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Picturing firms' institutional capital-based radical innovation under China's institutional voids ☆

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ABSTRACT

This study provides an institutional framework to interpret firms' resource management in China. We identify the formal and informal institutional capital that firms acquire via their relational network and solicit from the government, and their distinctive effects on firms' radical innovation. We address how firms' utilization of the formal and informal institutional capital would be influenced by their multi-level contexts (local context, market context, and organizational context). Using a survey data from 280 Chinese high-technology firms, we find that firms' informal institutional capital has a higher positive effect on firms' radical innovation than the formal institutional capital does. The effects of firms' formal institutional capital on radical innovation would be higher in the complex market, and for the state owned enterprises, whereas the effect of firms' informal institutional capital on radical innovation would be higher in the developed provinces but lower in the complex market.

1. Introduction

Radical innovation helps firms to redefine current markets and explore/create new ones to extract monopolistic rents (Chandy & Tellis, 1998; Zhou & Li, 2012). It thus has stronger and longer-lasting effects on firms' long-term competitive advantages than other types of innovation (Chandy & Tellis, 1998). This is particularly the case in China's transitional economy (Bao, Chen, & Zhou, 2012; Zhou & Li, 2012), where ongoing institutional transitions are shaping the competition landscape. The result is a range of uncertainties that firms need to buffer against and/or eliminate (Bao et al., 2012; Zhou & Li, 2012), but the underexplored market regime equally leaves vast spaces to conquer (Yi, Liu, He, & Li, 2012). Furthermore, firms' and the country's inferior position in the international marketplace motivates them to attempt to triumph in a "David and Goliath" battle (Chandy & Tellis, 1998; Tellis, Prabhu, & Chandy, 2009). Thus, radical innovation could be an effective strategy for local firms wishing to increase their domestic and international competitiveness, and for China to survive amid global competition (Li & Atuahene-Gima, 2001; Tellis et al., 2009). It is thus unfortunate that the country's considerable institutional voids (Khanna, Palepu, & Sinha, 2005) render the domestic market hostile to this type of innovation (Tellis et al., 2009).

Radical innovation is discontinuous and risky (Bao et al., 2012; Zhou & Li, 2012), relying heavily on firms' acquisition of diverse in-depth knowledge (Zhou & Li, 2012), timely and comprehensive market information (Reid & De Brentani, 2012), and abundant capital (Tellis et al., 2009). It is difficult for an individual firm to fulfill such criteria without the assistance of external entities. However, China's institutional voids (Khanna et al., 2005) include lacks of specialized market intermediaries, developed factor markets, and mature contract-enforcing mechanisms, inhibits firms in their acquisition of resources, knowledge, and information via market transactions (Khanna et al., 2005; Wright, Filatotchev, Hoskisson, & Peng, 2005). Therefore, unlike previous studies that focus on how firms' knowledge characteristics (Zhou & Li, 2012) and external learning activities (Bao et al., 2012) affect their degree of radical innovation, this study explores how firms counteract institutional voids and obtain the external assistance they need to achieve radical innovation.

The institutional literature provides two possible answers. First, weak formal institutions give rise to complementary informal institutions such as relational networks (Peng & Heath, 1996). Firms operating in such an environment can thus acquire external resources, knowledge, and information via their relational networks (Peng & Luo, 2000). Second, weak market institutions also compel governments to manage resource control and allocation (Wright et al., 2005). As governments increasingly

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recognize the importance of radical innovation, they are likely to provide support for firms to develop it (Li & Atuahene-Gima, 2001; Tellis et al., 2009), meaning that firms can actively solicit resources, knowledge, and information from the government. Notably, resources, knowledge, and information from different sources (i.e., government versus the business community) may have inherent heterogeneities. With reference to studies of such heterogeneities and their consequences (e.g., Bao et al., 2012; Zhou & Li, 2012), we further examine whether the benefits acquired via different solutions against a backdrop of institutional voids have different effects on radical innovation. To date, few studies have empirically validated the effects that specific firm solutions exert on innovation and examined their differences.

Acquiring the external information, knowledge, and resources is only half the battle; to achieve radical innovation, firms have to properly interpret, evaluate, assimilate, and integrate them with their internal R&D activities (Leifer, O'Connor, & Rice, 2001; Sirmon, Hitt, & Ireland, 2007; Weigelt, 2009). In the process, firms' internal and external contexts may exert considerable influence (North, 1990; Scott, 1995; Sirmon et al., 2007), which according to the institutional perspective, can be further divided into the economic view and the sociological view. The economic view considers how economic, political, and social institutions create the infrastructural foundations that support or inhibit firms' deployment activities (Chan, Makino, & Isobe, 2010; North, 1990), which coincides in part with industrial organizational economics (Barney, 1990). The sociological view incorporates cognition research (Fiske & Taylor, 1984) and considers the way in which certain types of firm behavior are "compliant, habitual, unreflective, and socially defined" (Oliver, 1997, p. 699). Most research adopting the former view makes the rational choice assumption, interpreting how firms *should behave* with regard to competitive influences, but rarely considering how they *choose to behave* in specific internal and external contexts (Oliver, 1997). This reliance on firms' rational choices constitutes a striking limitation when it comes to interpret radical innovation (Bao et al., 2012; Chandy & Tellis, 1998). Moreover, firms' specific contexts and hierarchies (Griffith, 2010; Oliver, 1997) render the situation even more complex. Firms' internal contexts, comprising institutionalized rules, values, norms, routines, and infrastructure (Walsh, Bhatt, & Bartunek, 2009), can support certain types of actions and decisions while constraining others (Oliver, 1997). Market conditions affect firms' cognition and understanding of the cause-and-effect relationships that provide the heuristics (i.e., decision rules) guiding their resource-utilizing behavior (Sirmon et al., 2007; Weigelt, 2009). Finally, the local economic and political infrastructure (e.g., capital markets and market system) supports firm activities to a certain extent (Chan et al., 2010), whereas social institutions exert expectations and pressures that define socially acceptable behavior (DiMaggio & Powell, 1983). However, previous research has largely neglected the role that hierarchies in the firm context play in radical innovation.

To address these limitations, we position our study in China, a research setting with considerable institutional voids and numerous heterogeneities in firms' internal and external contexts (Tsui, Schoonhoven, Meyer, Lau, & Milkovich, 2004). We adopt the institutional perspective as our overarching theory to interpret how firms react to these institutional voids in attempting to achieve radical innovation and to investigate whether the information, knowledge, and resources that firms acquire from different sources exert differential effects on such innovation. We adopt the integrated institutional logics framework (combining economic and sociological logic) (Peng, Sun, Pinkham, & Chen, 2009) to investigate how a firm's internal and external contexts influence its use of acquired benefits. We use (1) an institutional index to reflect firms' local context (Li & Qian, 2012), (2) market complexity (Sheng, Zhou, & Li, 2011) to depict their market conditions, and (3) firm ownership to reflect their organizational context (Peng, Tan, & Tong, 2004). In the next section, we discuss the concepts of institutional capital and institutional influences from a firm's local context, market context, and organizational context, and then develop our research hypotheses.

2. Theory and hypotheses

2.1. Formal versus informal institutional capital

A firm's institutional environment affects the means by which it can acquire external resources, knowledge, and information (North, 1990; Oliver, 1997). Economic institutions include market intermediaries that compile and disseminate market information and build lines of communication between transaction parties, and factor markets that provide firms with needed physical and intellectual resources. Political institutions comprise the legal and regulatory systems that govern and protect firms' business transactions. Social institutions determine what type of resource-renewing behavior is appropriate (Chan et al., 2010; North, 1990; Scott, 1995). The considerable institutional voids in China, namely the shortage of fully developed economic institutions, make it difficult for firms to search for and acquire market-based resources, and weak political institutions fail to effectively protect business transactions (Peng, 2003). In this situation, firms have two choices to counteract the adverse effects of institutional voids. They can develop relational networks to compensate for the weakness of formal institutions (Park & Luo, 2001; Peng & Heath, 1996), and then acquire resources (Fukuyama, 1995), technical knowledge, market information (Peng & Luo, 2000), and managerial intelligence (Park & Luo, 2001) from those networks. Resources, knowledge, and information acquired in this way can be viewed as a firm's informal institutional capital (IIC). Firms can also obtain support from the government in the form of technical information, financial support, infrastructure and equipment, and/or tax concessions and subsidies (Li & Atuahene-Gima, 2001). The benefits so obtained can be regarded as a firm's formal institutional capital (FIC).

Radical innovation refers to a revolutionary change in a current product category (Zhou & Li, 2012) and/or a novelty achieved through a combination of current technologies and market solutions (Bao et al., 2012). It requires risky, highly uncertain, iterated, and capital-intensive experimentation and a trial-and-error process (Reid & De Brentani, 2012), and thus imposes a heavy burden on firms' financial and technical resources and managerial capacity. Firms with a diverse knowledge base (Zhou & Li, 2012), abundant amounts of financial and intellectual capital (Tellis et al., 2009), timely and comprehensive market information (Day, 1994), and the managerial capacity to identify opportunities for innovation (Zhou & Li, 2012) and to cannibalize prior competency investments (Chandy & Tellis, 1998) and formulate proper organizational routines (Bao et al., 2012) are more likely to achieve radical innovation. Thus, FIC and IIC can boost firms' ability to achieve radical innovation.

With regard to FIC, to encourage endogenous innovation, governments can provide firms with financial support in the form of subsidies or favorable taxation policies to shelter them from competitive pressures (Li & Atuahene-Gima, 2001; Yi et al., 2012). Such support renders firms more capable of continuous investment in experimental activities and more endurance until success can be achieved (Tellis et al., 2009). Governments also play a bridging role between firms and universities or public research institutions (Xu, Huang, & Gao, 2012), which are sources of novel technology and scientific knowledge (Tellis et al., 2009). Such technology and knowledge, which are likely to be more diversified or in-depth than a firm's existing technology and knowledge (Carlo, Lyytinen, & Rose, 2011), have the potential to trigger the creation of novel technical knowledge and/or novel combinations of existing knowledge (Carlo et al., 2011; Zhou & Li, 2012). Moreover, government provided financial support, technical information and knowledge, and favorable policies all enhance firms' perceptions of safety (White, Varadarajan, & Dacin, 2003) and resource availability (Reid & De Brentani, 2012). Such implicit encouragement of innovation can render firms more willing to commit to, and more confident about implementing, radical innovation (Li & Atuahene-Gima, 2001; Reid & De Brentani, 2012; White et al., 2003; Yi et al., 2012).