EMERGING MARKET FIRMS’ CATCH-UP STRATEGY IN NEW PRODUCT DEVELOPMENT UNDER GLOBAL COMPETITION: THE CASE OF CHINA

Abstract

To catch up with their counterparts in global competition, emerging market firms need to build their innovative capabilities for new product development. Drawing on institutional and knowledge management perspectives, we extend Mathews’ (2006) ‘linkage-leverage-learning’ (LLL) framework and present an exploratory analysis of how Chinese firms overcome their resource disadvantages and exploit internationalization opportunities in facilitating their new product development (NPD). We suggest that to enhance their NPD, first, Chinese firms need to exploit external resources through linking with domestic governments and industrial clusters. Second, Chinese firms could learn from their foreign subsidiaries and hire heterogeneous R&D personnel to facilitate their NPD. Third, Chinese firms could leverage their valuable resources through the attendance of product champions to support their NPD activities. This article contributes to the extant literature by identifying key drivers that facilitate NPD of Chinese firms.

Keywords: emerging market firms, Chinese firms, new product development, linkage, leverage, learning
1. Introduction

Recent research has extensively examined how emerging market firms (EMFs) have grown and become important players in world business (Li and Kozhikode, 2008; Mathews, 2006; Yang, Mudambi, and Meyer, 2008). As latecomers to enter into the global industry, EMFs face the biggest challenge of catching up to the resource-rich multinational incumbents (Mathews, 2006). Studies suggest that as latecomers in the global competition, EMFs need to “find innovative ways to make space for themselves in markets that were already crowded with very capable firms” (Mathews, 2006, 14). Considering innovation becomes increasingly intensive in generating productivity, growth, and competitiveness in various industries (e.g., Battisti and Stoneman, 2003; Hansen and Løvas, 2004), EMFs need to enhance their “far-behind” technological capabilities (Mathews, 2006). As such, new product development (NPD) based on enhanced innovative capability has become major concerns of EMFs in global competition with developed market firms (DMFs) (Kleinschmidt, de Brentani, and Salomo, 2007). Following Cooper and Kleinschmidt (1995), we define NPD at the business-level that contribute to firm profitability and business performance.

Earlier studies have argued that both internal know-how (Cohen and Levinthal, 1990; Kogut and Zander, 1992) and access to external resources (Cassiman and Veugelers, 2006) can help firms sustain organizational innovation performance. Compared to DMFs, EMFs are inexperienced in conducting innovation activities. Therefore, EMFs are eager to secure valuable resources from diverse sources to improve their innovation capabilities. For example, Mathews (2006) emphasized that firms from emerging countries apply international expansion to secure new resources and complementary assets. He further proposed that EMFs not only need to access resources through external linkages, learning through internationalization, but also leverage
different resources. There is also empirical research supporting that EMFs can rely on external resources from their governments (at varies levels) to circumvent institutional barriers (e.g., Park and Luo, 2001; Peng and Luo, 2000) as well as compensate for their lack of valuable resources and capabilities in catching-up with global rivals (Luo and Rui, 2009).

However, with much research focusing on the antecedents of NPD such as increased competition, R&D investment, R&D team characteristics, knowledge management and capability development, organizational structure and culture (e.g., Chen, 2004; Greve, 2003; Perks and Wong, 2003; Salvado, 2009; Zahra and George, 2002), there is still a scarcity of integrative research investigating how Chinese firms deal with the challenges of insufficient resources and lack of experiences in developing new product to catch up with counterparts from developed markets. We attempt to fill this gap by investigating Chinese firms’ catch-up strategy in NPD, with the consideration of the unique characteristics of Chinese firms and their institutional environments.

As proposed by Mathews (2006), to better understand Dragon Multinationals or firms from emerging countries, it is appropriate to go beyond the established framework, a point also supported by Luo and Tung (2007). We propose an integrative model to explain Chinese firms’ NPD. Based on Mathews’ (2006) ‘linkage-leverage-learning’ (LLL) framework of emerging market firms’ internationalization, we extend it to further explore the fundamental mechanisms of Chinese firms’ NPD activities. For that purpose we explore how Chinese firms’ external linkage (government and industry cluster), learning (knowledge reversely transferred from foreign subsidiaries and knowledge created by heterogeneous R&D team) and leveraging internal and external resources (attendance of product champion to facilitate knowledge sharing activities) can affect their NPD. Our approach integrates firm and country level factors. First, we
investigate how firm-level determinants affect firms’ NPD, including R&D team characteristics and new knowledge stimulants (particularly knowledge reversely transferred from global networks). Second, we examine country-level determinants from the institutional perspective because government resources could support firms’ initial technological endeavors via fiscal incentives, direct investments, and supportive technological and research policies (Li and Atuahene-Gima, 2002, Luo, 2000), and firms’ political actions may in turn complement economic behavior (Boddewyn and Brewer, 1994). Furthermore, we examine the impact of Chinese firms’ geographic locations within a densely populated and competitive environment as another external knowledge facilitator by considering that a geographic agglomeration effect provides firms with both opportunities and pressures to innovate and experiment with new technological knowledge (Beaudry and Breschi, 2003).

The paper is structured as follows: we first review the extant literature on emerging market firms’ NPD. We then develop propositions to explain the impacts of key internal and external factors on Chinese firms’ NPD. Through some case illustration of Chinese companies, we suggest six propositions related to resource linkage, knowledge learning and resource leveraging that could facilitate Chinese firms’ NPD. We next discuss academic and managerial implications of this study. We finally discuss the limitation of this study and future research directions associated with this study.

2. Theoretical Underpinings

2.1. Emerging market firms’ innovative capability building and new product development

Knowledge is a set of know-how and capabilities that firms develop through complex interactions of resources (Amit and Schoemaker, 1993). It is a fundamental resource for firms to develop and sustain competitive performance (Grant, 1996; Inkpen, 1998). Specifically, firms
earn sustainable returns when the superior resources can be transformed and utilized to maximize returns (Majumdar, 1998). However, a firm’s ability to create and utilize organizationally embedded resources to compete successfully in a global marketplace is determined by its internal dynamic capabilities (Luo, 2002).

A key internal capability is a firm’s absorptive capacity which refers to its ability to scan and monitor relevant technological and economic information, to identify technical and market opportunities, to acquire knowledge, information and skills, to master a new technology or innovation, and to adjust its system of coordination and control to match the new technological opportunities (Cohen and Levinthal, 1990; Zahra and George, 2002). A firm’s absorptive capacity which is path dependent, cumulatively developed, and built upon existing knowledge affects a firm’s innovation performance by enabling the firm to recognize, leverage, and adapt external knowledge to organizational routines, and transform and integrate externally and internally generated knowledge.

However, as latecomers in industrialization, EMFs lack such capabilities. Emerging economies are countries that experience a rapid pace of economic development (Arnold and Quelch, 1998). Associated with the fast growth of the emerging economies in recent years is the emergence of their companies that have become global players. But those companies suffer from a lack of advanced technology and management skills relative to DMFs. Under the pressure of global competition, many EMFs now tend to take a proactive attitude towards innovation. Therefore, they have to adopt unique catch-up strategies to achieve rapid growth (Li and Kozhikode, 2008). For example, alliance and international expansion become good sources to acquire valuable resources for many emerging multinationals (Mathews, 2006; Mudambi and Tallman, 2010). In other words, they need to make best use of all accessible resources to
improve their organizational capabilities and transform it into NPD outcomes to catch up to their counterparts. Therefore, they may benefit from their internationalization in terms of acquiring competitive advantages and necessary knowledge (Luo and Tung, 2007; Mathews, 2006) to strengthen internal capabilities for their NPD.

Previous study indicates that firm-level factors play important roles in the success of a firm’s innovation. For example, prior knowledge and experience, R&D (research and development) investment, R&D team characteristics, and organizational culture are associated with technological innovation (e.g., Cohen and Levinthal, 1990; Kim and Marschke, 2004; van der Panne et al., 2003). As for EMFs, it is suggested that innovations could be enhanced through internal improvement such as a flexible organizational structure and informal communication channels (Lu et al., 2008). However, not much research emphasized the unique characteristic of R&D team in EMFs and its effect on firms’ NPD activities. Due to their lack of certain critical resources, EMFs pursue human capital as the key competitive resource. With the falling costs of transportation and communication, the global labor market becomes more mobile. High employee turnover becomes a prominent phenomenon in developing countries. In particular, R&D employees have relatively higher level of mobility (Yang and Jiang, 2007). Such mobility in both local and global labor markets provides abundant scientists and engineers for EMFs from a diverse pool of transnational and local communities (Saxenian, 2002, 2005). Thus, the R&D teams of Chinese firms manifest a high level of heterogeneity in their experience, culture, and ethnicity. How the R&D teams’ ‘characteristics enhance EMFs’ NPD outcomes is explored in this research.

Further, because of the underdeveloped absorptive capacity of the EMFs (Meyer and Estrin, 2001), external factors exert great influence on firms’ innovation activities in emerging
countries, which is quite different from knowledge management process in the traditional DMFs. For example, home governments’ support played a pivotal role in the initial stages of EMFs’ catch-up process (Hobday, 1995; Kim, 1997). Governments could stimulate firms’ innovations through a wide range of support such as fiscal incentives, direct investments, and supportive technological and research policies (Luo, 2000).

In addition, a firm’s geographical location is also found to have a significant effect on the firm’s innovative activities (Ahuja, 2000; Beaudry and Breschi, 2003). Firms in geographical clusters can create new knowledge thanks to their easier access to knowledge pools and other resources associated with positive spillover effects (e.g., Maskell, 2001b; Tallman et al., 2004).

Furthermore, studies suggest that how firms effectively leverage resources (prior existing resources or newly acquired external resources) across product markets, network units and cultural boundaries plays important roles to gain competitive advantage (Teece, 1998; Zach, 1999). As such, firms need to effectively manage and utilize knowledge in the entire organization (Hustad, 2004). Knowledge sharing has become a critical aspect for firms to successfully implement knowledge management in supporting their NPD activities (Spender, 1996). We suggest that to effectively leverage resources, EMFs need to have the attendance of product champion to improve their knowledge sharing activities.

In sum, scant research focuses on how EMFs benefit from accessing to external resources, learning new knowledge and leveraging them to compensate for their resource disadvantages in managing NPD. We discuss below how ‘LLL (linkage-leverage-learning) framework’ can be extended to explain how EMFs take advantage of external opportunities to improve their NPD.

2.2. Proposition development
Mathews (2006) proposes a ‘linkage-leverage-learning (LLL) framework’ to explain the different motives of EMFs’ catch-up strategy as later movers with respect to DMFs. He discusses that EMFs do not necessarily acquire and integrate the resources/knowledge from other strong partners. Instead, EMFs make the best use of the resources possessed by others through linkages and learning to improve the capability of link-building and resource-leveraging to improve the resource base/stock, organizational capabilities, thus resulting in improved firm performance.

We extend the Mathews’ LLL framework to examine how EMF’s NPD is different from DFMs’. Our objective is to examine what key internal and external factors could be employed to improve Chinese firms’ innovative capability building in their NPD activities to overcome their insufficient resources. Based on social network and internationalization perspectives, we propose six propositions related to Chinese firms’ NPD. We discuss the impact of 1) access to governments’ financial support, 2) connection with universities and research institutions, and 3) access to industrial clusters on Chinese firms’ NPD from ‘Linkage’ perspective, 4) new knowledge transferred from foreign subsidiaries, 5) knowledge from heterogeneous R&D teams on Chinese firms’ NPD from ‘learning’ perspective, and 6) intra firm knowledge sharing activities through the attendance of product champion on Chinese firms’ NPD from ‘leverage’ perspective. Our theoretical framework is presented in Figure A.

[Insert Figure A about Here]

2.2.1. Linkage: Chinese firms’ access to governments’ support
The governments of emerging economies play a more active role in promoting the NPD of national firms than those of developed countries by actively providing incentives to local firms (Lu et al., 2008; Sim and Pandian, 2003). Some government incentives include preferential policies, fiscal incentives, direct investments, and business opportunities (Luo, 2000). As emerging economies transition
toward market-based systems, two types of mechanisms coexist: the market mechanism characterized by resource allocation mainly via market forces, and the redistributive mechanism based on resources allocation mainly via governmental agencies (Tan et al., 2007). Firms can accordingly acquire resources not only through market mechanisms, but also by interacting with governmental and regulatory agencies. Home governments’ financial support allows them to undertake trial-and-error experimentation and buffers them from the potential risks involved in realizing the benefits of NPD.

For instance, leading manufacturer of Chinese white goods Haier Group has established 26 R&D units in developed countries that allow it to monitor new technologies and other non-indigenous research activities (UNCTAD, 2006). With more than a dozen information and design centers established in developed countries (including the U.S., Japan, and France), Haier has achieved an average of 1.3 new product designs daily for six consecutive years. Haier has been selected by the Chinese government as one of six companies to receive governmental support that has allowed the firm to advance to the Fortune 500 list via constant new product development (Yi and Ye 2003). Recognized as one of the respected companies in the city and later in the country, the company has received financial backing from various financial channels that enhance its innovation performance (senior executive interviews).

Similarly, Chang’an Automobile Co., Ltd. (Chang’an) and Anhui Jianghuai Automobile Co., Ltd. (JAC) have been actively engaged in applying for governmental support by participating in national technology development projects and applying for national innovation funds for improving its R&D capabilities (e.g. upgrading R&D facilities and equipment), developing new products (e.g. providing additional financial support for lab experiments), and new technology research (e.g. providing greater financial support for international collaboration).
In the past several years Chang’an has participated in over 40 national-level 863 technology development projects and received grants totaling $14.3 million Yuan (2.24 million USD) from governments at all levels for developing hybrid cars. A recent government initiative including a special government fund of $1.4 billion USD will be used to support automakers’ technological innovations and new energy development (www.gov.cn). Chang’an is also one of the top four automakers highly encouraged to implement mergers and acquisitions at the national level in order to further enhance its NPD capability development (from senior executive interviews); For JAC, they were able to obtain critical financial resources such as bank loans through networking with government officials to support its development of an innovation center. JAC used to have only about 80 employees working for the research and development (R&D) department in 1994 and in 2010 the JAC innovation center has 3,000 researchers from different countries and with various educational backgrounds (from senior executive interviews). Chang’an and JAC have obviously benefited from government support in developing its manufacturing capabilities and enhancing NPD outcomes.

In addition, financial resources could support substantial inter-firm hiring and transfer of key research personnel across regions and countries; this in turn promotes knowledge acquisition (Song et al., 2003). For instance, Huawei is home to more than 8,000 R&D engineers and its R&D talents naturally affect its R&D activities. Huawei has recruited talents from top Chinese technology universities (e.g. the University of Science and Technology of China), and also sent employees abroad for exposure to new markets and advanced technology with the goal of enhancing its innovative capability. Due to the availability of financial resources such as a $10 billion Yuan (1.57 billion USD) credit line from the China Development Bank, Huawei is able to conduct trial-and-error experimentation as well as collaborate among project teams and
departments to compensate for its competitive disadvantages in innovation and technological opportunities. These abundant financial resources also allow R&D personnel to conduct R&D experiments without bearing the risks of affecting their careers. The availability of financial resources consequentially enhances a firm’s flexibility in recognizing business opportunities, resolving unforeseen circumstances during the knowledge acquisition process, and generating positive influences on its new product development.

**Proposition 1a:** The linkage with governments to access financial support is positively associated with Chinese firms’ NPD.

The institutional environment also provides firms with a source of knowledge by facilitating collaborative efforts among firms, universities, and research institutions. For instance, since 1997 the Chinese government has approved the National Basic Research Program, also called the 973 Program, which finances firms’ R&D projects in line with national goals. Every project receives government financing, ranging from $3 to 4 million USD over a five-year-period. It is estimated that from 2001 to 2005 the government has made a financial investment of over $330 million to support firms’ research and development programs (973 Program). In addition to obtaining financial support from the government, firms’ access to the 973 Program also promotes close collaborations with universities, research institutes, and scientific and technological society (973 Program). So far, the 973 Program has spurred key technological breakthroughs, applications and transfer of research with 1,765 patents in 2 years, which enhances firms’ NPD capability. Further, the Chinese government has actively promoted technology transfer from local research institutions to domestic firms, including the initiatives of
merging R&D institutions with existing enterprises and spinning off new technology enterprises from R&D institutions and universities (Zhang, 2006).

Collaboration with external R&D institutions allows EMFs to tap into local scientific and technological knowledge pools, facilitating the creation and diffusion of technological knowledge (Lu et al., 2008). The governments’ support and coordination would allow their domestic firms to strengthen their close collaboration with universities, research institutes, and the scientific and technological society; this has substantially improved their capabilities in supporting NPD activities.

**Proposition 1b:** The linkage with governments to connect with universities and research institutions is positively associated with Chinese firms’ NPD.

### 2.2.2 Linkage: Chinese firms’ access to industrial clusters

Geographical location within a densely populated and competitive environment provides firms with both opportunities and pressures to innovate and experiment with new technological knowledge (Beaudry and Breschi, 2003). This cluster effect is important to firms in emerging countries, particularly because firms must build external relationships in order to acquire and integrate new knowledge. According to the cluster theory (e.g., Audretsch, 1998; Rosenfeld, 1997), firms within a geographical cluster enable frequent face-to-face communication with key knowledge providers such as suppliers, buyers, competitors, research institutes, and alliance members. Face-to-face communication makes knowledge transfer easier. In addition, firms in clusters share community norms and codes. These factors make interactive collaboration easier within the cluster. Geographical location accordingly provides “an arsenal of instruments” for firms to obtain and understand valuable tacit knowledge of possible relevance (Breschi and Malerba, 2005). Firms within these
clusters also compete intensively in innovations because, “the variation between and among firms doing similar things in a geographical cluster promotes the generation of ideas and guides interpretations without imposing uniformity” (Maskell 2001a, 228). The combination of pressure from competitors within the cluster, access to related knowledge, and availability of important complementary assets create geographical proximity benefits that can be translated into a force of agglomeration where firms engage in interactive learning and integrating knowledge from external sources to support their NPD activities. Therefore, we argue that Chinese firms located in geographical clusters have more advantages for NPD.

**Proposition 1c:** The linkage with firms in geographical industrial clusters is positively associated with Chinese firms’ NPD.

2.2.3. Learning: Chinese firms’ knowledge reversely transferred from foreign subsidiaries

In recent years many foreign subsidiaries are increasingly taking on significant roles in innovation because their MNCs perform research and development (R&D) activities outside their home countries (Cantwell, 1995; Kuemmerle, 1997; Pearce and Singh, 1992). Thus reverse knowledge transfers (RKT) from foreign subsidiaries to headquarters are expected to play a pivotal role in generating innovative capabilities on the basis of dispersed pockets of knowledge within the network of a multinational firm. RKT is also very important for Chinese firms because many firms from emerging contexts accelerate their paces of internationalization. This phenomenon is manifested by the increasing outward foreign direct investment from developing countries, which has risen from $60 billion in 1980 to more than $1 trillion in 2004 (UNCTAD, 2004). In recent years, Chinese firms have internationalized quite aggressively to developed countries. Unlike DMFs, Chinese firms pursue international expansion
to acquire needed resources through linking with foreign firms rather than to exploit pre-existing unique firm resources (Mathews, 2006).

Therefore EMFs could benefit from knowledge reversely transferred from foreign subsidiaries located in developed countries to improve their NPD capacities (Subramaniam and Venkatraman, 2001; Takeuchi and Porter, 1986) and enhance their competitive advantages (Kleinschmidt et al., 2007). Knowledge transferred from foreign subsidiaries benefit Chinese firms’ NPD in the following ways. First, transferred knowledge enables Chinese firms to identify new market opportunities when developing new products. Second, a Chinese firm’s headquarter can strengthen its understanding of technical standards and enlarge its knowledge base toward improving product quality via subsidiaries’ interaction with local customers, suppliers, and competitors. Third, the subsidiary’s direct access to local resources enables its headquarters to significantly reduce cost and time involved in collecting reliable and critical information as well as advanced technology. Fourth, the headquarters can either expatriate employees to subsidiaries or recruit local skilled employees, and later transfer them back to headquarters; both tactics allow the headquarters to make the best use of tacit knowledge (Song, et al., 2003).

In sum, knowledge acquired from foreign subsidiaries enables Chinese firms to accumulate and improve proprietary knowledge and management know-how that can be utilized to enhance their NPD outcomes.

**Proposition 2a:** The knowledge transferred from subsidiaries in developed countries is positively associated with Chinese firms’ NPD.

**2. 2. 4. Learning: Chinese firms’ knowledge obtained from heterogeneous R&D team**

EMFs’ unique advantage is their availability of low-cost qualified researchers and ample supply of scientists, engineers, and researchers (UNCTAD, 2005). Furthermore, according to the Human
Development Report (2009), “many international migrants move voluntarily, bring complementary skills to the destination countries, and in the process enrich both themselves and the host countries” (Bagchi, 2011, 420). Many international workers are attracted to emerging countries and this personnel mobility results in an increase in blended work forces for Chinese firms. Since a firm’s R&D team including scientists, engineers, and technicians plays a dominant role in improving its innovative capabilities (Gibson and Cohen, 2003; Haas, 2006), a diverse R&D team can become an EMF’s key strategic resource in global competition.

One distinctive characteristic of Chinese firms’ R&D teams are their teams’ expertise heterogeneity, or the “different sets of task-relevant skills, knowledge, and abilities team members possess as a function of their educational backgrounds” (Dahlin et al., 2005, 1108). Greater team heterogeneity affects a team’s NPD in the following ways. First, it demonstrates a positive effect on firms’ innovativeness (e.g., Dahlin et al., 2005; Hamilton et al., 2003). A firm can become more efficient (Cagan and Vogel, 2002) and productive (Hamilton et al., 2003) when it organizes a diverse set of experts to solve complex problems. Second, a heterogeneous R&D team can facilitate mutual learning and influence the group’s production norm (Hamilton et al., 2003). Team heterogeneity also increases the variety of environmental scanning alternatives, fosters effective decision-making, and influences competitive action and response that enhance a firm’s innovation activities (Williams and O’Reilly, 1998).

Following Haas’s (2006) typology, we can categorize a Chinese firm’s heterogeneous R&D team into three categories: cosmopolitans, locals, and moonlighters. First, cosmopolitans refer to team members with broad R&D experience in many countries, particularly developed countries, who have returned to headquarters. Cosmopolitans can bring in specialized technical know-how in order to compensate for a firm’s technological shortfalls (Earley and Mosakowski,
2004) and facilitate external knowledge transfer by interpreting and adapting technical knowledge (Athanassiou and Nigh, 2000). Cosmopolitans facilitate the firm’s effective application of knowledge in new contexts (Argote and Ingram, 2000).

Second, locals refer to scientists and engineers with extensive experience in their home countries of origin. Locals’ familiarity with the local environment facilitates the firm’s interpretation and customization of internal knowledge during the NPD process. Third, moonlighters refer to experienced foreign scientists, engineers, and technicians with extensive experience. Moonlighters possess substantial R&D experience in leading firms that support the EMF in integrating external and internal knowledge sources (Song et al., 2003). In addition, they help Chinese firms reduce the associated cost and time of recognizing, accessing, and assimilating new technologies (Song et al., 2003).

For instance, Chery Automobile (founded in 1997) has become the largest independent Chinese automaker and one of the fastest growing automakers in the world. Chery’s rapid growth has been contributed to its heterogeneous R&D team which includes local engineers, overseas returnees, and foreign experts (www.sina.com.cn). Currently, Chery’s Chinese R&D center consists of over 500 experts and engineers with three types of personnel mentioned (from senior executive interviews). Since its inception, the company has hired more than 100 engineers and top management team members (e.g. CEOs) from local competitor Shanghai Automotive Company. In addition, the company has attracted foreign experts from developed countries such as Germany, Japan, Korea, and the U.S. who joined with substantial R&D experience in leading firms. One of its senior managers, Terada Shinji, served Mitsubishi for over 30 years and has brought a tremendous amount of valuable experience into improving the company’s production technology (Anhui Association for International Exchange of Personnel, 2004). Hired foreign
experts and overseas returnees not only help the company absorb acquired knowledge from
developed countries, but also facilitate the utilization of advanced knowledge and skills acquired
in foreign countries to the company’s NPD activities (from senior executive interviews).

A heterogeneous R&D team enhances a Chinese firm’s new product development
capability by enabling firms to identify and assimilate potential market opportunities and
valuable external technical knowledge via complimentary knowledge and skills. Furthermore,
their different perspectives on product features enable a firm to find alternatives by balancing
standardization and adaptation (Subramaniam et al., 1998). The collaboration of heterogeneous
R&D team members accordingly enables EMF to integrate external knowledge into their product
development, resulting in enhanced NPD outcomes.

**Proposition 2b:** The knowledge obtained from heterogeneous R&D team is
positively associated with Chinese firms’ NPD.

2.2.5. Leverage: Chinese firms’ top management team as an attendance of product champion

According to the upper-echelon perspective, top management team (TMT) has great influence on
strategic decisions and the actions they adopted can affect firm performance (Hambrick and
Mason, 1984). Firms’ successful leverage of resources, such as newly acquired knowledge,
financial resources, network relationships and human capital, is thus greatly affected by the
strategic insight of the TMT, and sophisticated coordination of TMT, resulting in improved
innovation performance (Elenkov and Manev, 2005). In addition, the leaders’ attitude and
actions towards adopting new ideas can establish unique organizational culture which promotes
the creativity and innovation of firms (Hurley et al., 1998). In this paper we specifically examine
TMT’s involvement in R&D activities from the perspective of the attendance of a product
champion, which we consider an important factor of how TMT’s behavior can influences EMFs to leverage their resources to achieve NPD activities.

The product champion has been recognized as a preeminent factor in influencing firms’ innovation activities. R&D teams supported by an individual that appears as an innovation-dedicated internal entrepreneur are evidently more successful than teams lacking this support (Kleinschmidt and Cooper, 1995). The product champion also acts as an efficient technological gatekeeper (Rothwell, 1992). Product champions arise from all levels in the organization, including the TMT and lower-level employees (Day, 1994).

In many Chinese firms, TMT members act as major product champions who are innovation-dedicated, advocate new product development, and who actively support firms’ innovation activities. For instance, the fast internationalization of Haier Group lies in the innovation-dedication of its TMT that promotes a corporate culture that embraces constant progress and believes that innovation is necessary for corporate success. With the vision of becoming a Fortune 500 company, Haier Group’s TMT’s advocacy for innovation has greatly influenced its NPD and the evolution of the company from being a household company in China to a respectable brand name around the world (Yi and Ye, 2003). The TMT of Haier Group not only guided the firm’s NPD but also coordinate resourcing sharing activities for product development (from senior executive interviews). Similarly, the TMT of Hicense Group advocates new product development and supports the company’s R&D initiatives through effective resource sharing and allocation, which, as a result, influences firms’ innovation activities (from senior executive interviews).

With the attendance of product champions in the R&D projects, more efforts can be initiated to build innovative capabilities to improve firms’ NPD outcomes based on the following
reasons. First of all, the TMT could provide a vision to guide the firm’s NPD activities (Reid and de Brentani, 2004; Swink, 2000) so that researchers and technicians could adjust their objectives of research projects in line with the corporate’s strategic goals. Second, the involvement of key TMT members in R&D projects demonstrates the organization’s strategic efforts in the NPD activities. Management involvement, which represents corporate commitment to innovation, is positively associated with the performance of NPD (Cooper and Kleinschmidt, 1995). In addition, the TMT’s attendance enables the research teams to obtain necessary support from different functional departments, such as financial capital, human capital and other support, which facilitates the process of product development. Third, TMT attendance helps the organization to overcome difficulties during the process of knowledge integration, especially during critical phases (Takeuchi and Nonaka, 1986), and can coordinate NPD activities directly or indirectly (Cooper et al., 2003). Thus, we propose that:

**Proposition 3:** The resource leveraging through the attendance of a product champion is positively associated with Chinese firms’ NPD.

3. Conclusion and discussion
The main purpose of this study is to investigate how companies originating from emerging economies develop their innovative capabilities and enhance their new product development under the circumstances of possessing a relatively weak technological base with respect to DMFs. While examining firm- and institutional specific factors, we propose that it is essential for firms to explore internal- as well as external resources to recognize, assimilate, and integrate valuable knowledge and technology to benefit their new product development outcomes. In addition, the access of external resources through social networking and strategic
moves such as alliances with universities and research institute and internationalization is a viable way for EMFs to compensate for their organizational disadvantages.

With rapid technological development, a firm’s ability to develop innovative products determines whether it will survive and grow in the global competition (Zander and Kogut, 1995). In particular, as knowledge is the critical resource to generate innovative products, how firms are able to integrate organizational resources, especially knowledge from diverse sources, affect their NPD outcomes. To accelerate the development of capabilities and to catch-up to DMFs, Chinese firms have to integrate the newly acquired knowledge with their existing knowledge base to benefit their NPD. We suggest that, to a large extent, organizational resources, such as firms’ heterogeneous R&D team, the attendance of the product champion promote the Chinese firms’ ability to integrate new knowledge, build their innovative capabilities, and develop new products.

Furthermore, since most Chinese firms do not possess strong absorptive capacity, external factors also play an important role for them to utilize location advantages and financial and research supports from the home country governments to mitigate their organizational disadvantages during the catch-up process. Chinese firms’ reliance on their external network of relations to enhance their NPD is quite different from the knowledge integration process in those firms of developed countries. It is also worth mentioning that governments of emerging economies may help firms catch up when the home country is far from the technological frontier. However, as emerging economies approach their technological frontier, the government’s role must shift from a centralized to a market-oriented role; otherwise, it could be harmful to their national firms (Mahmood and Rufin, 2005).
This study makes additional contributions by enriching the current studies on knowledge management with a special focus on Chinese firms in two aspects. First, it attempts to explain a particular pattern of NPD by advocating the effects of organizational resources and influence of external factors on firms’ innovative outcomes. The institutional perspective in particular sheds lights on how governmental policies influence a firm’s knowledge management activities. Chinese firms’ innovative capabilities in developing new product are also expected to be promoted by their local governments’ financial and research support. In addition, external linkages allow Chinese firms to tap into local scientific and technological knowledge pools, thus facilitating the creation and diffusion of technological knowledge (Lu et al. 2008).

Second, academic demands on non-U.S. based studies are mounting in contextual- or institutional-based studies. The simple replication of U.S. studies in other nations is not useful approach in building universal knowledge (Cheng, 1994). Established international business theories (e.g., Dunning’s OLI paradigm) have their limitations in explaining unique situations of emerging markets and strategic choices of Chinese firms. By extending Mathews’ (2006) LLL framework, this study illustrates how firm-level and country-level factors affect new product development of emerging market firms. This study contributes to a more rich understanding how business or management is conducted in an emerging market context. This study also contributes to studies on Chinese firms’ NPD in a more integrative manner from a multilevel perspective as a multi-level study is essential in the international business area (Hitt et al., 2007).

This article also has important implications for practitioners. For an EMF, it is important to recognize, acquire, and assimilate new knowledge from its internal and external sources. Chinese firms’ innovate capability building and new product development can increase with firm-specific factors, such as its R&D collaboration among a diverse team and the attendance of
a product champion from the top management team level. This article advocates that Chinese firms can develop their innovative capabilities and new products with different approaches from DMFs. Specifically they can acquire and develop new knowledge from heterogeneous R&D teams and foreign subsidiaries. Relevantly, reverse knowledge transfer (knowledge transfer from foreign subsidiaries in developed markets to headquarters in emerging markets) is evidenced with Chinese firms (e.g. Yang et al., 2008). Further, in emerging economies, as the formal and reliable system of laws and regulations is still in the development process, it is essential for firms to explore external resources to compensate for their lack of knowledge and skills and the underdeveloped absorptive capacity.

Although this study contributes to both theory and managerial practice, it is not immune from limitations. We mainly focus on the NPD outcomes for headquarters’ R&D conditions. Since Chinese firms’ foreign direct investments (FDI) are generally small in scale and lacks international competitive capacity, we assume that the majority of EMF subsidiaries still rely on headquarters to develop new products. This article examines the early stage of Chinese firms’ NPD. Nonetheless, increasing FDI in foreign countries may allow Chinese firms to gradually strategically implement NPD activities in their subsidiaries located in developed countries. Since the role of a subsidiary evolves over time (Birkinshaw and Hood, 1998), foreign subsidiaries in developed countries could build up capabilities for both acquiring and integrating knowledge via interacting with external and internal networks that allow them to ultimately become centers of excellence. Future studies should investigate the dynamic pattern of Chinese firms’ NPD.

Furthermore, when examining organizational resources we suggest the importance of a heterogeneous R&D team in enhancing a firm’s NPD outcomes. Nevertheless, team member heterogeneity may create the possibility of relational conflict (Jehn et al., 1997; Lau and
Murnighan, 1998). Heterogeneous teams encounter many more time and communication problems when working to reach a mutual decision than members of homogeneous groups due to the team members’ diverse cognitive and experiential backgrounds (Earley and Mosakowski, 2000). These diverse cultural backgrounds may also cause communication and cooperation difficulties, affecting both decision-making speed and efficiency (Ferrier, 2001). We therefore call for future empirical study to investigate to what degree a heterogeneous R&D team can secure the advantages of reverse knowledge transfer on firms’ new product development performance.

In addition, although Chinese firms could benefit from their governments’ support, there exist some negative effects of firms’ reliance on political networking to assist their business activities (e.g., Fock and Woo, 1998; Warren et al., 2004). It is important to empirically test when the negative effects of government support would be outweighed by firms’ access to financial capital and external linkages with universities and research institute in adding value to firms’ innovation activities. We accordingly find it worthwhile to conduct additional research investigating how unique organizational factors and institutional environment affect firms’ NPD performance given the importance of and difficulties encountered by Chinese firms during the technological catch-up process.
4. Bibliography


Figure A: LLL Framework of Emerging Market Firms’ New Product Development

Linkage (P1a, P1b, P1c)
- Access to government support
- Connection with research institutes
- Access to industrial clusters

Learning (P2a, P2b)
- New knowledge transferred from foreign subsidiaries
- New knowledge obtained from heterogeneous R&D team

Leverage (P3)
- Attendance of product champion
Company Information

1. Chongqing Chang’an Automotive Co., Ltd. (Chang’an) was established in 1996. Over time, Chang’an has gradually transformed from being the manufacturing center for global auto makers such as Suzuki, Ford, and Mazda to an independent car manufacturing and development company in China. With a total asset of RMB 30 billion (US $4.28 billion), 40,000 employees, and an annual production capacity of 1 million automobiles and 1.1 million auto engines, Chang’an now is the largest mini-car and automobile engine manufacturer in China.

2. Anhui Jianghuai Automobile Co., Ltd. (JAC) was established in 1999. Headquartered in Heifei, the capital city of Anhui province, JAC currently has more than 9,000 employees with total asset of RMB 6.1 billion (US $0.98 billion), covering an area of nearly 4.05 million square meters. Listed on Shanghai Stock Exchange in 2001, JAC now is a top 500 enterprise in China and recognized by Anhui province as a key high-new technology enterprise in the National Torchlight Plan. Since its inception in 1964, originally called Hefei Jianghuai Automobile Factory, JAC’s has realized steady and rapid growth over the past four decades from an automobile parts and bus chassis maker to a leading whole automobile manufacturer in China. It currently engages in developing and producing a wide array of products including light-duty trucks, MPVs, SUVs, and sedan cars.

3. Haier Group (Haier) was established in 1984. In 2011, Haier Group has developed a 58,800 sales network which accounted for a global turnover of RMB 118 billion (US $18.1 billion), with a total of 50,000 employees around the world. In 2011, Haier brand had the world’s largest market share in white goods, with 7.8 percent. Haier established its Central Research Institute in 1998 in Qingdao, China. It has established a total of 64 trading companies (19 located overseas), 29 manufacturing plants (24 overseas), 8 design centers (5 overseas), and 16 industrial parks (4 overseas) to develop the newest products using the most advanced technology in pioneering sectors.

4. Hisense Group (Hisense) was founded in 1969. It is a white goods and electronic manufacturer with publicly traded subsidiaries. It is ranked #6 among China’s top 100 electronic information enterprises. The company has a total of RMB 71.6 billion (US $11 billion) in revenue in 2011. Hisense has a strong R&D team with R&D centers established in Qingdao, Shenzhen, Shunde, and the United States. Its R&D centers housed tens of thousands of R&D personnel with diverse background that played a critical role in its new product development.

5. Huawei Technologies (Huawei) was established in 1988. Huawei is a private high-tech enterprise which specializes in research and development, production and marketing of communications equipment, and providing customized network solutions for telecom carriers. Huawei has now become a leading vendor in the industry and one of the few vendors in the world to provide end-to-end 3G solutions. Since 2006, Huawei ranked No.1 in the global NGN market (Infonetics), No.1 in Mobile Softswitch (In-Stat), No. 2 in Optical Network (Ovum-RHK), No.1 in IP DSLAM (Infonetics), No.2 in broadband convergence routers (Gartner), and No.1 in MSAN market (Infonetics). It has established
strategic partnership with 1,500 partners around the world. Huawei has set up regional headquarters and 55 branch offices around the world. Products are deployed by more than 300 operators in 80 countries. Based on its global network, Huawei is currently serving 28 of the world's top 50 telecommunication operators with R&D centers set up in both developed and developing countries.

6. Chery Automobile Co. Ltd. (Chery) was founded in 1997. It is the largest independent Chinese automaker and one of the fastest growing automakers in the world. It is the 7th largest automaker in China, with an output around 600,000 units in 2011 and it exported 25 percent of its total production. It has established two R&D centers and has attracted R&D personnel from around the world.