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Institutional constraints of product innovation in China: Evidence from international joint ventures

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ABSTRACT

Research interests in product innovation and relevant success factors in an international context are increasing in the past decades. With the data from over 400 international joint ventures in China's manufacturing sector, this study explores China's institutional factors that may significantly affect product innovations in international joint ventures. The results show that while total R&D investment can increase China's international joint ventures' global product sales brought by new product innovations, local professional services and infrastructure including local universities and research institutes in China can also facilitate product innovation and patent applications. In addition, local market for talents and technologies in China has negative impact on international joint ventures' efforts to sell products overseas. This paper concludes with the discussions of the implications for Chinese government and international joint ventures in China's market.

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1. Introduction

Product innovation is a powerful tool of competition in the global market. Successful launch of new products can have significant impact on firm performance (Bowen, Rostami, & Steel, 2010; Di Benedetto, 1999; Ernst, 2002; Ettlie & Subramaniam, 2004; Song & Parry, 1994; Song, Podoyntsyna, Van der Bij, & Halman, 2008; Subramaniam, 2006; Zhang, Hu, & Kotabe, 2011). Empirical studies highlight the high failure rates in product innovation and development (Ernst, 2002; Parry & Song, 1994), which clearly indicates the utmost importance to better understand what factors impact product innovation success.

Product innovation and product development retain a high level of popularity over the last three decades (Ernst, 2002). Most studies on product innovation in the literature focus on the identification of various success factors (Calantone, Schmidt, & Song, 1996; Ernst, 2002). A large number of studies identify key factors that may facilitate new product success in different sectors with different perspectives (e.g., Calantone, Chan, & Cui, 2006; Di Benedetto, 1999; Dyer & Song, 1998; Ernst, 2002; Lichtenthaler & Ernst, 2007, 2009; Subramaniam & Venkatraman, 2001), however, in comparison with the tremendous amount of research on product innovation and new product development in the West, relatively little research examines the context of China (Chen & Yeh, 2012; Parry & Song, 1994; Yaprak, 2012; Wang &

Chung, 2013; Zhang et al., 2011). Chinese culture is unique and China has a dramatically different social and economic system where a large number of cultural barriers impede the process to simply apply success factors identified in the West to the Chinese context (Wang & Chung, 2013; Zhang et al., 2011). An examination on the relationship between institutional constraints of product innovation and firm performance of international joint ventures in China helps explore the unique characteristics of Chinese culture and facilitates multinationals' entry into the Chinese market.

In addition, relatively little research exists in product innovation literature that specifically examines China's unique institutional environment that might strongly affect a firm's innovation performance, in particularly for those international joint ventures competing in China's market. Despite the dramatic differences from Chinese state-owned enterprises and local private companies, international joint ventures in China play a very important role in China's rapid economic development. The understanding of international joint ventures' product innovation needs more research attention (Si & Bruton, 2005; Zhang et al., 2011). China is one of the most important emerging markets that has the potential to become the next economic superpower with world second largest GDP and fastest economic growth. Along with China's three-decade-long transition to a market economy, China undergoes massive restructuring in innovation system. In 2006, China further announced the Guideline for the National Medium- and Long-term Science and Technology Development Programs (2006–2020), the focus of which is to emphasize the strategic role of innovation and to

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lay out long-term goals and specific measures in order to booster China's aspiration to become an innovation center by 2020 (Ma, Lee, & Chen, 2009). As a result, a good understanding of product innovation and new product development in China is essential to help better understand the emerging trends in product innovation and further the rising of multinationals from the emerging markets which are sure to become formidable competitors for multinationals from the developed countries.

This study is to explore new trends in product innovation by examining China's institutional constraints on product innovation for international joint ventures in China, with the focus on what particular institutional factors can help improve firm performance as measured with patent application, global product sales, and overseas market shares as a result of successful launch of new products. While research on product innovation in the West produces an impressive array of success factors for product innovation and new product development (Ernst, 2002; Lisboa, Skarmas, & Lages, 2011; Song & Noh, 2006; Souder & Song, 1997, 1998; Subramaniam, Rosenthal, & Hatten, 1998), whether these factors have the impact in the Chinese context remains unclear (Guo, Xu, & Jacobs, 2014; Shou, Chen, Zhu, & Yang, 2014; Xie, Song, & Stringfellow, 2003; Zhang et al., 2011). The current study will explore this issue by investigating what are the important institutional factors in China and further what effects these factors may have. The answers to these questions will help identify what is relevant to product innovation in the eyes of Chinese managers, which is thus more meaningful to the product innovation literature in the increasingly globalized world market as well as in the increasingly important Chinese market.

2. Conceptual framework

Product innovation refers to novel product, service, or production process that departs significantly from prior product, service, or production process architectures (McKinley, Latham, & Braun, 2014). In organizations, product innovations often manifest in significant modifications of production process or product or service architectures and sometimes by the introduction of an entirely new product (McKinley et al., 2014). The continuous development and introduction of product innovations are important weapons of competition (Ernst, 2002). The success factor studies thus gain great popularity and generate a large array of literature on product innovation and associated antecedents and criterion factors (e.g., Cooper & Kleinschmidt, 1993, 1995, 1996; Di Benedetto, 1999; Dyer & Song, 1998; Ernst, 2002; Song & Montoya-Weiss, 2001; Song & Noh, 2006; Song & Parry, 1997a, 1997b; Song, Song, & Di Benedetto, 2009; Song et al., 2008; Souder & Song, 1997, 1998; Subramaniam et al., 1998). In order to identify the most important success factors, much of the research on product innovation focuses on the economics of new product development, effects of market orientation on product innovation, practitioner-oriented how-to approaches in product development and innovation, the innovation adoption process, and the descriptive but generally anecdotal firm characteristics that serve to generate innovation (Pullen, Weerd-Nederhof, Groen, Song, & Fisscher, 2009; Siguaw, Simpson, & Enz, 2006). Empirical research on new product development and innovation also shows that the presence of a product innovation process facilitates product innovation success, and within this process, quality of planning, necessary preparation, evaluation of product innovation ideas, and execution of technical and economic feasibility studies are very important for the success of new product innovation and development (please refer to Ernst, 2002 for a detailed review).

Scholars examine a number of factors for possible impact on product innovation success (please refer to Ernst, 2002; Siguaw et al., 2006 for a review). For example, a meta-analysis finds that new product development and innovation process, organization of product development projects, organizational culture, commitment of senior management, and product innovation strategy can greatly improve the success of new product development and product innovation (Ernst, 2002).

Contextual factors can also affect the process and further the result of new product development (Cooper & Kleinschmidt, 1995; Song & Parry, 1994). Specific contextual factors examined that affect product innovation include the market where new products compete, the compatibility of new products with the firm's existing skills, the characteristics of new product innovation, and the needs of the market and customers (Cooper & Kleinschmidt, 1995, 1996; Ernst, 2002).

However, even though the product innovation literature already identifies a number of success factors, current empirical studies on product innovation and new product development largely focus on very technical aspects of the product innovation process. Consequently, these studies somehow ignore the big picture. In addition to that observing the product innovation forest among myriad technical details trees is difficult (Brown & Eisenhardt, 1995), current literature does not give enough attention to the applicability of these factors in an international context or to the product innovation in international joint ventures across the globe.

Globalization and other rapid changes in the world market require examination of product innovation success factors in an international context, especially when multinationals already build strong existence often in the form of international joint ventures across the globe. Companies need to explore success factors for product innovation in different countries in order to remain competitive (Bstieler, 2012; Song, Di Benedetto, & Zhao, 1999). A better understanding of the relationship between environmental constraints and product innovation in various local contexts becomes one of the most important sources of global competitive advantage (Song, Kawakami, & Stringfellow, 2010; Song & Parry, 1996, 1997a, 1997b; Song, Van der Bij, & Weggeman, 2006). Identifying factors that influence product innovation in the international context thus becomes crucially important to researchers and managers.

According to the institution theory, institutional environment can strongly influence organizational activities and development, and in order to survive, organizations must conform to the rules and beliefs prevailing in the environment (DiMaggio & Powell, 1983; Meyer & Rowan, 1977). Substantial evidence shows that firms in different types of economies react differently to similar challenges and the institutional structure of a particular environment provides firms with advantages for engaging in specific types of activities (Hsu, Wang, & Wu, 2013; Knetter, 1989). As a result, institutional environment is very important in product innovation because institutional environment forms an influential context within which firms implement different product innovation projects and operate within the limits often defined by the institutional environment. Various institutional factors such as government regulations and innovation policies directly related to product innovation activities can motivate firms to develop and launch new products in order to achieve long-term objectives. Consequently, while those technical aspects often studied in previous studies focus on what and how the firm should do in order to successfully launch new products, more research needs to focus on the contextual constraints for a firm's innovation activities. Following this line of research, the current study examines the impact of institutional environment on product innovation in China's international joint ventures in order to explore what are the key success factors for product innovation in China. The hypothesis tested in this study is that the institutional environment in China will greatly affect product innovation of China's international joint ventures.

Hypothesis 1. *China's institutional environment will have significant impact on international joint ventures' product innovation.*

The unique Chinese institutional and economic systems also necessitate the study on what impact the institutional constraints, often criticized by international managers and scholars, have on product innovation and the resulting firm performance of international joint ventures in the Chinese context. International joint ventures are the main research subjects in this study because international joint ventures

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