Human resource management practices and organizational social capital: The role of industrial characteristics

Chih-Hsun Chuang a,*, Shyh- jer Chen b, Ching-Wen Chuang c

a Department of Business Administration, National Chung Hsing University, 250 Kuo Kuang Rd., Taichung 402, Taiwan, ROC
b Institute of Human Resource Management, National Sun Yat-Sen University, 70, Lienhai Road, Kaohsiung 804, Taiwan, ROC
c School of Management, Xiamen University, Xiamen, Fujian 361005, China

1. Introduction

Social capital generally denotes the aggregate of resources embedded within, available through, and obtained from the relationships of an individual or organization (Bolino, Turnley, & Bloodgood, 2002; Inkpen & Tsang, 2005; Nahapiet & Ghoshal, 1998). A firm can derive great benefit from both intra- and inter-organizational relationships. Internally secured social capital facilitates a firm’s internal coordination, knowledge creation and accumulation, and creativity (Leana & Pil, 2006; Nahapiet & Ghoshal, 1998; Tsai & Ghoshal, 1998). Social relationships between organizational members enhance innovation (Maurer, Bartsch, & Ebers, 2011; Subramaniam & Youndt, 2005), growth (Maurer et al., 2011), and other organizational outcomes (Andrews, 2010; Batjargal, 2003). Externally secured social capital promotes innovation through knowledge utilization (Pérez-Luño, Cabello Medina, & Carmona Lavado, 2011), and increases a firm’s competitiveness and likelihood of success (Fischer & Pollock, 2004; Inkpen & Tsang, 2005; Wu, 2008). This study follows Leana and Van Buren (1999) in conceptualizing organizational social capital (OSC) as a resource that reflects the social relationships within the firm, which pertains to the concept of internal social capital (Adler & Kwon, 2002; Leana & Pil, 2006).

Firms must make investments to develop and manage OSC (Ellinger, Elmadâ Baş, Ellinger, Wang, & Bachrach, 2011; Prusak & Cohen, 2001). However, this research theme has received little attention and requires further exploration (Bolino et al., 2002; Payne, Moore, Griffin, & Autry, 2011). Without neglecting values of the links with external stakeholders, this study focuses on the internal aspect of OSC that primarily arises from social relationships among organizational members. To nurture OSC, firms should create opportunities for, and increase the motivation and ability of, organizational members to build their relationships (Adler & Kwon, 2002). In this regard, human resource management (HRM) practices serve as a potential means through which firms can effectively accumulate and develop the depth and content of their OSC (Kang, Morris, & Snell, 2007; Leana & Van Buren, 1999). Although scholars have conceptually identified HRM practices that can play the role (Kang et al., 2007; Leana & Van Buren, 1999; Lengnick-Hall & Lengnick-Hall, 2003; Morris, Snell, & Lepak, 2005), empirical evidence remains scarce with a few studies that either examine this topic at the individual level (Gittell, Seidner, & Wimbush, 2010) or dyadic level (Kashe, Paauwe, & Zupan, 2009), or use a unique sample of top management teams (Collins & Clark, 2003). The literature still lacks empirical research on how HRM practices nurture social capital around other employees instead of top managers (Collins & Clark, 2003) and at the firm level (Payne et al., 2011).

OSC is a relational construct that inherently hinges on the interaction of individuals, which takes place within particular work contexts (Johns, 2006; Leana & Pil, 2006). Scholars argue for the necessity of a contingency approach that accounts for contextual conditions that strengthen or limit the effects of HRM practices (Datta, Guthrie, & Wright, 2005; Jackson & Schuler, 1995; Kim & Wright, 2011; Sun, Aryee, & Law, 2007). However, studies that focus on the relationship between HRM practices and OSC...
neglect contextual factors, particularly the firm’s external environments. The current study identifies industry as a pivotal context within which firms frame and execute HRM practices (Datta et al., 2005; Jackson & Schuler, 1995; Kim & Wright, 2011), incorporating industrial characteristics (industrial regulation and knowledge intensity) into the research framework.

This study builds on and extends existing literature (e.g., Collins & Clark, 2003; Gittell et al., 2010; Kaše et al., 2009) by exploring employee-focused OSC and examining the relationship between HRM practices and OSC at the firm level. More importantly, this study investigates the contingent effects of industrial characteristics to identify the context in which HRM practices are likely to exert differential influence on OSC. The next section formalizes the concept of OSC and identifies HRM practices that promote relationship-building among employees and foster OSC. It also explores the potentially moderating effects of industrial regulation and knowledge intensity. Sections 3 and 4 respectively present the methodology and results of this empirical study. Finally, Section 5 discusses the research and managerial implications of the findings and highlights directions for future research.

2. Theoretical background and hypotheses

2.1. Organizational social capital

Scholars use a variety of conceptualizations to emphasize various aspects of social capital (see Adler & Kwon, 2002; Leana & Van Buren, 1999). Social network theorists portray social capital as an individual attribute that benefits actors who possess it (e.g., Belliveau, O’Reilly, & Wade, 1996). This perspective considers social capital to be a private good held by individuals that can help individual outcomes such as creativity (Perry-Smith, 2006; Zhou, Shin, Brass, Choi, & Zhang, 2009) and career development (Seibert, Kraimer, & Liden, 2001). On the other hand, organizational scholars emphasize social capital as a social unit attribute that benefits both individual members and the social unit as a whole (e.g., Bourdieu, 1986; Coleman, 1988). This perspective regards social capital as a public good that resides at the collective level and appears more frequently in recent research (e.g., Andrews, 2010; Houghton, Smith, & Hood, 2009; Leana & Pil, 2006; Subramaniam & Youndt, 2005).

OSC is a firm-level phenomenon and the study here focuses on the internal aspect of OSC (Adler & Kwon, 2002; Leana & Pil, 2006). Concentrating on internal OSC is appropriate because the social relationships of organizational members within the same group or unit, as well as in the broader social structure of the organization, can improve group or unit performance (Merlo, Bell, Menguc, & Whitwell, 2006; Oh, Chung, & Labianca, 2004; Tsai & Ghoshal, 1998) and benefit the whole organization (Andrews, 2010; Batjargal, 2003; Leana & Pil, 2006; Maurer et al., 2011). The presence of high trust and a shared sense of vision among organizational members who pursue common strategic goals can contribute to firm performance (Andrews, 2010). Previous research shows that OSC fosters mobilization, assimilation, and use of organizational knowledge resources (Maurer et al., 2011), facilitates resource exchange and combination (Tsai & Ghoshal, 1998), and increases innovation capabilities (Subramaniam & Youndt, 2005). On the other hand, if the relationships among organizational members dissolve, the resulting OSC losses are detrimental to organizational performance (Shaw, Duffy, Johnson, & Lockhart, 2005).

OSC describes both the structure and the content of relationships among actors that create internal cohesiveness (Adler & Kwon, 2002). Establishing a shared vision among employees, creating a strong identity with the firm, and pursuing collective missions and goals manifest the essence of OSC. Nahapiet and Ghoshal (1998) specify structural, relational, and cognitive dimensions of OSC in their framework. The structural dimension of OSC refers to the network connections among actors. This aspect describes the extent of employee connections, the patterns of employee connections, and the usefulness of these connections in different contexts (Bolino et al., 2002). The relational dimension of OSC describes the affective relationships among employees and involves high levels of trust, shared norms and perceived obligations, and a sense of mutual identification (Bolino et al., 2002). Trust is a key component of the relational dimension (Leana & Pil, 2006). The cognitive dimension of OSC represents the extent to which employees possess a common language and shared narratives (Bolino et al., 2002).

2.2. Human resource management practices and organizational social capital

Firms should develop or adopt organizational routines that reflect and incorporate relationship resources to create value (Jackson, Chuang, Harden, & Jiang, 2006; Kang et al., 2007; Nahapiet & Ghoshal, 1998). HRM practices can play a critical role in the facilitation, accumulation, and utilization of OSC (Kang et al., 2007; Leana & Van Buren, 1999; Lengnick-Hall & Lengnick-Hall, 2003; Morris et al., 2005). Leana and Van Buren’s (1999) conceptual article appears to be the first discussion of HRM practices as the primary mechanism in fostering OSC. Lengnick-Hall and Lengnick-Hall (2003), Morris et al. (2005), and Kang et al. (2007) provide similar arguments. Gittell et al. (2010) show that HRM practices strengthen relational coordination among employees who perform distinct functions, while Kaše et al. (2009) indicate that HRM practices of work design, incentives and motivation, and training and development promote interpersonal relationships.

A vast and growing amount of literature documents the strategic importance of well-designed HRM practices (Combs, Liu, Hall, & Ketchen, 2006). Although scholars have little consensus about how to conceptualize HRM practices (Lepak, Liao, Chung, & Harden, 2006), there is more agreement in the literature that strategically aligned HRM practices reflect the strategic objective(s) that such practices intend to achieve (e.g., see Becker & Huselid, 1998; Bowen & Ostroff, 2004; Chuang & Liao, 2010; Lepak et al., 2006).

Examining HRM practices for a more narrowly conceptualized strategic objective can achieve a closer alignment between HRM practices and the specific objective (Lepak et al., 2006). Chuang and Liao (2010) and Liao, Toya, Lepak, and Hong (2009) employ this focused approach in studies investigating HRM practices for customer service employees. Zacharatos, Barling, and Iverson (2005) show that HRM practices facilitating trust in management and promoting a safety climate result in higher safety orientation and fewer accidents. Jackson et al. (2006) propose developing HRM practices that support and facilitate knowledge-intensive teamwork. In the area of social relationships and OSC, Collins and Clark (2003) specify a set of HRM practices that help develop and manage the social networks of top managers. Gittell et al. (2010) identify HRM practices that foster relational coordination among employees, and Kaše et al. (2009) pay special attention to relational implications when selecting HRM practices.

Scholars recognize that traditional prescriptions of HRM practices may not be relevant to OSC, and HRM practices must incorporate the development of relationships (Gittell et al., 2010; Morris et al., 2005). Consistent with the OSC literature and the focused approach of HRM practices, this study suggests that HRM practices, whose strategic focus is to promote and support OSC, should create opportunities for employees to build social relationships, encourage their effort toward relationship development, and enhance their ability to do so. The ability–motivation–opportunity model explicitly identified in the HRM literature (e.g., Batt, 2002; Boxall & Purcell, 2003; Lawler, Chen, Wu, Bae, & Bai, 2011; Lepak et al., 2006) is congruent with Adler and Kwon’s (2002) framework, which proposes opportunity, motivation, and ability as three sources of OSC. Further, Lepak et al. (2006) suggest that a set of more specific HRM activities can implement the objectives of these three HRM aspects. The following discussion focuses on HRM practices that address the three mechanisms.

First, HRM practices should provide employees with the opportunity to interact with other individuals for building interpersonal relationships.
Firms can arrange social events and other knowledge-exchange events to promote employee interaction (Collins & Smith, 2006; Jackson et al., 2006; Lengnick-Hall & Lengnick-Hall, 2003). Firms can also invest resources in operating community of practices that serve as a conduit of HRM practices on organizational outcomes. However, OSC is a context-specific phenomenon and the extent of HRM practices on organizational outcomes may depend upon the firm’s environmental contexts. Recent research suggests that industrial characteristics should be potential contextual conditions affecting the influence of HRM practices (Datta et al., 2005; Kim & Wright, 2011). This study investigates two industrial factors, which are industrial regulation and government involvement in business activities (Luo, 2003). Because governments may use regulations to strategically restrict vital industries, regulations can protect firms by creating barriers to new entry. Firms in a regulated environment often experience dependence on regulations that act as powerful constraints on existing business (Hambrick & Finkelstein, 1987).

The assertion of industrial regulation’s influence on the relationship between HRM practices and OSC primarily rests on the theory of HRM attribution (Kim & Wright, 2011; Nishii, Lepak, & Schneider, 2008). HRM attribution (Nishii et al., 2008) suggests that the meanings employees attach to HRM practices vary depending on employees’ interpretations of an employer’s underlying motivation. Employees respond positively if they believe that the employer is willing to implement HRM practices, but are less likely to exhibit positive behaviors if they perceive that the adoption of HRM practices is mostly a response to external forces. Kim and Wright (2011) employ Nishii et al.’s reasoning to propose that employees are more likely to believe that the adoption of HRM practices by firms is voluntary in a less regulated context where legal institutions do not severely restrict managerial autonomy. Thus, employees are more likely to interpret supportive HRM practices as a favor from their firms and tend to feel obligated to reciprocate the firm’s favor by engaging in discretionary behaviors such as cooperation with coworkers. In a sample including different industries, Boselie, Pauwwe, and Richardson (2003) show that HRM practices are more effective in a less-institutionalized sector than its more-institutionalized counterpart.

The institutional theory suggests that regulatory pressure common to firms in the same industry increases their tendencies toward conformity with regulations that are dominant in the industry, causing them to exhibit similar structures and activities (DiMaggio & Powell, 1983; Oliver, 1997). According to this perspective, industrial regulation may pressure firms to adopt certain HRM practices (Gooderham, Nordhaug, & Ringdal, 1999). However, the diffusion of such HRM practices does not necessarily imply that they can provide similar benefits (Kim & Wright, 2011; Meyer & Rowan, 1977). A highly regulated context limits managerial autonomy, and social justification strongly underpins organizational activities. Higher institutional forces may decrease employees’ positive attributions regarding HRM practices (Kim & Wright, 2011). In this situation, employees may perceive the adoption of HRM practices as a way to obtain social approval by complying with formal regulations or by mimicking other firms’ actions, rather than as a discretionary choice of the employer. Therefore, employee attributions mitigate the effect of HRM practices on OSC. In contrast, in an industry that is free of government control, managerial orientation is more entrepreneurial due to market fluctuation and intense competition, stimulating the process of strategic choices (Cho & Hambrick, 2006). Employees in this context tend to believe that such an employer has a high degree of discretion and implementation of HRM practices is voluntary and oriented toward the workforce. Employees receive messages from HRM practices that the employer encourages them to build good relationships so that they have the capacity and willingness to deal with uncertainty cooperatively. Thus, the influence of HRM practices on OSC is stronger in a less regulated environment.

**H1.** HRM practices whose strategic focus is to enhance social relationships among employees relate positively to OSC.

The discussion here considers the positive effect of HRM practices on OSC. However, OSC is a context-specific phenomenon and the extent of HRM practices on organizational outcomes may depend upon a firm’s environmental contexts. Recent research suggests that industrial characteristics should be potential contextual conditions affecting the influence of HRM practices (Datta et al., 2005; Kim & Wright, 2011). This study investigates two industrial factors, which are industrial regulation and knowledge intensity, as possible moderators of the relationship between HRM practices and OSC.

### 2.3. Industrial regulation as a moderator

Industrial regulation refers to constraints prescribed by the governmental policies on organizations. Industrial regulations posed by governments include industry access control, new investment ratification, progress and pattern control of privatization or decentralization, and government involvement in business activities (Luo, 2003). Because governments may use regulations to strategically restrict vital industries, regulations can protect firms by creating barriers to new entry. Firms in a regulated environment often experience dependence on regulators who act as powerful constraints on existing business (Hambrick & Finkelstein, 1987).

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**H2.** Industrial regulation moderates the relationship between HRM practices and OSC such that the relationship is weaker when industrial regulation is high and stronger when industrial regulation is low.

### 2.4. Knowledge intensity as a moderator

Knowledge intensity refers to the extent that knowledge is a key factor in production or activities (Auto, Sapienza, & Almeida, 2000; Coff, 2003). Although all firms use knowledge as a production input, the importance of knowledge varies among industries due to fundamental differences in markets, technologies, and the expertise deployed
Some industries rely on general knowledge or education, whereas other industries compete based on firm-specific knowledge. Knowledge appears to have broader relevance to firms in knowledge-intensive industries (Coff, 1999). The influence of HRM practices on social relationships among employees is stronger for firms operating in more knowledge-intensive industries. Knowledge-intensive industries are generally dynamic and uncertain (Hambrick, Black, & Fredrickson, 1992), and HRM practices designed to enhance employees’ skills, motivation, and performance may be particularly suitable for these industries (Datta et al., 2005). In these challenging and ambiguous environments, work tends to vary and be more complex. There are fewer task-related constraints upon employee performance and the human element becomes more integral to the business operation. As knowledge intensity increases, employees require more cross-disciplinary coordination and integration to effectively execute their work. Thus, extensive communication among employees for cooperation and problem-solving is critical (Collins & Smith, 2006; Reed, Lubatkin, & Srivivasan, 2006). Employees may realize that they need not only broader professional knowledge and higher technical skills but also good social relationships with other organizational members. Under these circumstances, employees are more likely to recognize the potential benefits of HRM practices implemented to help them improve interpersonal and teamwork skills and provide them more opportunities to interact and develop good relationships with others. Therefore, an investment in such HRM practices can have stronger effects on the development of OSC in higher knowledge-intensive contexts.

Further, the success of knowledge-intensive firms usually hinges on significant employee involvement in knowledge activities such as knowledge sharing and combination. Knowledge sharing facilitates transferring knowledge among organizational members, whereas knowledge combination involves bringing together bits of knowledge from different individuals or units (Jackson et al., 2006). The evaluation and articulation of knowledge during the sharing and combination process engages employees in exploring new ideas and developing creative solutions (Haas & Hansen, 2005; von Krogh, Ichijo, & Nonaka, 2000). Strong relationships reduce the time and efforts required to share and to combine knowledge, particularly when these activities involve tacit knowledge that is difficult to articulate and codify (Hansen, Morris, & Lewås, 2005). Under these conditions, employees may see OSC as a high potential to provide the conditions necessary for knowledge sharing and combination (Nahapiet & Ghoshal, 1998). HRM practices that emphasize frequent and intense interactions can encourage employees to focus on cooperation and to share and combine complex and ambiguous knowledge rather than to conceal knowledge and pursue selfish interests. Thus, HRM practices may exert a greater influence on the development of OSC for firms in knowledge-intensive industries than those in industries relying on tangible resources.

H3. Knowledge intensity moderates the relationship between HRM practices and OSC such that the relationship is stronger when knowledge intensity is high and weaker when knowledge intensity is low.

3. Method

3.1. Sample and procedure

This study distributes two different questionnaires to a senior executive and an HRM executive/manager respectively to reduce the possibility of common method bias. The executive questionnaire includes items regarding OSC, industrial regulation, knowledge intensity, structural capital, and company background information. This study follows Subramaniam and Youndt (2005) and Youndt, Subramaniam, and Snell (2004) in inviting senior executives (presidents, vice presidents, or directors) as informants of OSC because it is a firm-level construct. On the other hand, the HRM questionnaire includes items regarding HRM practices, knowledge management system, and firm size. Following previous studies on HRM practices at the firm level (e.g., Collins & Smith, 2006; Datta et al., 2005; Huselid, 1995; Youndt et al., 2004), this study asks the most appropriate and knowledgeable HRM executive/manager in the respective firm to access HRM practices.

According to Becker and Huselid (1998), survey response rates for HRM systems range from 6 to 28%, with an average of 17.4%. To mitigate a possible lower response rate resulting from a firm-level, multiple-responder research design, this study collects data from two sources provided by a major university in South China to expand the sample frame and increase total responses. This study identifies potential respondents with similar hierarchy positions during the data collection process to alleviate the possibility of heterogeneous samples.

This study surveys 135 firms whose senior executives are enrolled in executive MBA programs or attend training courses at the university. These senior executives complete the executive questionnaires in class and then distribute the HRM questionnaires to their most appropriate HRM managers with pre-paid return envelopes to ensure confidentiality. This study also randomly selects 465 firms whose executives are alumni of the university. A top executive in each firm receives a package including two questionnaires with pre-addressed, pre-paid envelopes, followed by a reminder letter and phone calls. Again, the executive completes the first questionnaire and then distributes the HRM questionnaire to an appropriate HRM executive/manager who is most knowledgeable of the firm’s HRM practices. The sets of respondents drawn from these two sampling processes are similar in terms of position at the executive level and the HRM level.

Overall, 166 firms of the total 600 firms respond to both questionnaires, representing approximately a 28% response rate that is comparable to previous HRM studies (Becker & Huselid, 1998). The final sample includes 161 firms due to missing values. The average firm age is 14.8 years and the average number of employees is 932 employees. The majority of firms (57%) are within the service sector. Of the 161 firms, 79 are privately owned, 45 are state-owned, 27 are foreign, and 10 are joint ventures.

The calculated t-statistics indicate no significant differences in age (t = .77, p = .45) or size (t = −.31, p = .76) between the two survey solicitation approaches. Four key variables (HRM practices, OSC, industrial regulation, and knowledge intensity) also exhibit no statistically significant difference (all p > .05). Although this study employs different sources in data collection, the two sets of respondents are drawn from similar samples. Therefore, the authors pool two sets of data together in subsequent analyses to increase the sample size and statistical power.

3.2. Measures

This study adopts several procedures to ensure measurement validity. This study develops the scale of HRM practices by reviewing the literature and interviewing several Chinese HRM executives and general managers. Five HRM scholars and professionals further validate the content of HRM practices. Two bilingual management researchers help translate items adopted from published measures into Chinese. To improve the level of equivalence and ensure validity, this study adopts the back-translation procedure recommended by Brislin (1980), paying particular attention to detecting misunderstandings due to translation. Finally, the authors discuss the survey readability with several Chinese managers and make appropriate adjustments. Unless otherwise noted, respondents rate items on 7-point Likert scales (1 = “strongly disagree” to 7 = “strongly agree”).

3.2.1. HRM practices

Relatively few studies discuss HRM practices in building and enhancing social relationships among employees, and most work is conceptual or descriptive without appropriate measure items (e.g., Kang et al., 2007; Leana & Van Buren, 1999; Lengnick-Hall & Lengnick-Hall, 2003; Morris et al., 2005). Among the few empirical studies, measures
of HRM practices either target unique groups, such as top management teams or orthopedic units (Collins & Clark, 2003; Gottell et al., 2010), or examine individual employees’ own experiences (Kaše et al., 2009). As a result, there is no appropriate measure of HRM practices that is applicable to OSC development for the organization as a whole. Thus, this study uses relevant articles (e.g., Kang et al., 2007; Kaše et al., 2009; Leana & Van Buren, 1999; Lengnick-Hall & Lengnick-Hall, 2003; Morris et al., 2005) as a basic template for developing a measure of HRM practices. This study also refers to other studies focusing on HRM practices for knowledge activities that also emphasize fostering employee interaction (e.g., Collins & Smith, 2006; Jackson et al., 2006; Lopez-Cabrales et al., 2009). Next, the authors interview several Chinese HRM executives and general managers to explore the role of HRM in supporting OSC. Based on these interviews and the literature, this study develops potential measure items corresponding to three categories of HRM practices for building relationships: providing opportunities, enhancing motivation, and improving abilities. Three HRM scholars and two HRM practitioners familiar with the issue of OSC validate the items. Finally, this study uses 19 items to assess HRM practices for OSC (Appendix A). The coefficients of Cronbach’s alpha for the dimensions of opportunity, motivation, and ability are .96, .83, and .84, respectively. The internal reliability of this composite scale is .95.

This study conducts confirmatory factor analysis (CFA) to further validate the measure of HRM practices. The model with three first-order factors and a latent second-order factor achieves an acceptable fit ($\chi^2 = 390.61$, $df = 148$, $p < .001$; root mean square error of approximation [RMSEA] = .08, standardized root mean square residual [SRMR] = .06, non-normed fit index [NNFI] = .92, comparative fit index [CFI] = .93). All indicators significantly load on their corresponding first-order factors ($p < .01$), and all three first-order factors load on the second-order latent construct (opportunity .81, motivation .90, and ability .85). However, one measure item, “Internal candidates take priority over external candidates for job openings,” loads below .40, and this study drops the item for subsequent analyses.

A primary principle in strategic HRM research asserts that examining the system of HRM practices in place rather than in isolation is more appropriate (Becker & Huselid, 1998; Lepak et al., 2006; Liao et al., 2009). A system of HRM practices represents a bundle of practices rather than a system of HRM practices. This study calculates a unitary HRM index to assess the HRM practices for OSC. Thus, this study forms a single comprehensive measure by calculating the mean scores of all HRM practices.

3.2.2. Organizational social capital

This study examines the structural (information sharing), relational (trust), and cognitive (shared vision) aspects of OSC by respectively adopting five, six, and five items from Leana and Pil (2006). Respondents assess OSC of the organization as a whole instead of individual employees. A sample item is “Employees share the same ambitions and vision for the company.” The values of internal reliability for the structural, relational, and cognitive aspects are .88, .90, and .92 respectively, and the Cronbach’s alpha for this complete scale is .95.

This study conducts CFA to assess the validity of the multi-dimensional scale of OSC, and the three facets form an overall, higher-order construct, given that the fit indexes fall within an acceptable range ($\chi^2 = 227.75$, $df = 101$, $p < .001$; RMSEA = .09, SRMR = .05, NNFI = .92, CFI = .94). All indicators significantly load on their corresponding first-order factors ($p < .01$), and the three first-order factors (i.e., structural .81, relational .98, and cognitive .86) load on the second-order latent construct. This study follows Leana and Pil (2006) in averaging the scores of all items to create a composite OSC index.

3.2.3. Industrial regulation

No appropriate scale is available to assess the level of industrial regulation. This study uses eight aspects from Doing Business of the World Bank (http://www.doingbusiness.org) quantity indicators on business regulations, and adds an environmental aspect. Each respondent rates the extensiveness of industrial regulation (5-point Likert scale, from 1, “very loosely regulated”, to 5, “very highly regulated”) with nine items: starting a business, dealing with licenses, employing workers, registering property, getting credit, protecting investors, paying taxes, enforcing contracts, and environmental protection. The alpha reliability for this scale is .82.

3.2.4. Knowledge intensity

This study adopts two items from Autio et al. (2000) and develops three items based on Coff (1999) and Cohen and Levinthal (1990) to assess the levels of knowledge intensity. A sample item is “There is a strong knowledge component in products and services in our industry.” The coefficient alpha for this scale is .84.

3.2.5. Control variables

This study also controls for the effects of several variables. Firm age and access to resources (firm size as the proxy) may influence OSC, which is inherently evolutionary in nature, and larger firms may employ more progressive HRM practices (Collins & Smith, 2006; Jackson & Schuler, 1995). A meta-analysis shows that the influence of HRM practices is larger for manufacturing firms than for service firms (Combs et al., 2006). The quality of knowledge management systems may affect a firm’s ability to accumulate OSC (Sherif, Hoffman, & Thomas, 2006). Structural capital can also create a context to enhance cooperation among employees (Carmona-Lavado, Cuevas-Rodríguez, & Cabello-Medina, 2010). This study calculates firm age as the number of years from the founding date and firm size as the natural logarithm of the number of full-time employees. A dummy variable for the industry type indicates whether firms belong to manufacturing industries (1 = manufacturing industry, 0 = otherwise). This study adopts five items from Kulikarni, Ravindran, and Freeze (2007) and four items from Subramaniam and Younoot (2005) to measure knowledge management systems and structural capital, with respective alpha values of .84 and .72.

3.2.6. Convergent and discriminant validity

This study assesses the psychometric properties of the perceptual measures by performing CFA to examine their convergent validity and discriminant validity. For multi-dimensional constructs (i.e., HRM practices and OSC), this study averages scores of items into dimensions and treats different dimensions as separate indicators of their corresponding constructs. Following the procedure suggested by Mathieu and Farh (1991), this study creates three composite indicators for other unidimensional constructs. A model with the six latent constructs fits the data well ($\chi^2 = 190.03$, $df = 120$, $p < .001$; RMSEA = .06, SRMR = .06, NNFI = .94, CFI = .95). All factor loadings are statistically significant at the .01 level. The values of composite reliability range from .74 to .89, and the average variance extracted from each contract ranges from .50 to .73, all above the cutoff suggested by Fornell and Larcker (1981).

This study uses the six-construct model above as a baseline model to further examine the discriminant validity of the constructs. Using chi-square difference tests to make comparisons of the baseline model with all alternative models reveals that the baseline model fits the data best, confirming the discriminant validity of the measures.

4. Analyses and results

This study employs hierarchical multiple regression analysis to test the hypotheses. To reduce multicollinearity among predictors
when testing moderation, this study centers the measures of HRM practices, industrial regulation, and knowledge intensity by subtracting the mean of each variable from observed values (Aiken & West, 1991).

Table 1 presents the means, standard deviations, and correlations of the study variables. Table 2 presents the results of hierarchical multiple regression analyses.

Model 2 in Table 2 shows that the relationship between HRM practices and OSC is significant and positive ($\beta = .31$, $p < .01$), indicating that managerial practices that emphasize interactions and relationships among employees enhance OSC. Therefore, the results support H1.

H2 states that HRM practices have weaker influence on OSC when industrial regulation is high. Model 3 in Table 2 indicates that the relationship between OSC and the interaction term of industrial regulation and HRM practices is significant ($\beta = -.20$, $p < .01$). Following Aiken and West’s (1991) procedure, this study probes the significance of the simple slopes and plots their interaction. Fig. 1 depicts a weaker relationship between HRM practices and OSC for firms with high industrial regulation ($\beta = -.21$, $p < .10$) and a stronger relationship for firms with low industrial regulation ($\beta = .46$, $p < .001$). Thus, the results support H2.

H3 states that HRM practices have stronger influence on OSC when knowledge intensity is high. Model 3 in Table 2 reveals a non-significant relationship between HRM practices and OSC ($\beta = .04$, ns), providing no support for the moderating effect of knowledge intensity.

Although this finding does not offer support for H3, the investigation of whether the two industrial variables act as moderators concurrently instead of individually may offer additional insights. This study examines the three-way interaction of HRM practices, industrial regulation, and knowledge intensity in a post hoc analysis. Model 4 in Table 2 shows that the coefficient of the three-way interaction term is significant and positive ($\beta = .22$, $p < .05$), indicating that the relationship between HRM practices and OSC may be contingent on the interplay of industrial regulation and knowledge intensity. Fig. 2 illustrates that, under the condition of high industrial regulation, HRM practices have positive and significant effects on OSC with the presence of knowledge intensity ($\beta = .32$, $p < .05$) but not with a low knowledge intensity ($\beta = -.04$, ns). The results clearly suggest that knowledge intensity moderates the HRM–OSC link in a regulated context.

On the other hand, when industrial regulation is relatively low, HRM practices have positive and significant effects on OSC when knowledge intensity is either high or low. To more accurately investigate the interaction effects, this study includes the procedure developed by Dawson and Richter (2006) to conduct a slope difference test. The slopes for high knowledge intensity and low knowledge intensity under the condition of low industrial regulation are not significantly different ($t = -.88$, $p = .38$).

Table 2

<table>
<thead>
<tr>
<th>Independent variables</th>
<th>Organizational social capital</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Model 1</td>
</tr>
<tr>
<td>Control variables</td>
<td></td>
</tr>
<tr>
<td>Firm age</td>
<td>.07</td>
</tr>
<tr>
<td>Firm size*</td>
<td>-.04</td>
</tr>
<tr>
<td>Industry typeb</td>
<td>-.02</td>
</tr>
<tr>
<td>Knowledge management system</td>
<td>.24**</td>
</tr>
<tr>
<td>Structural capital</td>
<td>.42***</td>
</tr>
<tr>
<td>Direct effects</td>
<td></td>
</tr>
<tr>
<td>HRM practices</td>
<td>.31**</td>
</tr>
<tr>
<td>Industrial regulation</td>
<td>.04</td>
</tr>
<tr>
<td>Knowledge intensity</td>
<td>.14*</td>
</tr>
<tr>
<td>Two-way interactions</td>
<td></td>
</tr>
<tr>
<td>HRM practices × industrial regulation</td>
<td>-.20**</td>
</tr>
<tr>
<td>HRM practices × knowledge intensity</td>
<td>-.04</td>
</tr>
<tr>
<td>Industrial regulation × knowledge intensity</td>
<td>-.10</td>
</tr>
<tr>
<td>Three-way interaction</td>
<td></td>
</tr>
<tr>
<td>HRM practices × industrial regulation × knowledge intensity</td>
<td>.22*</td>
</tr>
<tr>
<td>$R^2$</td>
<td>.28</td>
</tr>
<tr>
<td>$\Delta R^2$</td>
<td>.28</td>
</tr>
<tr>
<td>F change</td>
<td>12.26***</td>
</tr>
</tbody>
</table>

Values are standardized estimates.

* Natural logarithm of the number of employees.

b Dummy variable coded as manufacturing industry; 1; otherwise 0.

** $p < .05$.

*** $p < .01$.

5. Discussion

Although OSC is a critical resource for firms, the conditions that encourage and support this resource receive little attention. This study investigates the influence of HRM practices on OSC, and more importantly, the moderating role of industrial characteristics. The results of this study reveal that a firm’s OSC increases when the firm’s HRM practices focus on building good relationships among employees. However, the relationship between HRM practices and OSC is weaker in a more regulated context. Although not hypothesized, the findings of this study indicate that, in a more regulated environment, HRM practices effectively facilitate OSC for firms operating in comparatively high knowledge-intensive industries.

5.1. Research implications

This study contributes to the strategic HRM and social capital literature and provides several research implications. First, this study provides a complementary test of the HRM–OSC research by conducting firm-level, employee-focused empirical analysis. Extending previous research, the results suggest that, in addition to encouraging individual
employees or managers to build good relationships with their peers and coworkers as other studies have shown (Collins & Clark, 2003; Gittell et al., 2010; Kaše et al., 2009), HRM practices can also foster internal relationship resources of the organization as a whole. The findings are important because theory and research based on multilevel approach (Kozlowski & Klein, 2000) indicate that what applies at one level (e.g., the individual or group level) may not necessarily apply to another level (e.g., the firm level). Focusing on the firm-level phenomena, this study identifies what HRM practices devised around the strategic focus are the potential antecedent of OSC and delineates how HRM practices can facilitate OSC by addressing the three mechanisms of ability, motivation, and opportunity, and offers a better understanding of the critical role of HRM practices in developing OSC.

Next, this study strengthens the contingency perspective by exploring the moderating effects of industrial regulation and knowledge intensity to specify the industry context in which HRM practices are likely to exert greater or smaller influence on OSC. The investigation manifest the context-specific attribute of OSC (Leana & Pil, 2006) and answers calls for HRM research to address external contextual factors when examining the effects of HRM practices (e.g., Datta et al., 2005; Jackson & Schuler, 1995; Kim & Wright, 2011; Sun et al., 2007).

The results support theorizing that industrial regulation serves as an important boundary condition for the influence of HRM practices on OSC. Indeed, the relationship between HRM practices and OSC is stronger for firms that are relatively free of regulatory pressures, while the general levels of OSC change marginally as a function of HRM practices for more regulated firms. These findings provide preliminary support for Kim and Wright’s (2011) assertion that the influence of HRM practices depends on a regulatory context, and promote understanding of the cross-contextual variation of the HRM–OSC link.

Further, previous studies on industrial moderators of the relationship between HRM practices and organizational outcomes usually focus on one industrial factor or examine the influence of multiple industrial factors individually (e.g., Batt, 2002; Datta et al., 2005). However, multiple industrial factors tend to exist simultaneously in the organizational context and jointly influence managing practices and their outcomes. Results of this study highlight the importance of considering the interplay between industrial regulation and knowledge intensity when examining the relationship between HRM practices and OSC. Employees are less likely to perceive the adoption of HRM practices as a voluntary action in a regulatory context, particularly if the environment mainly depends on blue-collar workers without large investments in research and development. The success of such firms depends mostly on work efficiency rather than innovation. In such an environment, social interaction and knowledge flows within the firm are not urgent, and employees are less likely to realize the benefits of good relationships. Thus, the efficacy of HRM practices is limited.

In contrast, although employees may be skeptical of the employer’s intention to adopt HRM practices in a highly regulated context, HRM practices can still have a significant effect on OSC in an environment where information-processing and knowledge sharing among employees, particularly knowledge workers, plays a pivotal role in firm success. Employees who receive messages through HRM practices for encouraging good quality relationships may perceive that good relationships can help them work in an effective manner and receive better performance evaluation and rewards. Given that internal relationship resources are critical for both knowledge-intensive firms and their employees, firms that invest resources in HRM practices to develop OSC can facilitate relationships among employees in a more regulated context.

Although industrial regulation seems to be a more influential moderator than knowledge intensity in the present study, the various conditions of knowledge intensity in more regulated industries also alter the HRM–OSC relationship. This study suggests a new perspective that future research on OSC and HRM may need to explore critical contextual factors simultaneously to uncover the real picture. Such an approach avoids examining individual moderators in isolation, which limits the relevance of important contextual information.

5.2. Managerial implications

This study has important managerial implications. The findings support the notion that investment in complementary HRM practices aligned with strategic imperatives is worthwhile. Employees are essential to the execution of business strategies. Firms can use different HRM configurations to achieve different strategic objectives. In order for employees to behave toward the strategic objectives, managers need to clarify their strategies and then implement HRM practices that send clear messages to employees. Specifically, managing employees with an emphasis on developing social relationships can encourage network-building behaviors, which are helpful in developing OSC. Further, managers should design HRM practices that aim at three focal mechanisms of ability, motivation, and opportunity. HRM practices can improve employees’ abilities to interact with coworkers, increase their willingness to build good social relationships, provide them with more opportunities, and thus facilitate the accumulation of OSC.

More importantly, the findings of this study caution managers that the effects of HRM practices on OSC may be contingent on industrial characteristics such as industrial regulation and knowledge intensity. Employees receive messages embedded within HRM practices about the firm’s intentions. Through these practices, the firm demonstrates its investment in employees toward building good quality relationships within the firm. However, the influence of HRM practices on employees may vary depending on the regulatory context. Managers may find that investments in HRM practices produce higher returns when their firms are operating in a more loosely regulated context. In this regard, managers can improve their communication with employees and send strong messages in a way that the adoption of such HRM practices is for employees’ sake rather than for regulatory constrains. For firms in highly regulated settings, HRM practices can facilitate OSC development in
relatively high knowledge-intensive contexts, but they are more difficult to do so in low knowledge-intensive settings. This study suggests that managers can benefit from considering industrial characteristics when designing HRM practices that foster OSC.

5.3. Limitations and future research

This study has some limitations and offers directions for future research. First, this study does not investigate consequences of OSC and thus may limit its implications. Nonetheless, the body of literature linking OSC with firm performance lends support to the advantages of OSC. This study also acknowledges the possible dark side of OSC (Gargiulo & Benassi, 1999), and the cost associated with the development of OSC could diminish its benefits. Thus, future research should include critical indicators of organizational performance to construct a more complete research framework.

Further, although two respondents for each firm who provide different information can reduce the possibility of common method bias, this study collects survey data at the same time. This cross-sectional design limits inferences of causality. Although it is unlikely that higher levels of OSC will lead to more investment in HRM practices, a reverse flow from that assumed in the current study, future research on this topic would benefit from longitudinal designs that can address this issue with more certainty.

Another limitation relates to data collection. This study employs different sampling processes to solicit potential participants, generating two possible heterogeneous samples. Nevertheless, a series of sample comparison tests show no significant difference and thus offers a rational to pool the two similar samples together in subsequent analyses. In addition, those senior executives who respond to the first questionnaire distribute the HRM questionnaire within their firms. The authors ask senior executives to carefully identify the most appropriate and knowledgeable HRM executive/manager to assess HRM practices; however, this study cannot rule out the chance that the selection of the HRM respondents might be due to the senior executives’ bias, particularly if there are multiple HRM managers. Future research can improve the reliability of this measure by collecting HRM data from multiple respondents (Gerhart, Wright, McMahan, & Snell, 2000).

Additionally, although this study develops the items of HRM practices based on theory and literature and several HRM researchers and practitioners validate the scale, some relevant practices may be absent. Future research can attempt to improve the quality of the HRM measure. For other scales adopted from published work, this study employs the translation process for scale development, which has been widely used in Chinese management research (Farh, Cannella, & Lee, 2006). Despite the use of back-translation procedure and additional steps to ensure validity and avoid cultural bias, the level of equivalence may still be a concern (Farh et al., 2006). Therefore, subsequent studies should develop measures of OSC-related research in Chinese culture.

A related limitation is that the sample is from a Chinese context, in which power distance is greater than in Western countries, and thus may limit the generalizability of the findings. However, the sample can also be a strength because Chinese culture, which is well known for its relationship emphasis (Hitt, Lee, & Yucel, 2002), provides an appropriate cultural context for testing issues related to OSC. Considering the wider sample frame, many industries in China are complex and dynamic, representing a rich research context for studying industrial characteristics (Luo, 2003). Nevertheless, future research should examine the robustness of the current theoretical predictions in other cultural settings or across cultures.

Finally, the current results do not show consistency of the moderating role of knowledge intensity. Despite a nonsignificant difference in the slope comparison test, HRM practices exert a greater influence on OSC for firms operating in a relatively less regulated, less knowledge-intensive context. These findings may reflect the theory of HRM attribution (Nishii et al., 2008), such that employees tend to believe that firms with less regulation have voluntarily chosen to implement HRM practices for developing OSC, and their perceptions may be stronger in industries where knowledge is not a key factor for operating activities. Further investigation into this specific finding can offer additional insights.

Appendix A

Items and results of confirmatory factor analysis for HRM practices.

<table>
<thead>
<tr>
<th>Measure items</th>
<th>Factor loading</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Opportunity practices</strong></td>
<td></td>
</tr>
<tr>
<td>1. The company sponsors various social events to encourage contact and relationship-building among employees.</td>
<td>.89</td>
</tr>
<tr>
<td>2. The company often arranges events for knowledge exchange (e.g., seminar, presentation, etc.)</td>
<td>.91</td>
</tr>
<tr>
<td>3. New hires are moving around the organization so they can know people and other parts of the organization.</td>
<td>.84</td>
</tr>
<tr>
<td>4. The company uses job rotation for employees to gain experience by moving them across different functional areas or divisions.</td>
<td>.85</td>
</tr>
<tr>
<td>5. The company encourages employees to participate in community of practices.</td>
<td>.89</td>
</tr>
<tr>
<td>6. The company invests considerable time and resources in operating community of practices.</td>
<td>.90</td>
</tr>
<tr>
<td>7. Employees often work in teams (project teams, cross-functional teams, etc.)</td>
<td>.84</td>
</tr>
<tr>
<td>8. The company provides team training to facilitate social interaction.</td>
<td>.85</td>
</tr>
<tr>
<td><strong>Motivation practices</strong></td>
<td></td>
</tr>
<tr>
<td>9. The selection of employees emphasizes their overall fit to the company (values, personality, etc.)</td>
<td>.65</td>
</tr>
<tr>
<td>10. The company provides an extensive orientation program for new employees to learn the history, culture, and values of the company.</td>
<td>.70</td>
</tr>
<tr>
<td>11. Sharing information and knowledge with other people or units within the company is an important indicator of performance appraisals.</td>
<td>.80</td>
</tr>
<tr>
<td>12. The company rewards employees for sharing new information and knowledge.</td>
<td>.83</td>
</tr>
<tr>
<td>13. Employees’ bonuses or incentive plans are based primarily on the organizational performance.</td>
<td>.70</td>
</tr>
<tr>
<td>14. Internal candidates take priority over external candidates for job openings.</td>
<td>.35</td>
</tr>
<tr>
<td><strong>Ability practices</strong></td>
<td></td>
</tr>
<tr>
<td>15. The selection of employees is totally based on their technical skills but not interpersonal skills. (reverse-coded)</td>
<td>.61</td>
</tr>
<tr>
<td>16. The selection of employees emphasizes teamwork ability.</td>
<td>.71</td>
</tr>
<tr>
<td>17. The company provides training to improve the interpersonal skills of employees to build good relationships.</td>
<td>.81</td>
</tr>
<tr>
<td>18. The company provides training to enhance team-building and team-work skills of employees.</td>
<td>.79</td>
</tr>
<tr>
<td>19. Employees’ interpersonal relationships within and outside the company are considered as important in selecting team members.</td>
<td>.62</td>
</tr>
</tbody>
</table>

References


