score, the more entrepreneurial is the strategic posture of the firm. The Cronbach's α of this scale was 0.89.

3.2.4 Controls

Firm size, middle managers' age, and length of tenure were all included as control variables. Research has suggested that size is an important determinant in the extent to which firms may make use of highly developed and sophisticated HR practices (Jackson and Schuler 1995). Similarly, it is expected that larger firms are more likely to engage in CE-related initiatives because of the economies of scale and market power. Thus, firm size was measured as the number of employees in the respondents firms. The firm size in our sample ranged between 103 and 575 employees, with an average firm size of 376 employees. Additionally, middle managers' age and tenure have been used previously by middle managers' researchers (see Hornsby et al. 2009) as proxies for their level of experience. Therefore this study also included both age (measured in number of years) and tenure (number of years in their current organization), as control variables.

Harman's single-factor test was used to test for common method biases. According to Podsakoff et al. (2003), common method variance is likely to be a problem if the majority of the covariance in the variables is accounted for by a single factor. In line with Podsakoff et al.'s (2003) suggestions, a principal components factor analysis was conducted on all the variables used in the study. A ten-factor solution was extracted which accounted for 67% of the total variance. Similarly, the first factor accounted for only 27% of the variance. This provides evidence that common method biasness is not a particular concern in this study as no single factor emerged and one general factor did not account for most of the variance (Podsakoff et al. 2003).

4 Results

Table 2 displays the descriptive statistics and reliability coefficients of the study variables. All scales were found to be internally consistent ($\alpha > 0.7$; Field 2009). Skewness and Kurtosis were also within the acceptable limits (Field 2009). The values of the VIF associated with the predictors show a range from which fall within acceptable limits as suggested by Hair, Black, Babin, Anderson and Tatham (2006) indicating that multicollinearity is not a concern in this study.

Table 2: Means, SDs, reliability coefficients.

Variables	Mean	SD	α	Skewness	Kurtosis
Human Resource Practices (HPHRP)	77.59	9.93	0.86	-0.35	-0.38
Knowledge Sharing (KS)	18.14	3.43	0.82	-0.43	0.38
Corporate Entrepreneurship (CE)	3.15	0.85	0.89	-0.44	-0.20

Table 3 presents and examination of Pearson correlation values between the independent and dependent variables. The relationships between HPHRP, middle managers' knowledge-sharing behavior, and CE appeared to be consistent with our proposed hypotheses. For instance, HPHRP demonstrated a positive significant moderate relationship with middle managers' knowledge-sharing behavior ($r = 0.35$, $p < 0.00$) and positive significant moderate relationship with CE ($r = 0.43$, $p < 0.00$). Similarly, the relationship between middle managers' knowledge-sharing behavior and CE also matched our expected hypothesis. That is, middle managers' knowledge sharing was positively but weakly correlated with CE ($r = 0.29$, $p < 0.00$). Furthermore preliminary straightforward regression analyses showed that over and above the control

Table 3: Zero-ordered correlations among study variables.

Variables	1	2	3	4	5	6
1. Age						
2. Gender	-0.13					
3. Tenure	0.45**	-0.05				
4. Firm Size	0.13	0.05	0.02			
5. HPHRP	0.02	0.03	0.13	-0.10		
6. KS	0.03	0.19*	0.07	0.06	0.34**	
7. CE	0.09	-0.05	0.04	-0.14	0.43**	0.29**

Note: * $p < 0.05$; ** $p < 0.01$.

variables (without HPHRP), middle managers’ knowledge sharing accounted for 9% of the variance in CE ($\beta = 0.31, p < 0.01$).

Baron and Kenny’s (1986) mediation analysis technique was used to test our proposed hypotheses. In the first step, a relationship between HPHRP and middle managers’ knowledge-sharing behavior was established (Table 4, Model 2). In the second step, a relationship between HPHRP (independent variable) and CE (dependent) was established (Table 5 Model 2). In the third step, CE was still the dependent variable, but we added the middle managers’

Table 4: Multiple regression analysis for intention to share knowledge.

Variable	KS			
	Model 1		Model 2	
	<i>B</i>	β	<i>B</i>	β
Age	0.01	0.03	0.01	0.03
Gender	1.27*	0.19*	1.15*	0.17*
Tenure	0.21	0.05	0.10	0.002
Firm size	0.001	0.05	0.003	0.09
HPHRP			0.13**	0.36**
R^2	0.02		0.14	
F	1.60		6.16**	
f^2	0.02		0.16	

Note: B = unstandardized, β = standardized coefficients and f^2 = effect size.

* $p < 0.05$; ** $p < 0.01$.

Table 5: Multiple regression analysis for corporate entrepreneurship.

Variable	CE					
	Model 1		Model 2		Model 3	
	<i>B</i>	β	<i>B</i>	β	<i>B</i>	β
Age	0.01	0.01	0.01	0.12	0.01	0.12
Gender	−0.26	0.13	−0.06	−0.03	−0.11	−0.07
Tenure	−0.01	0.09	−0.06	−0.06	−0.06	−0.06
Firm size	−0.001	0.001	−0.001	−0.12	−0.001	−0.14
HPHRP			0.04**	0.41**	0.29**	0.34**
KS					0.05*	0.19*
R^2	0.01		0.17		0.20	
F	1.51		7.58**		7.48**	
f^2	0.15		0.21		0.24	

Note: B = unstandardized, β = standardized coefficients and f^2 = effect size.

* $p < 0.05$; ** $p < 0.01$.

knowledge-sharing behavior (the mediator) to the equation with HPHRP (Table 5 Model 3). For mediation to occur, the mediator variable should be significant while effects of the IV (HPHRP) should be reduced or become non-significant.

The regression results for the first stage are presented in Table 4. Models 1 and 2 provide results for middle managers' knowledge-sharing behavior as the dependent variable. The control variables are entered in Model 1, and HPHRP is added in Model 2. The regression coefficient for HPHRP was significant: ($\beta = 0.36$, $p < 0.01$, $f^2 = 0.14$). Thus, the results suggest that over and above the control variables, HPHRP has a positive impact on middle managers' knowledge-sharing behavior, yielding support to hypothesis 1.

The regression results for the second and third steps are presented in Table 5. In these analyses we treated CE as a dependent variable. In Model 1, we entered the control variables. In Model 2, we added HPHRP to the regression equation. Results from Model 2 suggest that over and above the control variables, HPHRP is positively related to CE: ($\beta = 0.41$, $p < 0.01$, $f^2 = 0.17$). In Model 3, we entered middle managers' knowledge-sharing behavior as the mediator. The results showed that middle managers' knowledge-sharing behavior has a significant effect on CE ($\beta = 0.19$, $p < 0.05$, $f^2 = 0.20$) thus supporting hypothesis 2. Middle managers' knowledge-sharing behavior contributed to an additional 3% unique variance to CE. The addition of middle managers' knowledge-sharing behavior in the model reduced the direct effects of HPHRP on CE ($\beta = 0.34$, $p < 0.01$).

We tested middle managers' knowledge-sharing behavior as a mediator in the relationship between HPHRP and CE using 5,000 bootstrapping re-samples as prescribed by Preacher and Hayes (2004, 2008). Mediation is said to be significant if the 95% Bias corrected and accelerated (BCa) confidence intervals (CI) for the indirect effect do not include zero (Preacher and Hayes 2008). Bootstrap results showed that middle managers' knowledge-sharing behavior partially mediated the relationship between HPHRP and CE (IE lower 95% CI = 0.0013, upper 95% CI = 0.0139) thus partially supporting hypothesis 3. The results are displayed in Figure 1.

5 Discussion and Conclusion

Our findings show that HPHRP positively relates to CE (main-effect relationships), and that this positive relationship is partially mediated by middle managers' knowledge-sharing behavior. Our findings suggest that the effects of

Figure 1: Mediation model of the relationship between high performance human resource practices and corporate entrepreneurship, mediated by knowledge sharing.

HPHRP partially operate through a path connecting individuals' strategic and discretionary behaviors with CE. As shown in Table 5, HPHRP explain 16% of the variance in CE over and above the control variables, and middle managers' knowledge sharing explains an additional 3% of the variance in CE. From the preliminary regressions, we found middle managers' knowledge sharing to account for 9% of the variance in CE over and above what is explained by the control variables (HPHRP excluded). Thus approximately 6% of the variance in CE is co-explained by HPHRP and middle managers' knowledge sharing. Our results therefore indicate that more than a third of the relationship between HPHRP and CE can be accounted for by middle managers' knowledge sharing. This suggests that middle managers' knowledge sharing is an important, although not exhaustive, link between HPHRP and CE. Consequently, this particular papers a number of theoretical and empirical contributions to the existing literature.

Theoretically, we contribute to existing discussions on the HRM–CE relationship by developing and testing a conceptual model explaining the mechanisms through which HPHRP are linked to CE (Castrogiovanni, Urbano, and Loras 2011; Dabic, Ortiz-De-Urbina-Criado, and Romero-Martínez 2011; Hayton 2005). Existing conceptualized models of the HR–CE relationship (see Hayton 2005) have largely focused on the role of organizational specific factors which foster CE. Scholars are also increasingly cognizant of the fact that when CE does emerge in organizations, it does so thoroughly largely complex process (Kuratko et al. 2005). Not surprisingly, the discretionary and entrepreneurial

behavior middle managers have been regularly identified as critical factor in the emergence of CE (see Hornsby, Kuratko, and Zahra 2002). However, existing theoretical models of the HR–CE relationship have largely ignored the role of such actors.

In developing our theoretical model and empirically testing it, we demonstrate the significance of individual managers' strategic and discretionary behaviors in enabling CE. In doing so our study not only begins to unlock the "black box" in the HRM–CE relationship (Hornsby, Peña-Legazkue, and Guerrero 2013; Takeuchi et al. 2007) but also demonstrates that HPHRP constitute an organizational capability in the development of satisfied, committed, and engaged employees (Kehoe and Wright 2013; Messersmith and Guthrie 2010). We therefore deepen the existing literatures understanding of how HRM influences CE (Castrogiovanni, Urbano, and Loras 2011; Dabic, Ortiz-De-Urbina-Criado, and Romero-Martínez 2011; Hayton 2005).

Additionally, our study extends the universality of the HRM–CE relationship by examining these concepts in a non-Western developed economy context. While research has recognized the importance of HRM in facilitating CE in a Chinese context (Zhang, Wan, and Jia 2008; Zhang and Jia 2010), studies in other Asian contexts remain rare. Our findings suggest that the overarching principles behind HPHRP systems (e.g. people flows, appraisals and rewards, and employment relations) can be considered as appropriate HR practices which promote CE also in a Malaysian context. Chew (2005) and Zhu, Warner, and Rowley (2007) argued that managerial practices and attitudes of Malaysian firms are much more consistent with those in Western countries because of global competitive pressures and the role of the state in industrial and HR policies. Thus, despite a set of common cultural tenets between Malaysia and China, such as the non-adversarial, "we" rather than "us and them" orientation, consensus seeking and organizational loyalty, our study indicates that there is no general Asian context in regard to the HPHRP–CE relationship. However, the general direction of the relationship is the same between the countries and the relationship is similar to what has been found in Western settings.

Empirically, we reconfirm previous findings that HPHRP are an important determinant of CE in general (see Zhang, Wan, and Jia 2008). In particular, we highlight the knowledge-sharing behaviors of middle managers, which are conceptually and empirically linked to HR systems and CE. Collectively, our findings lend quantitative support to theoretical claims that middle managers' knowledge sharing is important in fostering CE. Our study also lends further support to the importance of HPHRP in fostering such knowledge sharing. Collectively our findings provide empirical support for earlier theoretical arguments concerning the strategic and discretionary behaviors of middle managers

as critical antecedents of CE (Hornsby et al. 2009) and also address Hornsby, Kuratko, and Zahra (2002) call to better document and understand the strategic and entrepreneurial activities of middle managers’.

Lastly, while the CE literature has mostly focused on specific organizational and individual factors as antecedents of CE (see Hornsby, Kuratko, and Zahra, 2002), our study emphasizes the importance of examining the influence of entire HRM systems as opposed to individual HR practices. Delery and Doty (1996) suggested that sets of HR practices can have synergistic influence upon desired employee behaviors. However, we note that only a small number of existing studies have empirically considered the influences of sets of HR practices on individual employees’ behaviors in support of CE (see Zhang, Wan, and Jia 2008).

Our findings are also of particular significance to business practitioners and managers. It has been suggested that the management of CE requires an enlightened approach to management (Hayton 2005). In this respect, our study emphasizes the importance of middle managers’ knowledge-sharing behaviors. Our study also suggests that HPHRP constitute a potent way of fostering such behaviors, which in turn are likely to spur CE. This has practical implications in that it outlines actionable strategies to increasing CE.

Additionally, middle managers’ knowledge sharing is likely to further spur trust and encourage discretionary behaviors at the operational level. To facilitate these outcomes, firms need to firstly recognize the importance of middle managers and more importantly their discretionary behaviors. They then should utilize a range HR practices to cultivate better and stronger relationships with middle managers’ which in turn will result in favorable discretionary behaviors fostering CE.

5.1 Limitations and Future Research

There are some limitations that should be emphasized. Firstly, the study has relied on self-report data for all variables, which could lead to response biases that may be further compounded in the cross-cultural context and to common method variance (Podsakoff et al. 2003). To address the latter, we used Harman one-factor test, which did not indicate that common method variance, is of particular concern in this study. However, that does not preclude any influence of common method variance. Therefore, we encourage future studies to consider responses from multiple sources, thus helping to alleviate potential problems related common method variance. In order to minimize the problem with self-reported data, we used well-established measures of all our variables. Such measures are, however, designed to assess the principal relationships of this

study in a Western context, and thus the employed scales may not truly capture the essence of the constructs under investigation in the Malaysian context. Nevertheless, the high internal consistency exhibited by the scales indicates that the scales work well also in the Malaysian context (the lowest Cronbach's α was 0.82 which is substantially better than the recommended lower level of 0.7 by Field 2009). It is also important to stress that the reported findings are only tested in a Malaysian context. Therefore it is imperative to be aware that any generalization beyond this setting is based on assumptions of similarity between different contexts. Finally, our study utilized a cross-sectional survey design. An inherent limitation of this approach is that inferences regarding causality cannot be properly deduced. Inferred causality must therefore rely on theoretical considerations.

This study offers some further suggestions for future research. Although prior studies have established an empirical relationship between HPHRP and CE (see Zhang, Wan, and Jia 2008; Zhang and Jia 2010), it is less clear what mechanisms create this relationship. Whereas Zhang, Wan, and Jia (2008) indicate that discretionary behaviors by employees constitute an important foundation for the relationship between HPHRP and CE, this study finds support for a particular type of discretionary behavior, middle managers' knowledge sharing, being an important factor in explaining this relationship. Yet other kinds of discretionary behaviors (such as coaching and mentoring of co-workers, resource exchanging and networking, opportunity seeking and risk taking) can also be encouraged through HPHRP and may also affect CE (Hayton 2005). Hence, future research should consider additional discretionary variables which might mediate the relationship between HPHRP and CE.

Secondly, given the important role that middle managers' knowledge-sharing behavior plays in the HRM–CE relationship, further research is needed on how to maximize discretionary behaviors of middle managers. In this study, we only focused on organizational-level factors which can affect middle managers' discretionary and entrepreneurial behaviors. However, research has revealed that both organizational and individual factors can influence middle managers' decisions to engage in discretionary behaviors (Kuratko, 2010). The interplay of individual-level factors and HRM practices and their effect on discretionary and entrepreneurial behaviors holds promise for future research.

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