

ENTREPRENEURIAL SEARCH, INNOVATION, AND INITIATIVE:
THE STAGE, NETWORK, AND LEVEL ANALYSIS

A DISSERTATION IN
Entrepreneurship and Innovation

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ABSTRACT

Drawing on the lean startup model, network theory, institutional theory, learning theory, and symbiosis view, this dissertation examines three important issues of entrepreneurship. This dissertation consists of three essays, each focusing on one specific aspect of entrepreneurship, namely: stage, network, and subsidiary initiative. Based on the lean startup model, the first essay focuses on the development processes of startups and the dominant cognition an entrepreneur might use at each stage. The second essay proposes an appropriateness perspective to examine the optimal configuration of network characteristics, learning experience, and legal environment that is most conducive to innovation performance. The third essay focuses on the relationship between informal institutional distance and subsidiary initiatives, investigating how the trust between headquarters and subsidiary mediates the relationship and how communication effectiveness moderates such relationship. As a whole, these three essays address important questions of entrepreneurship at different levels.

APPROVAL PAGE

The faculty listed below, appointed by the Dean of the Henry W. Bloch School of Management, have examined a dissertation titled “Entrepreneurial Search, Innovation, and Initiative: The Stage, Network, and Level Analysis,” presented by Xiaoming Yang, candidate for the Doctor of Philosophy degree, and certify that in their opinion it is worthy of acceptance.

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CHAPTER 1

INTRODUCTION

The rapid expansion of entrepreneurship education and research over the past two decades has resulting in a proliferation of entrepreneurship methods and theories. However, most of these research has been done in the context of developed countries and mainly in the United States. Whether these entrepreneurship theories and methods are applicable to the emerging economies still remains unclear (Peng, 2000). This question is extremely important because emerging economies are rapidly becoming major global economic forces and entrepreneurship plays a key role in this process. It is predicted that by the middle of this century, the total economic volume of BRIC economies, which include Brazil, Russia, India, and China, will surpass that of G6, which includes United States, Germany, Japan, U.K., France, and Italy (Wilson & Purushothaman, 2003). Among those emerging economies, China is under the spotlight of entrepreneurship scholars like never before. Not only has China become the second largest economy in the world since 2014, but also the entrepreneurship activity in China grew exponentially. According to a survey by Global Entrepreneurship Monitor, nearly 25% of the adult population in China are entrepreneurs, twice as many as in the US. Therefore, there is a strong demand to develop a deep understanding of entrepreneurship in China. In this dissertation, I am going to focus on three important topics about entrepreneurship in China.

The Organization of the Dissertation

The first research question I am going to address in this dissertation is related to entrepreneurship education. As we know, the lean startup model emerging from the Silicon Valley has recently become a hot practice. In this model, search and execution are the two primary activities conducted by entrepreneurial firms. Search activities focus on learning and discovery, such as exploring new customer and market segments, while execution activities

focus on implementing well-defined plans and scaling up. Based on an entrepreneurial process model, we argue that firms engage in more search activities in the early startup stage and more execution activities in the late stage. In addition, effectuation and causation are two different cognitive approaches an entrepreneur might use to conduct strategic moves. We argue that entrepreneurial effectuation cognition leads to more search behaviors and entrepreneurial causation cognition leads to more execution behaviors. We test these hypotheses in a survey of 160 firms and find evidence support our arguments. Our findings show that search occurs more in the early stage and is positively related to firms' profitability while execution is positively related to firms' profit growth in the late stage.

The second essay focuses on innovation performance of firms located in networks. The literature is inconclusive on how network characteristics of firms (such as centrality and structural holes in alliances) boost product innovation. This problem may, however, be solved by introducing contextual factors, or under an appropriateness perspective on firms' network position. We argue that learning experience and legal environment are important moderators that facilitate the relationship between network position and innovation. Integrating social network theory, the institution-based view, and learning theory, we argue that two network structural characteristics of firms—namely, closeness centrality and structural holes—have distinctive values on innovation performance under configurations of different learning experiences and legal environments. Empirical results from the electronics and information technology industries in China largely support our hypotheses.

The third essay concentrates on an important but understudied question of corporation entrepreneurship, namely subsidiary initiative. Despite the fact that the relationship between headquarters and subsidiaries has been widely studied, we have little knowledge of what type of relationship will be conducive for subsidiary initiative, a significant form of corporation entrepreneurship activities. Drawing upon institutional theory and corporate entrepreneurship

theory, we develop a symbiosis view to depict the emerging structure of multinational enterprises from emerging economies. We argue that the trust between headquarters and subsidiaries serves as mediating mechanism linking informal institutional distance and subsidiary initiatives. Meanwhile, we propose that communication effectiveness between headquarters and subsidiary plays as a moderator upon such relationships. Based on a sample of 299 multinational enterprises with headquarters in China and subsidiaries overseas, we find that trust is a significant mediator of the relationship between informal institutional distance and subsidiary initiative, and communication effectiveness positively moderates the relationship from institutional distance to trust but negatively moderates the relationship from trust to subsidiary initiative.

As a whole, through integrating and leveraging the literature on stage theory, institutional based view, organizational learning theory, network theory, corporate entrepreneurship, and international business, this dissertation addresses three important questions of entrepreneurship in China, and therefore significantly contributes to further our understanding of the entrepreneurship activities in emerging economies such as China.

CHAPTER 2

SEARCH AND EXECUTION IN AN ENTREPRENEURIAL PROCESS MODEL

Since Schendel and Hofer (1979: 11) define strategic management as “a process that deals with the *entrepreneurial work* of the organization”, strategy scholars endeavor to understand the sequence of events over time in the process (Pettigrew 1992; Vaara & Lamberg, 2015; Van de Ven, 1992); however, it seems that the entrepreneurial perspective is widely ignored. In the entrepreneurial practice, emerging from the recent social movement of “the lean startup” originated from Silicon Valley, “search” and “execution” are important strategic actions in staging the entrepreneurial process (Blank & Dorf, 2012; Ries, 2011). In firm’s growing process, Blank (2013) argues that entrepreneurs should search for a repeatable, scalable, and profitable business model in the first stage and that only after this is complete should entrepreneurs execute the business model and scale the firm up. An entrepreneurial firm is not a smaller version of a large firm because each kind of firm emphasizes on different activities under different growth stages. Inspired by the practice of the lean startup, we try to address the following questions in this study. What is the theoretical foundation of staging perspective in lean startup methodology? How do startups engage in different activities at different development stages? What are the entrepreneurial cognitions that lead to search and execution activities? These questions remain unanswered in theory even though both entrepreneurial cognitions and entrepreneurial activities are extensively studied.

Behavior theory of the firm suggests that firms will keep searching until the results satisfy that entrepreneurs’ aspiration levels. Scholars have developed the concept of search from different perspectives. For example, Cyert and March (1963) posit that two categories of search behavior exist: problematic search, which is triggered when firms perform below the aspiration level, and slack search, which is triggered by firms’ slack resources. Gavetti

and Levinthal (2000) argue that two different kinds of search processes take place in organizations: forward-looking search, which is based on organizations' cognitive map of the linkages between action and outcomes, and backward-looking search, which is based on organization experience. The other central argument of the behavior theory of the firm is that the organizational learning process includes the exploration of new possibilities and the exploitation of existing certainties (March, 1991). Despite the diverse research streams on the concept of search, behavior theory of the firm has not identified the entrepreneurial process and cognition behind these influential concepts of strategies. These issues are important in two regards. From a theoretical point of view, the inclusion of search and identification of entrepreneurial cognition could enrich entrepreneurial staging theory while mapping the strategy processes under the entrepreneurial lens (Burgelman, 1983). From a practical point of view, the inclusion of search in the entrepreneurial stages could provide entrepreneurs with a valuable mind map and handy tool.

Introducing the effectuation concept to entrepreneurship study, Sarasvathy (2001) argues that individuals also adopt an effectual logic when pursuing entrepreneurial opportunities. Under such logic, an entrepreneur does not have a clear goal at the beginning, but stays flexible, leveraging environmental contingencies, taking affordable loss, and seeking to control an unpredictable future in the effectuation processes. Effectuation logic boldly questions the universal applicability of the causation logic of entrepreneurship (Stevenson & Gumpert, 1985). Under causal logic, an entrepreneur will begin with a given goal, focus on expected returns, emphasize competitive analyses, exploit pre-existing knowledge, and try to predict an uncertain future.

Effectuation and causation are the two main cognitive streams of logic that entrepreneurs follow in their decision-making processes. Ever since Sarasvathy (2001) proposed these two different approaches to entrepreneurial decision-making, voluminous

studies have further defined the theoretical domain, extended the theoretical model, and examined the differences. Similarly, search and execution are two fundamental activities firms perform in their day-to-day operations. Nevertheless, to date, no research has examined the relationship between the two entrepreneurial cognitive processes or the two entrepreneurial activities. This is problematic because as entrepreneurship educators try to apply the search and execution model to teach students how to allocate resources and time in daily operations, no entrepreneurship theory exists in support of such a model. As such, entrepreneurship scholars feel an urgency to build a connection between entrepreneurship theory and practice.

In this study, we build an entrepreneurial process model in accordance with the lean startup process. Even though extant studies show that the development of new ventures could involve multiple stages (Blank, 2013), the whole entrepreneurial process can be split into two stages, namely, search and execution. As shown in figure 2.1, firms engage in activities similar to the exploration mentioned by March (1991) in the search stage such as risk taking, experimentation, variation, and discovery, among others. As a result, a firm's profitability will be low. After a firm finds a scalable, repeatable, and sustainable business model, it moves to activities similar to exploitation such as refinement, choice, production, efficiency, selection, and implementation. In this execution stage, a business plan becomes necessary to guide the firm's scaling growth. In this stage, a firm's profitability will gradually improve.

Consequently, we conduct an empirical study to examine how entrepreneurs' cognitive approaches—effectuation and causation—affect a firm's operational activities, namely, search and execution. Moreover, we also examine how search and execution activities affect a firm's performance and which activity happens more often in each stage of development.

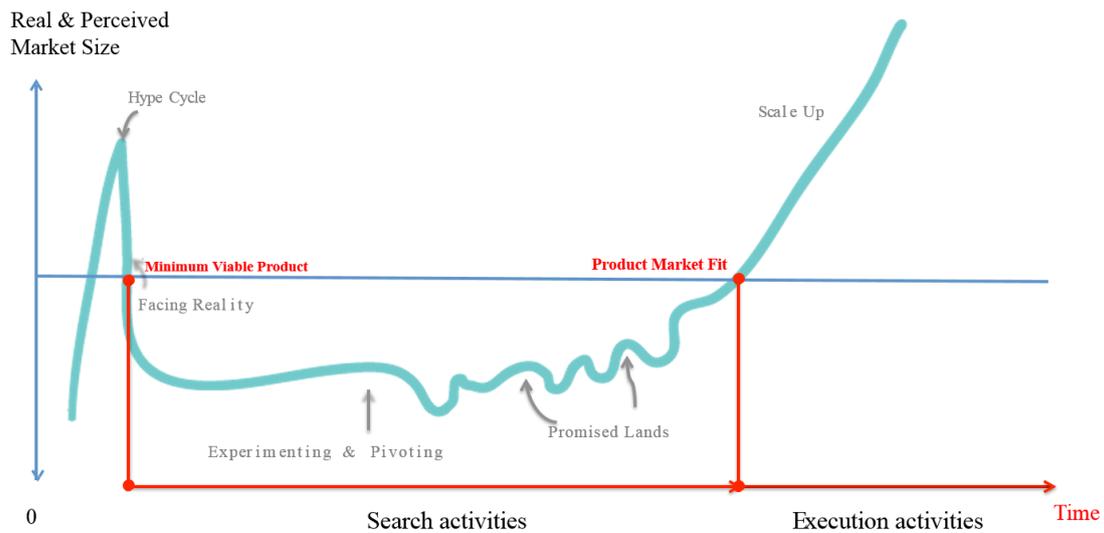


Figure 2.1. Two entrepreneurial firms' development stages

This study makes three contributions to strategy research and practice. First, our research enriches the strategy process theory by differentiating strategy actions in the entrepreneurial growth trajectory. Our results suggest the two-stage entrepreneurial process model in which different entrepreneurial cognitions and activities happens in different stages. Second, our research builds connections between the cognition mechanisms, namely effectuation and causation, and firms' search and execution actions. Third, our research also provides empirical support to the behavioral theory of the firm that firms' execution actions is positively related to their profit growth, while firms search behavior is positively related to their profitability. Our study suggests that the lean startup has a reliable theoretical foundation and is applicable in entrepreneurship education.

This paper is organized as follows. First, we review the literature of search, execution, stages models, effectuation, and causation. Second, we develop a theoretical framework and hypotheses. Third, the methodology, data analysis and results are explained. The paper concludes with a discussion and implications for future research.

Theoretical Framework and Hypotheses

According to the practice wisdom of the lean startup, a startup is defined as a temporary organization designed to search for a repeatable, sustainable, and scalable business model (Blank, 2013). Existing companies have developed successful business models while new ventures can only struggle with a series of untested hypotheses. By testing these hypotheses within markets and with customers, new ventures continuously revise or pivot into new hypotheses. Once all of the hypotheses are tested and verified, new ventures start to build a complete business model and formal organization. From this point on, the startup starts to make predictions and devise a plan accordingly. Rather than searching for a repeatable, sustainable, and scalable business model, the primary task turns to executing the plan. In other words, in the early stage of a startup, focusing on execution will misguide new ventures and waste investment capital. Instead, new ventures should focus on search activities before they reach the point of knowing what to execute. Although the lean startup has had a huge impact on entrepreneurial research and education, its theoretical underpinnings have not yet been developed.

Search

Search is a fundamental concept in both behavioral theories of the firm (Cyert & March, 1963) as well as organizational learning (Huber, 1991). Generally, search is the controlled, intentional process of individuals or organizations to attend, examine, and evaluate new knowledge and information existing around them (Li *et al.*, 2013). Organizations search for new information to decide upon which means to take (Derfus *et al.*, 2008), maintain superior organizational design (Bruderer & Singh, 1996), close actual and aspirational performance gaps (Levinthal & March, 1981), improve innovation performance (Katila & Ahuja, 2002; Li *et al.*, 2013; Von Hippel & Tyre, 1995), and identify opportunities (Kornish & Ulrich, 2011). Derfus *et al.* (2008) show that the improved innovation

performance of a firm may trigger an extensive search by their rivals to catch up. Individuals in firms also search for information and answers to help them to make decisions (Derfus, Maggitti, Grimm, & Smith, 2008), close gaps between the real and aspirational performance (Levinthal & March, 1981), find new opportunities (Kornish & Ulrich, 2011), and develop innovations (Katila & Ahuja, 2002). In the context of startups, search refers to the learning and discovery process through which new firms examine untested hypotheses of their products, look for the right customers, market segment, cultivate suppliers and alliances, and develop a repeatable, scalable, and profitable business model. Instead of executing business plans, new ventures are testing hypotheses, gathering early and frequent customer feedback, and showing “minimum viable products” (Blank, 2013: 68).

Execution

The term execution refers to the process of carrying out or accomplishing a well-defined plan. In the Oxford English Dictionary, execution is defined as, “the carrying out or putting into effect of a plan, order, or course of action.” Execution is the main activity in modern organizations. One of the primary responsibilities of managers and executives in big companies is to make predictions based on their previous experiences, information, and intelligence provided by other sources such as consultant firms, competitors, markets, users, and employees, among others. With the goal of future predictions, they then make specific plans of how to allocate resources (e.g., employees, advertisement, R&D) to attain such goals. A plan is a process to determine the long-term objectives of firms, the procedures to generate and evaluate alternative strategies, and a system to monitor the results (Armstrong, 1982). In the end, managers and executives execute such plans strictly. Most management courses in business schools help train students to utilize different tools, theories, and formulas, to make decisions quickly and wisely, and execute plans professionally in the real world. In big organizations, in order to meet the budget and evaluation on multiple levels,

strictly executing a business plan could be the most efficient way to coordinate different departments/levels and maximize the performance of the whole. The execution of a good business plan is positively related to a firm's performance such as survival and success (Delmar & Shane, 2003). However, an overly detailed plan could lead to lower performance because it may foster cognitive rigidity (Vesper, 1993) and overconfidence (Hayward, Shepherd, & Griffin, 2006). We summarize the differences between search and execution in table 2.1.

In our study, we focus on these two critical activities in the different stages of a startup. When new ventures establish a successful business model by a series of searching activities, they enter the stage of execution in which they commit resources to activities such as manufacturing, promotion, advertisement, and selling.

An Entrepreneurial Process Model

Firm growth is one of the essential topics in strategy process study (Pettigrew, 1992; Shane & Venkataraman, 2000). The extant literature has different approaches to model new business growth in a variety of distinct stages (Blank, 2013; Hanks *et al.*, 1993; Churchill & Lewis, 1983). The number of stages described in current textbooks include three (Stevenson *et al.*, 1992), four (Timmons & Spinelli, 1994), five (Frederick, Kuratko, & Hodgetts, 2007), six (Baron & Shane, 2007), and so on. The staging approach is widely applied in entrepreneurship education on business growth because of its intuitive appeal although the validity of such an approach has been called into question (Blank, 2013; Phelps, Adams, & Bessant, 2007; Stubbart & Smalley, 1999). Stages theory is also applied to study the cognitive maps of entrepreneurs (Barringer, 2009) and the decision-making processes of venture capitalists (Gompers, 1995; Li, 2008).

Table 2.1. Search and execution

	Search	Execution
Main activities	Experimentation, risk taking, variation, discovery, survive	Implementation, selection, production, efficiency, refinement, growth
Strategy	Hypothesis driven, exploration	Implementation driven, exploitation
Attitude toward failure	Expected and fail fast	Avoid
Management team	Founders	Professional executives
Product	Minimum viable product, service, interaction with customers	Product for the real product, quality, brand, customer demand
Competition	Avoid	Confront
Pricing policy	Flexible, high, by contingency	Fixed, low, based on cost and profitability
Promotion	Word of mouth, low cost method	Advertisement, high cost method
Channels	Wholesale, agency	Direct sale
Customers	Early adopters	Majority users
Market positioning	Niche market	Primary market
Business model	Unknown	Known
Profitability	Survive	Profitable
Stage in firm growth	More in early stage	More in late stage

A primary reason behind the questioning of stages theory is due to the lack of consistency in the number of stages or the constitutive components, and being linear, sequenced, and deterministic (Phelps *et al.*, 2007). As shown in figure 2.1, in the first half of the startup curve, the trajectory of market size development exhibits a zigzag line without any predictive pattern. The shape of such a curve and the number of ups and downs also varies at different times and within different industries, countries, and even individual firms.

Steve Blank (2013: 67) has defined search as the following:

Instead of executing business plans, operating in stealth mode, and releasing fully functional prototypes, young ventures are testing hypotheses, gathering early and frequent customer feedback, and showing "minimum viable products" to prospects. This new process recognizes that searching for a business model (which is the

primary task facing a startup) is entirely different from executing against that model (which is what established firms do).

According to the lean startup, in the early stage of a venture, entrepreneurs try to translate business ideas into a series of hypotheses of their business model, test assumptions about the needs of customers, and develop “minimum viable products” to validate customers’ interest. If their products fit with the expectations of the market and customers, they will move on to the next stage; otherwise they will pivot their business model. Such a process will be iterated multiple times until the right approach is found. Similar to March (1991)’s concept of exploration, the main activity in this stage is to search for all of the possibilities. In the second half of the curve in figure 2.1, we can see that the curve starts to scale up, which reflects that fact that firms have identified the right business model. The hypotheses of their business model are thus proved. The firm jumps from the search stage into the execution stage to scale up its business. Similar to the concept of exploitation by March (1991), the main activity in this stage is to execute the well-defined business model to exploit the old certainties. Thus, we argue the following:

Hypothesis 2.1. Search activities happen more in firms’ early development stage and execution activities happen more in firms’ late development stage.

Effectuation and Causation Logics

Sarasvathy (2001: 245) defines causation and effectuation as the following.

“Causation processes take a particular effect as given and focus on selecting between means to create that effect. Effectuation processes take a set of means as given and focus on selecting between possible effects that can be created with that set of means.”

What are the differences between causation and effectuation? There are mainly five differences between effectual and causal logics in terms of views of the future, bases for taking action, predisposition toward risk and resources, attitudes toward outsiders, and attitudes toward unexpected contingencies (Sarasvathy, 2001). First, causal logic views the

future as a continuation of the past, while effectual logic views the future as shaped by people. Second, causal logic is goal-orientated and actions are determined by goals, while effectual logic is mean-orientated and goals come into being based on given means. Third, causal logic focuses on the upside potential (expected return) while effectual logic focuses on limiting the downside potential (affordable loss). Fourth, causal logic poses a competitive attitude toward outsiders while effectual logic advocates a partnership view of other players. Fifth, causal logic avoids contingencies by accurate predictions and careful planning while effectual logic leverages contingencies by eschewing predictions. Based on these differences, causation has connotations of ex-ante rational planning, whereas effectuation is associated with ex-post emergent strategies (Harms & Schiele, 2012).

We argue that entrepreneurs could follow effectual logic to engage in search activities. First, when entrepreneurs have a creative view toward the future, their search activities will be more productive. Under effectual logic, entrepreneurs frame the future as a result of co-creation by different stakeholders who are “stitched together” (Dew *et al.*, 2009: 299). Effectual logic assumes that entrepreneurs have particular means available, which is a starting point to take action under uncertainty. Since entrepreneurs are less likely to predict the future and more inclined to modify their initial goals and visions of the future, they engage in more search activities that result in more serendipity. For example, Fleming (2001) argues that invention is a process of recombination, which is inherently uncertain, and a process of local search.

Second, effectual logic increases the depth and breadth of search. Effectual logic focuses on affordable loss and encourages entrepreneurs to experiment with different strategies with all the means given. Rather than maximizing present returns, the effectuation mindset prefers options that can create more options for the future. Such a preference for additional future options leads to more explorative activities such as experimentation, trial

attempts, risk taking, testing, and searching. For example, Katila and Ahuja (2002) show that firms' search activities result in the introduction of new products. They further categorize firms' search activities into two dimensions: search depth, the extent to which firms reuse their existing knowledge, and search scope, the width of exploring new knowledge.

According to effectual logic, the affordable loss principle will make firms keep searching for a certain option rather than stop at any point if the return reaches the expected level.

Similarly, to create more options for the future, firms following effectual logic need to search extensively rather than focusing on a few options.

Third, effectual logic leads entrepreneurs to configure different resources in search activities. An effectuation mindset emphasizes strategic alliances and a precommitment by stakeholders in order to reduce uncertainty and build entry barriers. During such an alliance and precommitment process, entrepreneurs commit the physical resources (who they are), human resources (what they know), and organizational resources (whom they know) to search for a repeatable, scalable, and profitable business model. Under the affordable loss principle, they take uncertainty, risk, and failure for granted and make small bets to ensure that their failure is not catastrophic.

Fourth, effectual logic leads entrepreneurs to leverage a partner's advantage. Effectual logic emphasizes strategic alliances and the precommitment of stakeholders rather than competitive analyses. Under effectual logic, entrepreneurs tend to proactively look for partners such as suppliers, customers, or even competitors with complementary skills or assets to create opportunities with them. Search literature shows that firms search for partners locally or distantly according to the gap between their performance, aspiration levels (Baum *et al.*, 2005), and environmental factors (Sorenson & Stuart, 2008).

Fifth, effectual logic leads entrepreneurs to leverage the opportunity in contingency. Effectual logic is also in favor of unexpected events, using contingencies as opportunities for

novel creation and leveraging these events by shifting action to take advantage of them. Search literature shows that firms conduct two types of search activities: problem-driven search and opportunity-motivated search (Carter, 1971). When firms confront problems such as low market share, they have low performance, which reinforces their problem-driven search. When firms find great opportunities that they can leverage, they will pursue an opportunity-motivated search. The information search patterns and resource expenditures that emerge from a problem-driven search are different from those motivated by an opportunity-orientated search (Fredrickson, 1985). When contingencies arise unexpectedly, effectual logic will enable entrepreneurs to better exploit such opportunities by conducting an opportunity-motivated search.

In general, such an effectual logic of decision making will lead firms to pursue more search activities in an environment of uncertainty. Thus, we believe that:

Hypothesis 2.2. Entrepreneurial effectuation leads to more search activities.

In contrast, entrepreneurial causation will take a totally different logic. Under causal logic, entrepreneurs will see the future as a continuation of the history of the endeavor and they believe prediction is not only necessary but also useful. Entrepreneurs operating under such logic are more goal-oriented and determine their sub-goals and actions according to the primary goal, even when it is constrained by limited means. Rather than limiting the downside potential under effectual logic, they focus on the upside potential and expected return, and pursue opportunities based on the expected value.

We argue that entrepreneurs could follow causation logic to engage in execution activities. First, the “planning school” (Ansoff, 1987) has long argued that three key sub-activities take place in the process of strategic activities: sensing the need for strategic action, deciding on an action, and executing the action. Execution activities have been treated as logical continuation of strategic decisions. Causation logic is consistent with the planning

school strategy approach (Ansoff & McDonnell, 1988; Mintzberg, 1978), which views the future as a continuation of the past. Second, causation logic believes that through calculation and inference, entrepreneurs could predict the distribution of outcomes of strategic activities (Sarasvathy, 2001). The options with the highest expected return then will be selected and executed. Third, causal logic is goal-orientated and actions are determined by goals. Once goals are established, entrepreneurs will exploit pre-existing capabilities and resources to reach the goals (Choi & Shepherd, 2004; Shane & Venkataraman, 2000). Careful planning and execution could minimize the negative impact of risk and uncertainty to the largest extent. In order to attempt control over the future as much as possible, the rigorous execution of the plan is a precondition. From the abovementioned, causal logic implies that firms conduct more implementation and execution activities based upon their experience, prediction, and plan. Thus, we argue that:

Hypothesis 2.3. Entrepreneurial causation leads to more execution activities.

Performance

A startup is a temporary organization in search of a scalable, repeatable, profitable business model (Blank, 2013). For most startups, rather than generating revenue and maintaining profitability, the primary objectives are to look for customers, market segments, sales channels, and suppliers.

Billinger, Stieglitz, and Schumacher (2013) demonstrate factors explaining searching behavior in rugged landscapes and reveal that search activities will stop before reaching a peak of performance. For firms, search is part of the organizational learning process through which firms try to solve problems they encounter in an ambiguous world (Huber, 1991).

In the beginning stages, entrepreneurs have many hypotheses about products, customers, markets, advertisements, and sales channels. In order to test these hypotheses, they need to experiment until they find a good fit between their products and the market.

During this process, they may iterate back and forth with their business model and pivot if necessary to obtain the best fit (Desa, 2012; Noda & Bower, 1996; Van de Ven, 1992). When hypotheses are tested on a small scale, profit is not the main gain and/or consequence of such search activities. In contrast, a firm with more execution activities implies that it has a better understanding of the market, applying previous experiences on their daily operations and making relatively accurate predictions about the future. With a clearly defined organizational structure and abundantly allocated resources, entrepreneurs may follow a well-defined business plan and execute such plans to make increased profits from such a robust business model. Meanwhile, firms preoccupied with execution activities experience the search period for a viable business model and care more about the business's final performance. Thus, we argue that:

Hypothesis 2.4. Execution activities have a stronger relationship with firms' performance than search activities have.

Method

Data

Following the convenience sampling method, we chose firms with memberships in the Coalition for Entrepreneurship Development of China, a public service organization aimed at helping entrepreneurs start and develop ventures (akin to the U.S. Chamber of Commerce). With the help of several doctoral students from the School of Economic and Business Administration of the Beijing Normal University of China, we randomly selected a total of 270 firms from a variety of industries including traditional manufacturing, information technology and software, business service, customer service, and education and training. All of the firms were located in two cities (Beijing and Chengdu) and one province (Shandong). The firms involved in the study have been established for at least two years, have at least two employees, and have annual sales of RMB 2 million (USD 0.3 million). The

respondents were founders, general managers, vice general managers, directors, or vice presidents in charge of firm sales or marketing. We conducted two survey rounds to collect a satisfying amount of data. In the first round, a total of 180 questionnaires were distributed. One hundred and thirteen questionnaires were returned, with a response rate of 63% after deleting one invalid questionnaire (we defined questionnaires with 25% missing variables as invalid). In the second round, a total of 90 questionnaires were distributed and 48 returned, with a response rate of 54%. After comparing the two rounds of data, we did not find any significant differences and in this way, we further verified our scales' reliability. By combining the two round of data, the total number of observations was 160.

Variables and Measures

Dependent Variables

Search and execution. Based on the characteristics of exploration and exploitation as described by Blank (2013), we generated 63 initial questions of search and execution by interviewing different entrepreneurs. The search scale reflects the extent to which ventures engaged in searching activities for the right products, customers, marketing strategy, pricing, channels, promotion, and sales management. The execution scale examines how ventures implement such activities. Next, we asked several entrepreneurs to evaluate the 63 questions and divided them into two groups: 30 questions measuring search activities and 21 questions measuring execution activities. We then invited a group of strategy and marketing scholars to discuss, revise, delete, and add to the question items, resulting in 10 questions of search activities and 10 questions of execution activities. Based on the survey data, we conducted a factor analysis of the 20 questions. After deleting questions with loadings on two factors and loadings less than .4, we ended up with 6 questions of search and 7 questions of execution. The Cronbach's alpha was 0.64 for the search scale and 0.72 for the execution scale. The translated questions of measurement of search and execution can be found in the Appendix.

Performance. We used two variables to measure firm performance. The first dependent variable is profit growth, which is operationalized as the profit difference between years 2010 and 2013 and divided by the profits of year 2010. The second variable is profitability, which is measured as the profits in year 2013 divided by the sales in year 2013.

Independent Variables

Effectuation: Following Chandler et al. (2011), we measured effectuation from four dimensions, which includes experimentation, affordable loss, flexibility, and precommitment and alliances. We used five point Likert-type rating scales, ranging from “strongly disagree” to “strongly agree,” to measure entrepreneurs’ perceptions of each question of effectuation.

Experimentation: Experimentation is measured by five items ($\alpha = .61$) based on the work of Chandler *et al.* (2011). We purposefully divided the first question of “We experimented with different products and/or business models” into two questions that include, “We experimented with different products,” and “We experimented with different business models,” to differentiate the perception of products and business models of entrepreneurs. Affordable loss is measured by three items ($\alpha = .85$) that evaluate the amount of affordable loss and choosing strategies within the available means (Sarasvathy, 2011). Flexibility is measured by four items ($\alpha = .75$), which reflect entrepreneurs’ flexibility when they make strategic decisions. Precommitments and alliance dimension is measured by two items ($\alpha = .40$), which reflect the extent of involvement and pre-commitment of stakeholders when confronted with uncertainties.

Causation: Causation is measured by seven items ($\alpha = .73$), which reflect the main ideas of envisioning the end from the start, maximizing expected returns, predicting uncertain future, and exploiting existing knowledge (Sarasvathy, 2001).

Control Variables

To exclude other factors that may affect the relationship between the focal dependent variables and independent variables, we also add a set of control variables at the individual level, firm level, and industry level. Among all the control variables, we have five variables at the individual level. Three variables are used to reflect the respondent's demographic information, such as age, gender, and education level. We also introduce a variable *serial* to show whether the respondent is a serial or nascent entrepreneur. *Serial* is a dummy variable, which equals to 1 when the respondent founded more than one new venture and equals to 0 when the respondent found only one venture. *Network* is defined as how many government staff and officials from industrial and commercial departments, tax departments, and justice departments that the entrepreneur is acquainted with.

A couple of variables are included in the firm level. *Firm age* is measured as the number of years a firm has been founded. *Startup fund* refers to the funding a firm raised to start the venture. We also introduce two dummy variables, *B2B* and *B2C*, to differentiate three types of business models that include B2B (business to business), B2C (business to customer), and a mixture of both. When B2B equals to 1, the firm's business model is business-to-business. When B2C equals to 1, the firm's business model is business-to-customer; otherwise, the firm's business model is a mixture of business-to-business and business-to-customer.

The slack resources variable is measured by four items ($\alpha = .61$) that reflect the abundance of resources that a firm possesses. Uncertainty is measured by nine items ($\alpha = .65$) that include the industrial competition, institutional environment, and economic situation, among others.

We also use dummy variables to differentiate the roles firms play in the value chain, such as manufacture, channel, agency, and wholesale. We further treat different industries with different dummy variables and control the industry effects in the models.

Since search and execution do not have a linear relationship with firm age, to test Hypothesis 2.1, we first sorted all of the observations by the variable *firm age* from young to old. We then selected the 30% youngest firms, which totaled 48 firms. We then selected the 30% oldest firms, which totaled another 48 firms. We conducted a pairwise t-test between the two groups of firms in terms of profit growth, profitability, search, execution, effectuation, causation, gender, education, serial, firm age, network, startup fund, slack resources, and uncertainty.

Results

Table 2.2 presents descriptive statistics and the correlation matrix of the variables for regression. Table 2.3 shows the result of the t-test between the two groups of firms, the youngest 30% firms and the oldest 30% firms. The average age of the youngest 30% firms is 2.40 years, while the average age of the oldest 30% firms is 13.56 years. The two groups of firms are significantly different under the dimensions of search, effectuation, causation, startup fund, and network. The means of variable *search* are 3.28 of the youngest 48 firms and 3.15 of the oldest 48 firms, which indicate that younger firms conduct more search activities than older firms, and such a difference is significant at .1 level. The means of variable *execution* are 2.90 of the youngest 48 firms and 2.92 of the oldest 48 firms, but the difference is not significant. Therefore, our Hypothesis 2.1 receives weak support. The results also show that younger firms follow more effectuation logic than older firms, while older firms follow more causation logic than younger firms. Both of the differences are significant at .1 level. Such results are consistent with entrepreneurship theory. The mean of the startup funds of the youngest 48 firms is RMB 4.74 million (USD .75 million) and significantly higher than the mean of funds of the oldest 48 firms, which is RMB 1.49 million (USD .24 million). There could be two reasons for such a big difference. One reason could be the liberation of capital markets in China in recent decades and thus new ventures might have

access to multiple capital resources such as venture capitalists, angle investors, and crowdfunding, among others (Ding, Sun, & Au, 2014). The other reason could be inflated Chinese currency. We also regressed search and execution on age to test our Hypotheses 2.1 and the results are similar: younger firms conduct more search activities than older firms do, but they are not significantly different in execution activities. We also regressed search and execution on age to test our Hypotheses 2.1 and the results are similar: younger firms conduct more search activities than older firms do, but they are not significantly different in execution activities.

Table 2.4 exhibits the regression results on search and execution. In the first and fourth models, we put only control variables in to work as a baseline model. Hypothesis 2.2 argues that entrepreneurial effectuation leads to more search activities. In Model 1, the result shows that the loading of effectuation on search is significantly positive ($\beta = .22, p < .001$). Thus, hypothesis 2.2 receives strong support. In Model 3, the coefficient of causation on execution is also significantly positive ($\beta = .17, p < .001$), which shows that entrepreneurial causation is positively related to execution activities. Thus, our Hypothesis 2.3 also receives strong support. In Models 3 and 4, we add two interaction variables—search \times firm age and execution \times firm age—to see whether a firm's age has moderating effects on the relationships between dependent variables and independent variables. Unfortunately, we did not find significant results.

Table 2.2. T-test results of old firms and young firms

Variables	Mean of Top 30% Youngest Firms	Mean of Top 30% Oldest Firms	P-value
1. Profit Growth	150.00%	299.00%	.15
2. Profitability	-9.43%	4.18%	.29
3. Search	2.82	2.68	.07†
4. Execution	2.99	2.93	.17
5. Effectuation	.14	-.10	.09†
6. Causation	-.04	-.02	.08†
7. Founder Age	29.44	29.33	.35
8. Founder Gender	.75	.69	.36
9. Founder Education	3.21	3.26	.36
10. Serial	.67	.38	.13
11. Firm Age	2.40	13.56	.00***
12. Startup Fund	474.06	148.77	.05†
13. Network	4.16	4.28	.30
14. Slack	2.73	2.76	.42
15. Uncertainty	3.01	3.05	.40

† p < .1; * p < .05; ** p < .01; *** p < .001.

Table 2.3. Descriptive statistics and correlations of variables ^a

Variables	1	2	3	4	5	6	7	8	9	11	10	12	13	14	15
1. Profit Growth ^b	1														
2. Profitability ^c	.04	1													
3. Search	-.01	.13	1												
4. Execution	.27	.26	.04	1											
5. Effectuation	.11	.16	.21	.08	1										
6. Causation	.20	.04	-.11	.34	.35	1									
7. Founder Age	.08	-.09	-.24	-.23	-.09	.07	1								
8. Education	-.06	-.16	-.07	.04	.12	.12	-.20	1							
9. Gender	.01	.07	.18	.14	.07	.12	-.01	-.15	1						
11. Serial	-.12	-.27	-.13	-.17	.11	-.07	-.02	-.09	.07	1					
10. Firm Age	.36	-.16	-.18	.00	-.07	-.07	.04	.12	-.25	-.05	1				
12. Startup Fund	.22	-.01	-.05	-.04	-.07	-.12	.14	-.06	-.13	.07	-.15	1			
13. Network	.19	-.08	-.04	.16	.13	.18	.14	-.03	.11	-.17	.15	.08	1		
14. Slack Resource	.10	.23	-.16	.27	-.06	.11	.10	-.11	-.02	.01	.18	-.09	.01	1	
15. Uncertainty	.06	-.17	.11	.04	.33	.13	-.02	.22	-.02	-.24	.05	.22	.21	.02	1
Mean	8.49	.17	2.97	2.78	.00	.00	28.57	3.26	.80	.41	7.15	249.73	4.19	2.76	2.97
Std. Dev.	50.72	.38	.68	.68	.91	.87	.47	.57	.40	.49	5.30	760.51	.95	.67	.57

^a Correlations above |.12| and significant at the .05 level are in italicized bold typeface.

^{b, c} In percentage.

Table 2.4. Results of regressions on search and execution

	Baseline 1	Model 1	Model 2	Baseline 2	Model 3	Model 4
Dependent Variables	Search	Search	Search	Execution	Execution	Execution
	Estimate (S.E.)					
Independent Variables						
Effectuation (H2)		.22** (.07)	.33* (.13)		.01 (.06)	-.03 (.11)
Causation (H3)		-.18* (.07)	-.30* (.25)		.17** (.06)	.29 (.11)
Interactions						
Effectuation × Firm Age			-.01 (.01)			-.01 (.01)
Causation × Firm Age			.01 (.01)			-.01 (.01)
Control Variables						
Founder Age	-.02* (.01)	-.02* (.01)	-.02* (.01)	-.01 (.01)	-.01 (.01)	-.01 (.01)
Founder Gender	-.04 (.16)	-.07 (.15)	-.07 (.16)	-.11 (.14)	-.10 (.14)	.08 (.10)
Founder Education	.03 (.11)	.11 (.12)	.10 (.12)	.13 (.10)	.13 (.10)	.09 (.07)
Serial	-.13 (.13)	-.11 (.13)	-.09 (.13)	-.03 (.12)	.02 (.12)	-.08 (.08)
Network	.09 (.07)	.08 (.07)	.08 (.07)	.10 (.06)	.11 (.06)	.06 (.04)
Firm Age	-.02* (.01)	-.02† (.01)	-.02† (.01)	.01 (.01)	.00 (.01)	.01 (.01)
Startup Fund	.00 (.00)	.00 (.00)	.00 (.00)	.00 (.00)	.00 (.00)	.00 (.00)
Slack Resources	-.16 (.10)	-.08 (.10)	-.08 (.10)	.24** (.09)	.19* (.09)	.16** (.06)
Uncertainty	.20 (.11)	.09 (.11)	.07 (.12)	.03* (.10)	-.03 (.10)	-.04 (.07)
B2C	.41** (.13)	.32** (.12)	.25 (.21)	.29 (.12)	.83** (.18)	.41 (.13)
B2B	.31** (.09)	.15 (.09)	.08 (.15)	.11 (.10)	.52*** (.13)	.26 (.09)
Manufacture	.04	.16	.40**	.09	.07	-.01

	Baseline 1	Model 1	Model 2	Baseline 2	Model 3	Model 4
Dependent Variables	Search	Search	Search	Execution	Execution	Execution
	Estimate (S.E.)	Estimate (S.E.)				
Channel	(.09) .02 (.08)	(.08) .10 (.08)	(.14) .07 (.13)	(.08) .13 (.08)	(.08) -.02 (.08)	(.08) -.08 (.08)
Agency	.10 (.09)	.05 (.09)	.19 (.15)	.13 (.08)	.15 (.09)	.17 (.09)
Wholesale	-.20* (.09)	-.18 (.09)	-.26 (.16)	-.23* (.09)	-.20* (.09)	-.14 (.09)
Industry Effects	Controlled					
Constant	2.05 (.52)	1.05 (.87)	1.86** (.55)	1.14 (.79)	.03 (.10)	1.94** (.57)
R ²	.2978	.3244	.3342	.4281	.4969	.4716
Adjusted R ²	.1560	.1805	.1772	.3227	.3878	.3569

Note: Seven industry dummies are included, but not reported here.

† p < .1; * p < .05; ** p < .01; *** p < .001.

Table 2.5. Results of regressions on firm performances (profit growth and profitability)

	Baseline 3	Model 5	Model 6	Baseline 4	Model 7	Model 8
Dependent Variables	Profit Growth	Profit Growth	Profit Growth	Profitability	Profitability	Profitability
	Estimate (S.E.)	Estimate (S.E.)	Estimate (S.E.)	Estimate (S.E.)	Estimate (S.E.)	Estimate (S.E.)
Independent Variables						
Causation		.64 (7.88)	1.09 (6.33)		-.01 (.06)	-.01 (.05)
Effectuation		15.70† (7.81)	15.42* (6.09)		.09† (.05)	.06 (.05)
Search (H4)		5.04 (8.99)	6.84 (17.38)		.13* (.06)	.31† (.14)
Execution (H4)		25.18* (10.39)	-52.18** (15.82)		-.01 (.08)	.04 (.14)
Interactions						
Search			-.40 (1.82)			-.04* (.02)
× Firm Age						

	Baseline 3	Model 5	Model 6	Baseline 4	Model 7	Model 8
Dependent Variables	Profit Growth	Profit Growth	Profit Growth	Profitability	Profitability	Profitability
	Estimate (S.E.)	Estimate (S.E.)	Estimate (S.E.)	Estimate (S.E.)	Estimate (S.E.)	Estimate (S.E.)
Execution			7.88***			.00
× Firm Age			(1.30)			(.01)
Control Variables						
Founder Age	.13 (.93)	.57 (.97)	.44 (.77)	.13 (.93)	.01 (.01)	.01 (.01)
Founder Gender	16.83 (20.87)	10.22 (20.56)	-11.50 (20.97)	16.83 (20.87)	-.06 (.11)	-.01 (.11)
Founder Education	-5.72 (5.18)	6.52 (11.99)	2.83 (9.83)	-5.72 (5.18)	-.12 (.08)	-.12 (.08)
Serial	29.23 (24.36)	-6.89 (13.33)	64.47 (55.02)	-13.16 (8.03)	-.14 (.09)	-1.21 (.46)
Network	3.40 (13.87)	-3.45 (8.15)	1.07 (6.56)	.35 (3.04)	-.01 (.05)	-.03 (.05)
Firm Age	7.50** (2.44)	4.90** (1.42)	-16.42** (2.35)	1.43* (.61)	.01* (.01)	.11** (.05)
Startup Fund	.11** (.04)	.07* (.03)	.01 (.02)	-.01 (.01)	.00 (.00)	.00 (.00)
Slack Resources	1.45 (18.90)	-3.92 (10.42)	-10.89 (8.23)	4.72 (4.40)	.11 (.07)	.12† (.07)
Uncertainty	-2.13 (21.36)	-13.03 (12.60)	-10.59 (9.76)	2.23 (5.14)	-.12 (.08)	-.14† (.08)
B2C	49.37 (35.18)	40.67 (37.01)	24.36 (40.58)	35.63 (20.89)	28.01 (23.41)	28.01 (23.41)
B2B	-7.05 (27.13)	-5.32 (27.63)	-15.59 (32.28)	.44 (15.72)	3.47 (19.52)	3.47 (19.52)
Manufacture	-.24 (24.70)	-1.75 (25.30)	3.05 (26.85)	-5.92 (7.71)	-7.36 (12.60)	-7.36 (12.60)
Channel	-17.07 (22.62)	-28.39 (23.35)	-36.26 (29.93)	-2.80 (12.14)	-14.96 (15.20)	-14.96 (15.20)
Agency	-6.46 (26.05)	-13.28 (26.77)	-32.21 (29.05)	6.56 (7.32)	14.32 (4.54)	24.32 (7.94)
Wholesale	7.24 (27.56)	16.26 (27.65)	32.17 (30.45)	2.45 (5.34)	2.14 (8.14)	3.82 (8.25)
Industry Effects			Controlled			
Constant	11.99	-78.30	198.15	.59	.51	.40

	Baseline 3	Model 5	Model 6	Baseline 4	Model 7	Model 8
Dependent Variables	Profit Growth	Profit Growth	Profit Growth	Profitability	Profitability	Profitability
	Estimate (S.E.)					
	(38.00)	(85.72)	(85.68)	(.57)	(.61)	(.66)
R ²	.3665	.5063	.7265	.1949	.2871	.3891
Adjusted R ²	.1448	.2734	.5678	.0170	.0724	.1648

Note: Seven industry dummies are included, but not reported here.

† p < .1; * p < .05; ** p < .01; *** p < .001.

Next, we examine whether search or execution activities impact firms' performance.

Table 2.5 shows the result of regressions on *profit growth* and *profitability*. The first and fourth models are baseline models in which we put all of the control variables. In Models 5 and 7, we add in the independent variables. The results show that, as hypothesized, the relationship between *execution* and *profit growth* is positively significant, or, that firms that conduct more execution activities experience higher profit growth. In Models 6 and 8, we add two interaction variables—*search* × *firm age* and *execution* × *firm age*—to determine whether a firm's age has moderating effects on the relationships between dependent variables and independent variables. As we can see in the third model, firm age positively moderates the relationship between *execution* and *profit growth*. The coefficient of *execution* is -52.18 and the coefficient of *execution* × *firm age* is 7.88, meaning that when a firm is less than seven years old, execution could have a negative effect on profit growth. From the eighth year on, the effect of execution on profit growth becomes positive.

In Models 7 and 8, we substitute the dependent variable, profit growth, with profitability. The results of Model 7 show that the coefficient of *search* on *profitability* is significantly positive, which means that firms' search activities have a positive effect on firms' profitability. In Model 8, the coefficients of *search* and *search* × *firm age* are .31 and -.04, implying that for

firms less than seven years old, more search activities lead to higher profitability. However, from the eighth year on, more search activities will hurt a firm's profitability performance. When we check the adjusted R^2 of the three models, we can see that each model gains a bigger explanatory power when more variables are put in, exhibiting a good model design. Overall, our Hypothesis 2.2 does not receive support. However, our results in table 2.5 suggest that relations between search and performance and execution and performance are significantly contingent with firm age, which furthers support our Hypothesis 2.1 on the entrepreneurial stage model.

Finally, we check the variance inflation factor (VIF) value and find that the VIF indexes of all variables are below three in Models 1, 3, 5, and 7, indicating that the multicollinearity issue is not very significant. To check the potential common method bias issue, which could overestimate or underestimate the relationships between our interested constructs, we conduct an exploratory factor analysis on all of the measures of the main constructs—a total of seven variables—to examine whether more than 50% of the total variance is explained by a single factor (Podsakoff & Organ, 1986). This test is called the Harman single-factor method. Such a test generates 10 factors with eigenvalues greater than 1 and the first factor accounts for 14% of the total variance, indicating that the common method bias is not an issue in our research. In addition, our performance measures—profit growth and profitability—are objective in the survey, which also reduce common method bias.

Discussion

Contributions

Our research contributes to strategy research in the following ways. First, we contribute the process analysis to identifying the sequences of strategy actions -- search and execution -- in entrepreneurial growth process (Pettigrew, 1992). Steve Blank's customer development model

has received tremendous momentum in entrepreneurship education. The two-step develop model, which includes search and execution that integrates other stages approaches of organization growth, continues to gain more legitimacy in practice and education. However, after an extensive literature review, we noticed that no empirical study had yet been conducted that tests the validity of such an impactful model. Our study is the first attempt to empirically examine such a process. Although our research is not designed purposefully to test this model, it sheds light on the process analysis of new venture development. Our research also makes a contribution to strategy process literature by mapping the strategy processes under an entrepreneurial lens (Pettigrew, 1992). The study shows that an entrepreneurial context is associated with a different strategic process: new entrepreneurial firms are more search-oriented while old entrepreneurial firms are more execution-oriented.

Second, to our knowledge, this study is among the first batch of research attempting to build a connection between entrepreneurial cognition and lean startup practices. By empirically examining the relationship between entrepreneurial theories of effectuation and causation and entrepreneurial practices—that is, search and execution—we establish the theoretical foundation for such entrepreneurial activities.

Third, we show that firms conducting more execution activities exhibit higher profit growth; however, this only applies to firms older than seven years. For firms younger than seven years, more execution will hurt the profit growth performance. We also find that firms conducting more search activities exhibit higher profitability. However, such a positive effect of search on profitability will stop when the firm is seven years old, at which point more search will decrease the profitability performance.

Implications for Practice and Education

The current research has several implications for practice. First, our two-stage entrepreneurial process model shows different cognitive logic and activities in different stages. For entrepreneurs who are baffled by the complexity of existing business growth models, our entrepreneurial process model can be used as benchmark to examine their business development process and to make strategic decisions accordingly. Entrepreneurs should understand that they must go through the search stage in which they will engage in experimentation, risk taking, variation, and discovery before reaching a point of product market fit and finding a scalable, profitable, and sustainable business model. After this point, they will enter an execution stage in which they engage in refinement, choice, production, efficiency, selection, and implementation of their business model and make profit. Second, for investors such as venture capitalists, our two-stage model provides them with a benchmarking tool to evaluate the development process of new ventures. For example, our model suggests that early angel investors should focus on whether and how entrepreneurs examine hypotheses in the search stage and not focus on immediate profits as the performance measure (Chahine, Filatotchev, & Zahra, 2011). More rational decisions could be made when entrepreneurs reach a milestone and when investors have a clearer picture of the new venture development stages (Gompers, 1995; Li, 2008).

Our research also carries several important implications in entrepreneurial education. The advent of entrepreneurship research has caused some paradigmatic shifts of conventional tenets and norms taught at business schools. One big change is the introduction of the lean startup, which favors experimentation over elaborate planning, customer feedback over intuition, and iterative design as opposed to the traditional "big design up front" development (Blank, 2013). According to the traditional tenets, which are generally taught in most business schools,

entrepreneurs should first create a business plan regarding income forecasts, profits, market growth, and product features. The next step is then to execute and implement such plans to reach the goals set at the beginning. We call this method of startup the plan and execution approach. Although this approach is widely used among new ventures and supported by universities, governmental agencies, and management consultants, many people are increasingly skeptical about its value (Castrogiovanni, 1996; Delmar & Shane, 2004; Ford, Matthews, & Baucus, 2003). Other scholars indicate that many successful startup entrepreneurs did not begin with business plans. For example, Microsoft, Dell Computers, Rolling Stone magazine, and Calvin Klein all started without business plans (Bhide, 2000). Our research echoes to those critics by showing that while a business plan can be useful to require founders to hammer out details of a venture and communicate its merits to investors (Barringer, 2009), entrepreneurship educators should also remind students to follow an iterative search strategy before they find an executable business model. Accordingly, business schools should modify their curricula by incorporating more courses about how to search, how to iterate, and how to deal with failure before telling students how to execute. For example, we should teach students that fail is common during new venture development, especially in the early stage. During the early stage, the main task of new venture is to test their hypotheses. If they fail, they should revise their business model and test the hypotheses again, until they identified a profitable, scalable, and sustainable business model. If they have to fail, they'd better fail fast and cheap.

Limitations and Future Research

While our research sheds light on the strategy and entrepreneurship theory and practice, it has a few limitations. First, we artificially divided firms' day-to-day operations as search and execution. More research is required to provide a theoretical foundation for such a dichotomy.

Second, our samples are all from three locations in China, namely Beijing, Shandong, and Chengdu. We followed the convenience sampling method, which could be biased due to such a method as well as geographic limitations. Future studies could collect data from other provinces and countries to examine the generalizability of our conclusions. In addition, since all of the firms selected are those that have survived, we may have failed to include firms that did not survive before the survey. Last, although we carefully followed the measurement of effectuation in four dimensions, the reliability of one dimension, precommitment and alliance, is fairly low ($\alpha = .40$). The reliability of other variables, such as search ($\alpha = .64$), experiment ($\alpha = .61$), and slack resources ($\alpha = .61$), are also low. Possible explanations include cultural differences between West and East (which may affect a respondent's perception of this dimension), the methodology we used to calculate this construct, or simply a defect in research design. Any abovementioned aspect is a promising opportunity for further research.

Conclusion

Since the introduction of the lean startup concept by Steve Blank, search and execution have become buzzwords in entrepreneurship education. Echoing this trend in entrepreneurship practice and education, we propose a two-stage process model to better describe the growth trajectory of new ventures. With data collected from 160 ventures in China, our research provides empirical evidence in support of such a lean startup model. We find that firms in the search stage are significantly different from firms in the execution stage in ways such as the extent of search, effectuation, causation, and profitability, among others. More importantly, we provide a theoretical foundation for firms' search and execution activities. We find that effectuation cognition leads to more search activities, while causation cognition causes more

execution activities. Overall, our research provides a significant contribution to strategy and entrepreneurship processes and practices.

CHAPTER 3

THE CONTINGENCY OF NETWORK POSITION, LEGAL ENVIRONMENT, AND LEARNING EXPERIENCE ON INNOVATION: AN APPROPRIATENESS PERSPECTIVE

Under what circumstances is the network most conducive to firms' innovation performance? There is no conclusive answer to this question. The literature has examined the matter from different perspectives, yet these have led only to some anecdotal conclusions. It is widely acknowledged that the network is important for firms' innovation performance, and that the relationship is contingent on a number of factors. For example, Ahuja (2000) finds that direct and indirect ties are conducive to innovation performance, and that the positive effect of indirect ties is moderated by the level of direct ties. Sun and Lee (2013) argue that firms' innovation performance increases when structural hole positions in their IJV portfolio increase, but decreases when network centrality increases; however, such relationships are contingent on the size and resource commitment of the IJV portfolio. Carnabuci and Diószegi (2015) find that the relationship between social network position and innovative performance is contingent on employees' cognitive styles. These contingent effects enrich our understanding of how firms' network position boosts innovation and help firms leverage the power of the network.

How can firms maximize the rent extracted from the alliance network? In this study, we introduce an appropriateness perspective on firms' network position to emphasize the importance of contextual factors such as learning experience and legal environment. An appropriateness perspective here refers to the optimal configuration of the different internal and external factors that can provide the best condition for boosting firms' innovation performance (March, 1999; Porter & Siggelkow, 2008; Reinholt, Pedersen, & Foss, 2011). We apply learning theory to examine the internal configuration factor, namely learning experience, which may affect the

relationship between network characteristics and innovation performance. Meanwhile, we also will apply an institution-based view to take into account the external configuration factors, namely legal environment, in order to examine this relationship.

This article was prompted by a dual impetus. First, from a learning perspective, we posit that firms could develop organizational capabilities from their experience and then engage in repeat experiences that further refine their capabilities. Organizational learning enables firms to encode inferences from history into routines that guide behavior (Levitt & March, 1988). Thus, firms' learning experiences could strengthen the effect when firms try to adapt to the competition. The learning experience of firms provides a complementary internal factor with which to study the effect of network characteristics on innovation performance. Second, from an institution-based view, we argue that legal environment is a critical contingency for explaining the relationship between network characteristics and innovation performance. The theoretical framework can be found in figure 3.1. Our research focuses on China, which is characterized by a highly diversified institutional environment and a fast-growing business network structure, as well as, over the past two decades, a remarkable degree of progress in innovation.

In general, this paper contributes to the literature on networks in three significant ways. First, we introduce the concept of network appropriateness. Combining multiple theories such as social network theory, the institution-based view, and learning theory, we posit that while each individual factor may have a unique and direct effect on firms' innovation performance, there is also a condition of network appropriateness. When the three factors coexist and interact with one another to a certain extent, network appropriateness or configuration will be attained (Porter & Siggelkow, 2008; Reinholt, Pedersen, & Foss, 2011). Network appropriateness provides the best internal and external contexts for firms to utilize the resources, knowledge, and information that

they acquired from their partners and to commit to innovation activities (Lavie, 2006). As a result, a firm's innovation performance is maximized. Second, we emphasize the pivotal contextual factors affecting firms' network position by examining how the relationship between structural hole positions and firms' innovation performance complements firms' learning experience. Third, we examine the relationship between network centrality and firms' innovation performance and the contingent effect of learning experience on this relationship. Overall, we provide a better picture on how firms configure and leverage the network advantage.

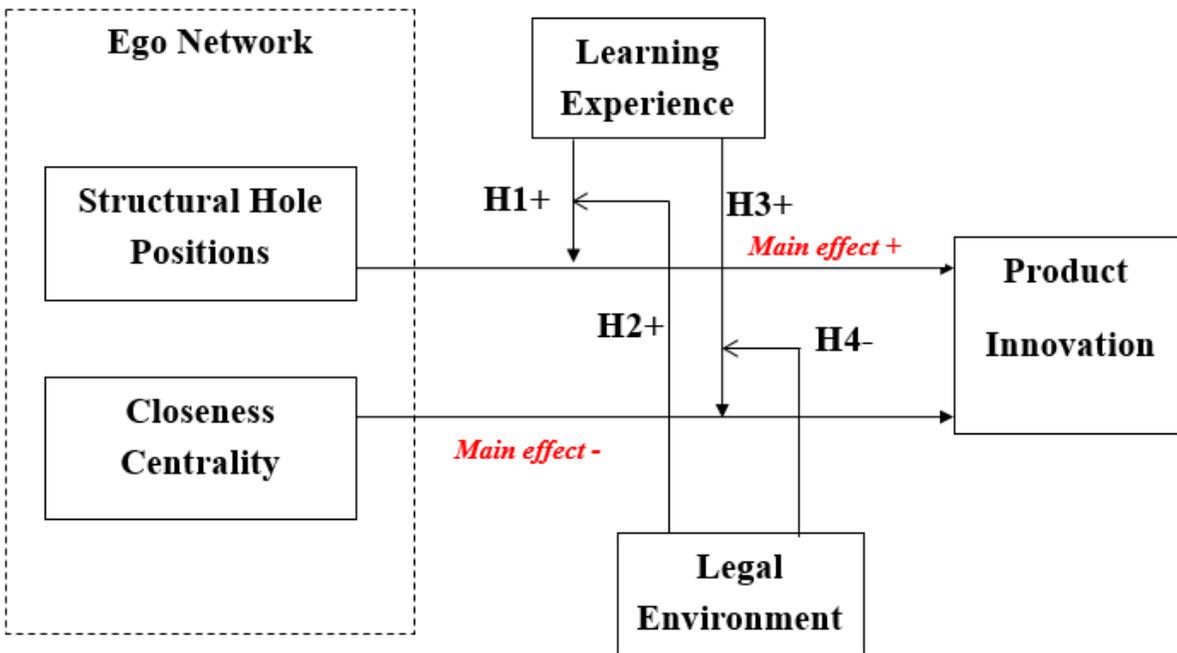


Figure 3.1. Theoretical framework

The paper is organized as follows. First, we review the literature on network theory, the institution-based view, and organizational learning theory. Second, on the basis of these three theories, we developed four hypotheses. Third, the research method and results are presented. The paper concludes with a summary and a discussion of implications.

Literature Review

Network

Most studies support the argument that structural hole positions have a positive effect on firms' innovation performance (Ahuja, 2000; Rodan & Galunic, 2004; Sun & Lee, 2013). Firms in a broker position have more chances to manipulate the flow of resources and private information, such as new product development and technical knowledge, from their partners. These resources and information can enhance firms' ability to develop new products that better suit the market (Tiwana, 2008). Meanwhile, firms in a broker position have less fear of sanction or retaliation, which increases the chance that broker firms will take advantage of their bridging positions to appropriate their partners' knowledge and technology (Benson 1975).

The studies also show that network centrality can affect innovation performance both positively (Ibarra, 1993; Tsai, 2001) and negatively (Burt, 1997; Glasmeier, 1991). Network centrality reflects how well the focal firm connects with its partners to acquire information and resources (Ibarra, 1993). In an emerging market such as China, closely tied firms in a well-connected network tend to avoid challenging one another in order to maintain their close relationships, which further prevent them from stepping out of their comfort zones to pursuit innovative opportunities (Burt, 1997). Meanwhile, closely tied firms may receive redundant information or knowledge that flows through the network. For most firms in an emerging market, limited absorptive capacity may constrain them from utilizing such information and knowledge effectively and transforming them into innovation performance (Sun & Lee, 2013). In the context of our research, network centrality constrains firms' innovation performance.

Network Appropriateness

Attempting to connect such inconsistencies, we adopt the appropriateness concept (March & Olsen, 2004), which incorporates the internal and external factors of firms into current network theory. Previous research suggests that we need to take configurational approaches to understand the complex relationships between environmental or organizational factors and performance (Doty, Glick, & Huber, 1993; Miller, 1988). Configurational research shows that firms with higher configurational consistency with normative theory on multiple dimensions perform better than firms utilizing only two dimensions (Dess, Lumpkin, & Covin, 1997). For example, in a few studies that adopt a configurational approach to understand the confluence effect of multiple contingent factors, Stam and Elfring (2008) find that new venture performance is positively related with the optimal configuration of entrepreneurial orientation, network centrality, and bridging ties; Reinholt, Pedersen, and Foss (2011) find that knowledge sharing in networks depends on an optimal configuration of network centrality, motivation, and ability. Similarly, Porter and Siggelkow (2008) mentioned in their research that the benefit of any individual activity is dependent on a firm's configuration of other activities—that is, contextuality. In this study we combine network theory, the institution-based view, and learning theory to interpret the interactive factors that may boost firms' innovation performance. A better configuration of network location, learning experience, and legal environment will create a status of network appropriateness that is most beneficial to firms' innovation performance, while a poor configuration will generate a status of network inappropriateness that harms firms' innovation performance. In this research, we empirically operationalize configuration as the simultaneous interaction of three variables (Baker & Cullen, 1993; Dess et al. 1997; Miller, 1988; Wiklund & Shepherd, 2005). That is to say, the configuration is represented as the interaction of network

attributes, learning experience, and legal environment. To make our argument hierarchically, we first focus on two way interactions and hypothesize how learning experience and legal environment, respectively, moderate the network-innovation relationship. We then proceed to the argument of the three-way interactions of the three variables.

Learning Experience

Learning theory posits that organizations could develop organizational capabilities from their experience and define their capabilities by engaging in repeat experiences (Gulati, 1999). According to Levitt and March (1988), organizations learn by “encoding inferences from history into routines that guide behavior.” Huber (1991) further argues that organizations will learn whenever they realize that the knowledge is potentially useful to them.

Learning is believed to be a critical factor of innovation performance, because learning experience helps firms to adapt their new products to unpredictable environmental factors, such as uncertain customer demand, turbulence in technological developments, or competition (Wheelwright & Clark, 1992). The learning process includes the acquisition, dissemination, and use of knowledge, all of which are closely related to innovation performance (Lemon & Sahota, 2004). According to Cohen and Levinthal (1990), firms are regarded as a means of acquiring, assimilating, and exploiting knowledge in order to build competitive advantage: “a learning perspective on networks provides a supplement to attempts to explain differences among organizations or histories of integration exclusively in terms of processes by which history efficiently matches organizational forms to environmental or task requirement” (March, 1999: 275). Previous research shows that organizational learning is a pivotal organizational factor in firms’ configurational dimensions. For example, Jimenez-Jimenez and Sanz-Valle (2010) find that a good configuration of organizational learning, innovation, and environmental turbulence

leads to superior performance; Lichtenthaler (2009) reveals the complementary effect of learning processes, environmental turbulence, and absorptive capacity on performance; and Baker and Sinkula (1999) find that the best performance in terms of market share, new product success, and overall performance depends on different configurations of learning orientation and market orientation. Therefore, learning experience is a critical internal factor in reaching appropriateness.

Legal Environment

Institutional theory provides us with a useful tool for studying the research question against a certain backdrop. “Institution” is defined as “the rule of the game” by North (1990: 3) and “regulative, normative, and cognitive structures and activities that provide stability and meaning to social behavior” by Scott (1995: 33). Institutional theory is treated as “the third leg in the strategy tripod” (Peng, Sun, Pinkham, & Chen, 2009: 63). According to Hoskisson, Eden, Lau, and Wright (2000), institutional theory, transaction cost theory, resource-based theory are the top three theories that have been used to study emerging economies. The literature shows that the institutional environment plays a significant configurational role in determining firms’ performance. For example, Sun, Peng, Lee, and Tan (2015) find that the confluence of legal-environment openness, financial openness, and a CEO’s tenure determines the degree of local firms’ outward internationalization; Batjargal et al. (2013) find that new-venture growth is contingent on the confluence of weak, inefficient institutions and structural holes. Overall, the institution or legal environment is a pivotal external factor in reaching appropriateness.

Hypothesis Development

Structural holes are defined as the gaps in information flows between partners linked to the same ego but not to each other (Ahuja, 2000). A structural hole indicates that partners on

different sides of the hole have access to different information (Hargadon & Sutton, 1997).

According to structural hole theory, however, ties that lead to the same actors in a network could be redundant (Burt, 2009). A network rich in structural holes implies that there are fewer redundant ties, which means that individual players could get access to distinctive information flows. Thus, maximizing structural holes is a fundamental aspect of building an efficient and information-rich network, which plays an important role in firms' innovation performance.

The Moderating Effect of Learning Experience on Structural Hole Positions and Innovation Performance

Learning theory suggests that firms may build organizational capabilities from experience and then engage in repeat experiences that further refine their capabilities. Levinthal and March (1993) propose that firms conduct more "exploitation" of their existing capabilities, rather than "exploration" of new prospects, because they intend to use and develop their existing skills. The building blocks of firms' learning process include appropriate routines developed from a trial-and-error process (Argyris & Schön, 1995). When firms develop routines, they will repeat the same or similar sets of activities every day and improve on those routines (Amburgey, Kelly, & Barnett, 1990; Nelson & Winter, 1982). Within alliances, firms with more learning experience can improve their absorptive capacity from alliances (Cohen & Levinthal, 1990).

Learning plays a determinant role in new-product development projects because it allows new products to be adapted to changing environmental factors, such as uncertainty of customer demand, technological developments, and competitive turbulence. The organizational learning process consists of acquisition, dissemination, and use of knowledge and is thereby closely related to product innovation performance (Argote, McEvily, & Reagans, 2003; Lemon & Sahota, 2004).

Firms in broker positions have more chances to manipulate the flow of resources and private information from their partners. Those with more learning experience could achieve greater advantage from such a position. A reduced fear of sanction or retaliation increases the possibility that the broker firm will take advantage of its bridging position to appropriate its partners' knowledge and technology (Benson, 1975). A firm with more learning experience could appropriate more of its partners' knowledge and technology owing to its higher absorptive capacity, leading to better innovation performance. Such a reinforcement mechanism of the learning experience is also mentioned by March (1999: 284):

The primary engine of this learning-based development of structure is what might be called the basic mutual learning multiplier. There is a strong positive feedback loop by which jointly favorable experience[s] lead to further jointly favorable experiences, and jointly unfavorable experiences lead to further jointly unfavorable experiences. Each successful experience with a link increases the likelihood of [a] subsequent successful experience, and each unsuccessful experience increases the likelihood of a subsequent unsuccessful experience.

In an interconnected network setting, the mutual learning multiplier could magnify any positive or negative effect the network characteristics have on performance. That is to say, while the structural hole positions can improve firms' innovation performance, a higher level of learning experience can act as a mutual learning multiplier to magnify this positive relationship. As a result, firms' innovation performance will be further boosted by their learning experience.

In addition, a firm with a higher level of learning experience will be able to access more non-shared resources and novel knowledge from the spillover of alliance when such a firm is in a broker position (Lavie, 2006; Sun & Lee, 2013). Generally speaking, firms can acquire two types of knowledge from their network: explicit knowledge and tacit knowledge. Explicit knowledge can be easily aggregated, stored, and appropriated, while tacit knowledge can only be acquired by practical experience such as "learning by doing" (Polanyi, 1966). Thus, firms with a higher

level of learning experience will acquire more tacit knowledge from their partners and transfer it to their competitive advantage in areas such as innovation.

Therefore, putting the interaction and reverse interaction effects together, we believe that the effect of structural hole positions and the effect of learning experience on firms' innovation performance are complementary. They interact and reinforce each other so that firms which possess both factors are able to have much better innovation performance than firms that possess only one of these factors. Thus, we argue that:

Hypothesis 3.1. The positive relationship between the focal firm's structural hole positions in the alliance network and innovation performance is strengthened when the firm has more learning experience.

Three-Way Interaction of Structural Hole Positions, Learning Experience, and Legal Environment

Hypothesis 3.1 above proposes a moderate role of learning experience on structural hole position and innovation performance relationship. However, configurational approach suggests that firms aligning on multiple factors perform better than those aligning on only two factors. To verify the propositions of the configurational approach, we proceed to test the interactions of structural hole positions, learning experience, and legal environment.

Network theory argues that firms can enjoy the resource-sharing benefits of collaboration when firms combine their skills, share their knowledge, and conduct joint projects to obtain scale economies. However, all of those resource-sharing benefits are based on an assumption of trust between partners in the network (Ahuja, 2000). When trust is absent, combining skills, sharing knowledge, and making joint investments are likely to be impossible and detrimental under any circumstances (Coleman, 1988). Meanwhile, interorganizational coordination is also threatened

by the opportunistic behavior of unethical players in the network (Gulati & Singh, 1998). Such opportunistic behaviors include stealing technology from partners, not fulfilling ex ante duty, and providing poor-quality investments on joint projects, among others. The research context in our study is China, the biggest emerging market in the world. Emerging markets are always criticized for their inadequate legal environment and ineffective laws. A strong legal environment can boost firms' confidence in investing and conducting innovation activities. An inadequate legal environment causes firms' decision makers to be less committed to innovation activities for fear of a possible loss of investment, which usually involves large sunk costs, high risk, and a long and uncertain payback period (Ghosh, Moon, & Tandon, 2007; Sun, Peng, Lee, & Tan, 2015). When the legal environment is robust, it provides better protection of firms' intellectual property and a legal approach to defend it if their rights are infringed. A sound legal environment also promotes trust among firms in the network. In addition, opportunistic behaviors will be effectively curbed in a sound legal environment owing to the high cost of being caught and the high likelihood of being sued. While the structural hole positions increase firms' innovation performance, a better legal environment could further boost such a relationship.

While the broker position and learning experience complement each other to boost product innovation, a good legal environment builds an environment of trust among partners with respect to sharing information and knowledge. Trust is proved to be helpful in lowering the transaction costs among firms in uncertain environments by reducing opportunism (Noordewier, John, & Nevin, 1990). This facilitates long-term relationships among firms (Ganesan, 1994), which are an important component of the success of strategic alliances (Gulati, 1995). The legal environment, which plays a moderating effect on the relationship between structural hole positions and innovation performance, also plays a complementary role in the interaction of

structural hole positions and learning experiences, which further reinforces the interaction effect on innovation performance. In other words, better structural hole positions, a higher level of learning experience, and a better legal environment present the best combination of internal and external factors in predicting high levels of innovation performance. When the three factors coexist and work together, a status of network appropriateness is attained.

A good legal environment also helps focus a firm's access to more of the alliance partner's novel information and tacit knowledge and accelerates knowledge transfers among partners (Sun & Yang, 2013). In this kind of environment, firms with rich learning experience that occupy broker positions can benefit more from such information exchange and knowledge transfers in boosting their innovation performance.

Under such a condition of appropriateness, a better legal environment can foster the most conducive environment for firms located in the structural hole positions to better utilize their learning experience so as to have better innovation performance. Meanwhile, firms with a higher level of learning experience can amplify the advantage of the structural hole positions and better legal environment, which benefits their innovation performance. The structural hole positions will further strengthen the positive effect of the internal factor, learning experience, and the external factor, legal environment, on firms' innovation performance. As a result, improvements with respect to innovation will be higher than under any other conditions in which only any two factors are involved. Thus, we put forward the following three-way interactions:

Hypothesis 3.2. There is a three-way interaction between the focal firm's structural hole in the alliance network, learning experience, and legal environment such that the firm's innovation performance is highest when all three dimensions are high. Such an

interaction effect on innovation performance is stronger than the sum of effects of all the three factors.

The Moderating Effect of Learning Experience on Closeness Centrality and Innovation Performance

Network centrality measures how well a firm connects with its partners to obtain information and resources (Ibarra, 1993). A high closeness centrality implies that a firm could reach the rest of the firms in the network in the smallest number of steps (Lin, Peng, Yang, & Sun, 2009). One of two mechanisms may exist in a highly centralized network. On the one hand, when the focal firm is closely linked with its partners in a network, information will travel quickly between it and other firms (Ibarra, 1993). Meanwhile, given the closeness between the focal firm and other firms, information flows in such a network will be more trustworthy and accurate (Gupta & Govindarajan, 2000). Thus, closeness centrality could help firms acquire complementary knowledge and new knowledge in a timely manner. On the other hand, a highly centralized network could also exert a negative effect on firms with high closeness centrality. Such firms have to compete with other firms in the network for the valuable but limited resources useful for innovation activities. Although firms in a centralized position are able to access a wide variety of information and resources, they lack the ability to control and manipulate the flow and allocation of such information and resources. Such competition could become fierce when information about the value, scarcity, and availability of resources travels quickly in the network. China has long been known for its lack of resources and concentration of competition, which could increase this negative effect. Thus, while conflicting mechanisms exist with regard to the relationship between network centrality and innovation performance, we

believe that in an emerging market such as China, closeness centrality has a negative effect on innovation.

As we mentioned in the argument of Hypothesis 3.1, firms' learning experience has a positive effect on their innovation performance. When a firm works as a member in a network, it starts to accumulate experiences of cooperation with other firms. The longer a firm has worked in an alliance, the better experience it has with identifying what kinds of resources are more valuable than others, what kinds are easier to acquire in the network than to develop on their own, and what kinds have far-reaching strategic implications. This experience will help firms build resources that are complementary to their partners in the network, or to link only with partners whose resources are complementary with their own. Links and the structure of a network are the consequences of learning from past experience within the network. All the collaborative efforts provide the focal firm with the opportunity to refine organizational routines, in order to better cooperate with its partner in various ways (Powell, Koput, & Smith-Doerr, 1996).

Firms with abundant learning experience could magnify the negative effect brought by the closeness centrality. Because closeness centrality has a negative effect on innovation performance in the context, next we shall explain how learning experiences may influence this negative relationship. The mechanism of the mutual learning multiplier mentioned above could be applied in this circumstance as well, since the mutual learning multiplier could magnify any positive or negative effect the network characteristics have on performance. To be specific, when closeness centrality is harmful to firms' innovation performance, a higher level of learning experience can act as a mutual learning multiplier to reinforce the network structure by magnifying the negative relationship. Firms with a higher level of learning experience will

further improve their ability to access a wide variety of information and resources, but their inability to control and manipulate the flow and allocation of valuable information and resources will be magnified as well. Furthermore, a high degree of closeness centrality implies that a firm has more connections, over shorter distances, with other firms in the network. We also mentioned that a firm with a higher level of learning experience can access more nonshared resources and novel knowledge from the spillover of alliance. When firms located at central positions of networks have access to more novel information and knowledge, a higher level of learning experience could enable them to acquire more information and knowledge. However, organizational learning is a difficult and expensive process (Fichman & Kemerer, 1997). To acquire new knowledge from multiple partners in a network will dramatically increase the cost of learning. Although maintaining the central position in a network is costly, learning from different partners will further place an extra financial burden on the focal firm, which could cancel out and even surpass the benefit brought by the learning experience. As a result, firms' innovation performance will be further hampered by such a network structure. Accordingly, we argue that:

Hypothesis 3.3. The negative relationship between the focal firm's centrality in the alliance network and firms' innovation performance is **strengthened** when firms have a higher level of learning experience in alliance.

Three-Way Interaction of Closeness Centrality, Learning Experience, and Legal Environment

We argued in Hypothesis 3.2 that better structural hole positions, a higher level of learning experience, and a better legal environment present the best combination of internal and external factors for predicting high levels of innovation performance. Similar to the argument we made in Hypothesis 3.2, we will further test the propositions of the configurational approach by examining the interaction of closeness centrality, learning experience, legal environment. We argue that higher

closeness centrality, higher levels of learning experience, and a poorer legal environment present the worst combination of internal and external factors, predicting the lowest levels of innovation performance.

In a strong legal environment, firms have more confidence in investing in learning and conducting innovation activities. Meanwhile, a sound legal environment also promotes trust among firms in the network. When the legal environment is robust, it provides better protection of a firm's intellectual property and a legal approach for defending their rights when they are infringed; thus, firms find it is rewarding to integrate the knowledge and information they acquired from the network and transform them into intellectual property. In addition, opportunistic behaviors will also be effectively curbed in a sound legal environment owing to the high cost of being caught and the high likelihood of being sued. In sum, when the legal environment is strong, benefits that firms can receive from a central position and a higher level of learning experience increase; therefore, if the cost does not change, the negative moderating effect of learning experience on the relationship between the focal firm's centrality in the network and innovation performance is weakened.

On the contrary, in a weak legal environment, firms' decision makers are less committed to innovation activities for fear of a possible loss of investment, which usually involves large sunk cost, high risk, and a long and uncertain payback period (Ghosh, Moon, & Tandon, 2007; Sun, Peng, Lee, & Tan, 2015). Meanwhile, firms at the central position will have less trust in their partners owing to a lack of protection for their intellectual property and an inadequate legal approach for defending it if it is infringed. Opportunistic behaviors will increase in such an inadequate legal environment owing to the low cost of being caught. In sum, when the legal environment is weak, benefits that firms can receive from a central position and a higher

level of learning experience decrease, while the cost increases. Therefore, the negative moderating effect of learning experience on the relationship between the focal firm's centrality in the alliance network and firms' innovation performance is strengthened. To conclude the arguments above, we argue that:

Hypothesis 3.4. There is a three-way interaction among the focal firm's closeness centrality, the legal environment, and learning experience such that the firm's innovation performance is lowest when the closeness centrality and level of learning experience are high and the legal environment is weak. Such an interaction effect on innovation performance is stronger than the sum of effects of all the three factors.

Method

Sample and Data

Our research setting is in China, one of the biggest emerging markets in the world. This context, which includes a highly diversified institutional environment as well as firms with different levels of learning experience, provides us with an ideal setting in which to examine the contingency effect of these factors on the focal relationships. We selected firms from the information and electronics industries as our research subjects for three reasons. First, significant foreign direct investment (FDI) has been attracted in these two industries due to open FDI policies tilting toward them (Sun, Chen, & Pleggenkuhle-Miles, 2010; Sun & Lee, 2013). Second, there are plenty of IJVs in these two industries. Third and foremost, many firms from these two industries may build alliances as a response to the emerging trend of hardware and software integration in global competition.

Our research focuses on the alliance at the network level, where the focal firm's network position is important. Previous research centered primarily on the alliance at the dyad

level, where the focal firm's allies are important. The alliances in China's alliance network are mainly equity based, so they are seriously commitment to sharing their resources with one another. Following the example of other researchers on network and alliances (Shi, Sun, & Peng, 2012; Shi, Sun, Pinkham, & Peng, 2014; Sun & Lee, 2013), we used WIND Data Services to carry out the data collection.

In order to construct the domestic alliance network, following Rowley, Behrens, and Krackhardt (2000), we incorporated all listed firms in these two industries. WIND identified a total of 81 firms listed on either the Shenzhen or the Shanghai Stock Exchange.

Measures

Various approaches have been used to measure innovation performance. In this study, we operationalized innovation performance as the number of a firm's applications for patents for invention, patents for utility model, and patents for design. All of the information about patents is acquired from the database of the State Intellectual Property Office of the PRC (People's Republic of China). We took the mean of innovation performance of each firm in year $t + 1$ and year $t + 2$ as the dependent variable to captures the lagged effect of the independent variables on innovation performance.

Structural hole positions and network centrality are operationalized in the following ways. First, we construct a symmetric matrix of all the firms in each year (Wasserman & Faust, 1994). UCINET 5 software is used to calculate structural hole positions (Borgatti, Everett, & Freeman, 2002).

The equation below presents the constraint formula developed by Burt (1992):

$$P_{ij} + \sum_q P_{iq} P_{jq}, q \neq i, j.$$

where P_{ij} stands for the strength of direct ties between firm i and firm j . It is measured by the total number of direct ties that exist between firm i and firm j . $\sum P_{iq}P_{jq}$ refers to the sum of the strength of indirect ties from firm i to firm j via firm q . Then we calculated holes access by one subtract the constraint score. Thus, a higher score of holes access stands for an individual firm is rich of structural holes (Sun & Lee, 2013).

As mentioned above, there are three aspects of network centrality: degree, closeness, and betweenness. In this study, we focus on the closeness of network centrality, which is the normalized closeness centrality of the firm using reciprocal distance. Closeness centrality is calculated based on that year's industry alliance matrix using UCINET 5. Freeman's (1979) formula below was used to calculate closeness centrality.

$$C'_D(p_k) = \frac{\sum_{i=1}^n a(p_i, p_k)}{n - 1}.$$

A given firm p_k can be adjacent to at most $n - 1$ other firms in a network, so the maximum of $C'_D(p_k)$ is $n - 1$. Thus, the equation above shows the proportion of other firms that are adjacent to p_k .

Based on Luo and Peng (1999), we examine the alliance history of the focal firm and calculate the accumulated years since the focal firm built its first alliance as learning experience. We adopt the legal-environment index developed by Fan, Wang, and Zhu (2007) at the National Economic Research Institute (NERI). This index reflects regional disparities among different provinces in China. It captures four aspects of the local legal environment: (1) the level of development of market intermediaries, (2) the protection of firms' legal rights, (3) the protection of intellectual property rights, and (4) the protection of consumer rights. This measurement has been adopted by previous studies (Sun et al., 2015; Yang, Sun, and Yang, 2015).

We also include several control variables in our regression. Size is operationalized as the natural log of total assets of the focal firm. Age is the number of years the focal firm has been established. ROA is the return on assets. Fortune 500 is a dummy variable. It equals 1 when the focal firm is a Fortune 500 company and 0 when it is not. Industry is a dummy variable in our research. When industry equals 0, it refers to electronics. When it equals 1, it refers to information technology. Domestic partners are operationalized as the sum of domestic partners. Foreign partners are measured as the sum of foreign partners from developed economies, such as the United States, Japan, Netherlands, Italy, Germany, Denmark, Great Britain, and Sweden, among others, of the focal firm in the year. Domestic partners size is measured as the log of total invested assets from all domestic partners in alliances. Similar to domestic partner size, foreign partner size is measured as the log of total invested assets from all foreign partners in alliances. Total exploring alliances is the percentage of exploring alliances in total alliance (Lin, Peng, Yang, & Sun, 2009).

Results

The correlation matrix is exhibited in table 3.1. The matrix shows that most of the correlations between our variables is low, so multicollinearity is not a problem in our study. Table 3.2 shows the results of regression of our models. We utilized moderated hierarchical regression analysis as the primary statistical procedure for testing the relationships between network characteristics and innovation performance, as well as the moderating effects of learning experience and legal environment.

In Model 1, we put only the control variables in. The result shows that firms' innovation performance is positively correlated with the size of the firm and negatively correlated with a

firm's age, if the firm is a Fortune 500, and the number of its foreign partners from developed countries. Such results are consistent with those of previous studies.

In Model 2, we run the regression on innovation performance with one of the focal independent variables, structural hole positions, and one of the moderators, learning experience. The result shows that both structural hole positions and learning experience have a significant positive effect on firms' innovation performance. In Model 3, we add the interaction term of structural hole positions and learning experience. The interaction effect is significant, so our Hypothesis 3.1 is supported. Figure 3.2 presents the moderating effect of learning experience, indicating that when firms have a higher level of learning experience, higher structural hole positions will lead to better innovation performance. However, when firms have a lower level of learning experience, lower structural hole positions will lead to lower innovation performance.

Table 3.6. Descriptive statistics and correlations of variables

Variables	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1. Innovation	1														
2. SHP	.10	1													
3. Centrality	.01	<i>-.17</i>	1												
4. LE	.13	.07	-.02	1											
5. LV	<i>.14</i>	.08	-.14	<i>.33</i>	1										
6. Industry	-.01	<i>.18</i>	-.00	.02	<i>.14</i>	1									
7. Size	<i>.33</i>	-.04	.12	<i>.14</i>	<i>.20</i>	-.12	1								
8. Firm Age	-.08	<i>.20</i>	<i>-.16</i>	<i>.39</i>	<i>.17</i>	<i>.16</i>	-.03	1							
9. ROA	.04	.04	.04	<i>-.17</i>	-.01	-.04	<i>.20</i>	-.22	1						
10. Fortune 500	-.03	-.02	.12	-.06	<i>-.13</i>	-.12	-.11	<i>-.15</i>	.10	1					
11. DP	<i>.14</i>	-.04	<i>.42</i>	.05	-.08	<i>-.42</i>	<i>.16</i>	-.23	.06	<i>.16</i>	1				
12. FP	-.03	<i>.31</i>	<i>-.18</i>	-.02	.07	<i>.18</i>	.04	.00	.14	.09	.00	1			
13. DP Size	-.05	-.04	.14	<i>.13</i>	-.13	<i>-.14</i>	<i>.19</i>	.06	-.12	-.07	<i>.18</i>	-.05	1		
14. FP Size	<i>.31</i>	.03	<i>.19</i>	.15	.09	<i>-.19</i>	<i>.42</i>	.05	-.05	.06	.10	.03	.03	1	
15. TEA	.00	-.12	<i>-.17</i>	-.08	-.11	<i>.17</i>	-.13	<i>-.22</i>	-.06	<i>.14</i>	-.11	-.06	-.07	-.06	1
Mean	8.31	.28	.95	3.20	6.70	.67	21.29	9.08	.26	.05	.90	.20	1.37	.51	.59
Std. Dev.	71.93	.45	.69	2.23	2.76	.47	1.06	4.69	11.65	.22	1.81	.59	.78	.97	.44

Correlations above |.12| and significant at the .05 level are in italicized and in boldface type.

SHP = structural hole positions; LE = learning experience; LV = legal environment; ROA = return on assets; DP = domestic partners; FP = foreign partners; TEA = total exploring alliances.

Table 3.7. Results of regression for innovation performance

Variables	Model 1	Model 2	Model3	Model 4	Model 5	Model 6	Model 7
Independent Variables							
Structural Hole Positions		.62* (.29)	-.54 (.52)	2.66+ (1.60)			.95** (.32)
Closeness Centrality					-21.35+ (11.41)	-50.58*** (11.76)	-39.08*** (10.16)
Moderating Effects							
Structural Hole Positions × Learning Experience			.40* (.16)	-1.02* (.40)			
Structural Hole Positions × Legal Environment				-.50* (.24)			
Closeness Centrality × Learning Experience						-.69*** (.12)	-.84*** (.17)
Closeness Centrality × Legal Environment							-.26** (.08)
Structural Hole Positions × Leaning Experience × Legal Environment				.19*** (.06)			
Closeness Centrality × Leaning Experience × Legal Environment							.04* (.02)
Moderator							
Learning Experience		.32** (.11)	.16 (.12)	.25* (.11)	.30** (.11)	.31** (.11)	.72*** (.13)
Legal Environment		-.01 (.08)	-.04 (.08)	-.12 (.08)	-.02 (.08)	.26* (.11)	.08 (.10)

Variables	Model 1	Model 2	Model3	Model 4	Model 5	Model 6	Model 7
Control Variables							
Industry	-.70+ (.43)	-1.14** (.42)	-1.05** (.40)	-.94** (.36)	-32.65+ (16.97)	-24.33 (18.63)	-62.78*** (15.06)
Size	.77*** (.19)	.68*** (.19)	.82*** (.19)	.82*** (.17)	.72*** (.20)	.84*** (.18)	1.04*** (.18)
Firm Age	-.18*** (.04)	-.23*** (.04)	-.22*** (.04)	-.25*** (.04)	-.20*** (.05)	-.19*** (.04)	-.18*** (.04)
ROA	.06+ (.03)	.01 (.02)	.01 (.02)	.02 (.02)	.02 (.02)	.03 (.02)	.03 (.02)
Fortune 500	-1.27 (.41)	-1.28** (.40)	-.90+ (.49)	-1.37*** (.38)	-.99* (.46)	-1.22** (.44)	-1.86*** (.48)
Domestic Partners	-.14 (.10)	-.20* (.09)	-.16 (.10)	-.14 (.09)	-.21* (.09)	-.17+ (.10)	.17 (.13)
Foreign Partners	-.01 (.22)	.09 (.23)	.15 (.21)	.26 (.20)	.27 (.25)	.29 (.27)	.06 (.21)
Domestic Partners Size	.08 (.25)	-.05 (.25)	.01 (.24)	.02 (.22)	.11 (.25)	.26 (.23)	.12 (.20)
Foreign Partners Size	.03 (.23)	-.04 (.22)	-.28 (.22)	-.55** (.19)	.05 (.23)	-.19 (.22)	-.43* (.17)
Total Exploring Alliances	.32 (.61)	-.36 (.66)	-.48 (.67)	-.25 (.61)	-.17 (.62)	0.16 (.54)	.05 (.52)
Constant	-15.15*** (3.87)	-11.60** (3.71)	-14.14** (3.70)	-13.67** (3.36)	29.44 (21.79)	81.19*** (22.37)	60.64** (19.28)
N	256	256	256	256	256	256	256
R ²	.085	.085	.090	.099	.085	.093	.117

Standard errors in parentheses.

+ $p < 0.1$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

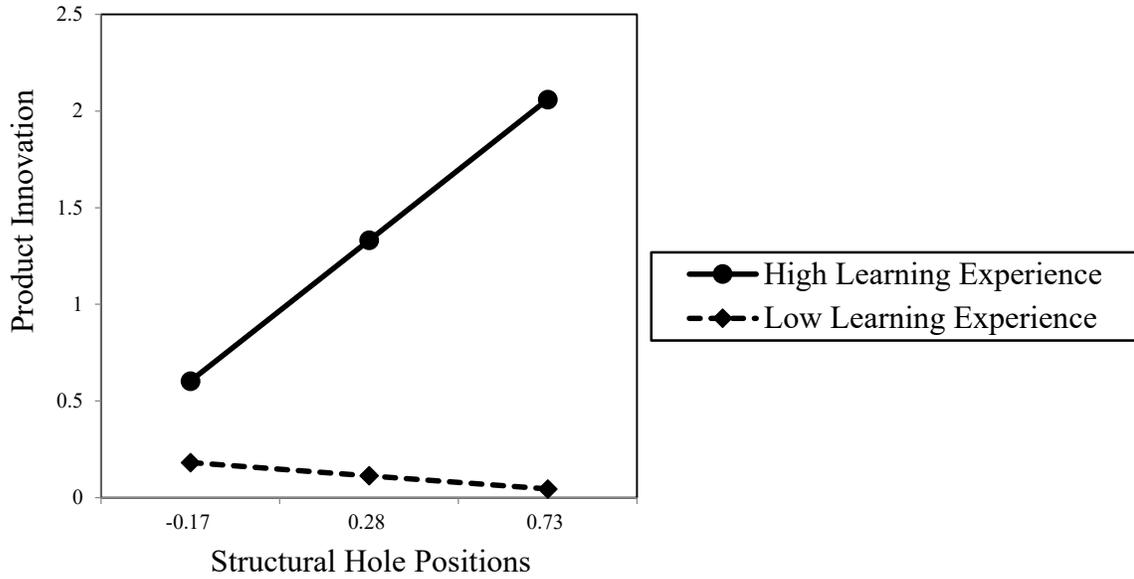


Figure 3.2. Moderating effect of learning experience on structural hole positions and innovation performance

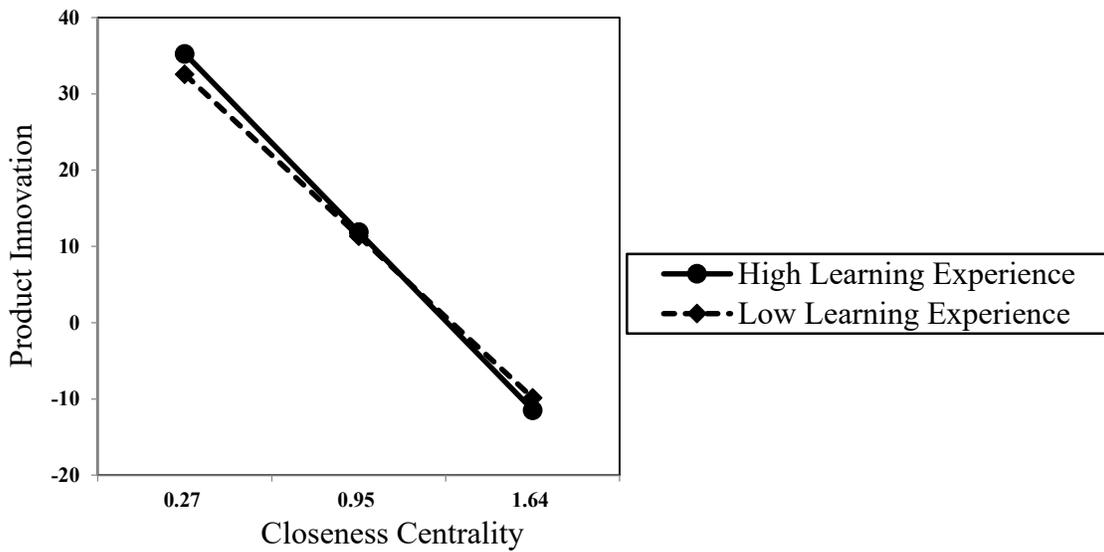


Figure 3.3. Moderating effect of learning experience on closeness centrality and innovation performance

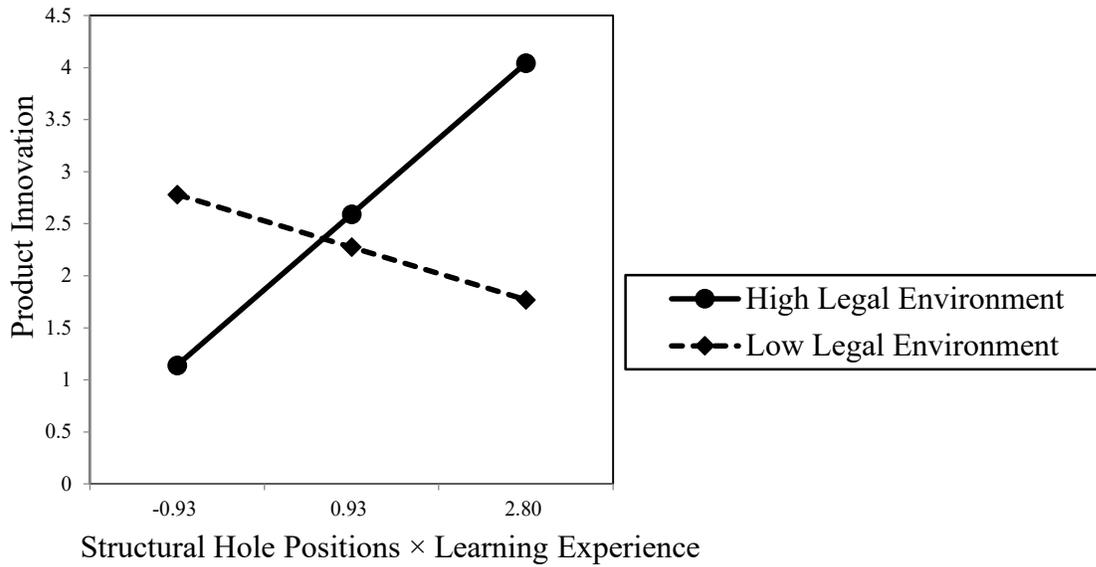


Figure 3.4. Three-way interaction of structural hole positions, learning experience, and legal environment

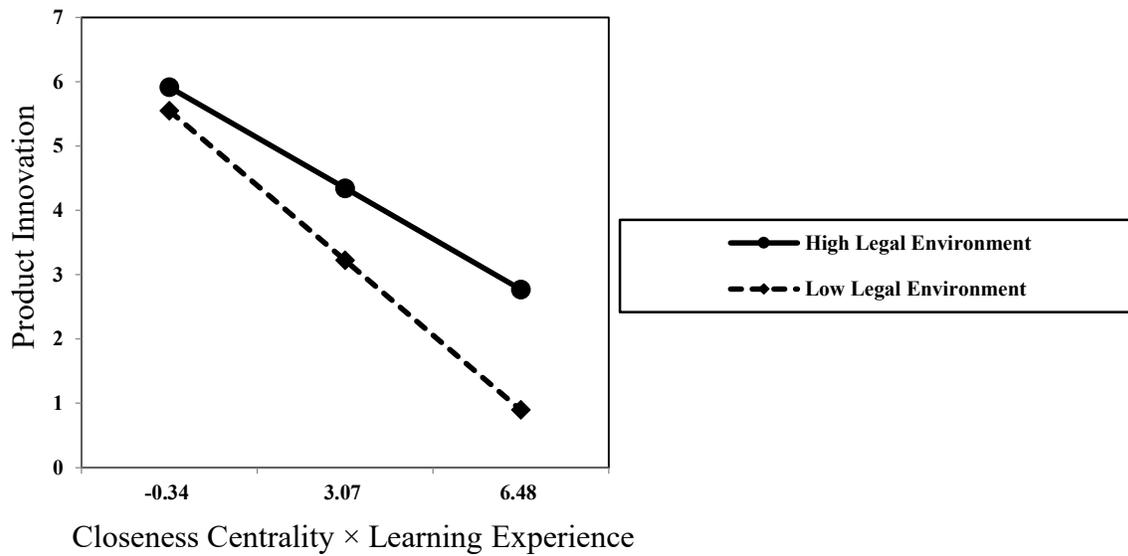


Figure 3.5. Three-way interaction of closeness centrality, learning experience, and legal environment

Model 4 includes the three-way interaction of structural hole positions, learning experience, and legal environment, which has a significant positive effect, supporting Hypothesis

3.2. Figure 3.4 shows that when the legal environment is strong, a higher interaction of structural hole positions and level of learning experience will result in higher innovation performance. Nevertheless, when the legal environment is weak, a higher interaction of structural hole positions and level of learning experience will result in lower innovation performance.

In Model 5 we add the main effect of closeness centrality and learning experience. The result shows that the negative effect of closeness centrality on innovation performance is significant ($\beta = -21.35, p < .05$). Model 6 adds the interaction term of closeness centrality and level of learning experience, which shows a significant negative effect on innovation. Thus, Hypothesis 3.3 is supported. Figure 3.3 demonstrates that closeness centrality is negatively related to innovation performance, and that the degree of this negative relationship will be even higher for firms with high levels of learning experience than for those with lower levels of learning experience.

In Model 7 we add the three-way interaction of closeness centrality, learning experience, and legal environment, which exhibits a significant negative effect, lending support for Hypothesis 3.4. Figure 3.5 shows that the higher the interaction of closeness centrality and learning experience, the lower the innovation performance will be. Meanwhile, this kind of negative relationship will become even worse in a weaker legal environment than in a stronger one.

Discussion

Contributions

The most significant contribution of our research is the identification of network appropriateness or configuration. Scholars such as Doty et al. (1993) and Miller (1988) call for academia to take configurational approaches toward understanding the complex relationships

between environmental or organizational factors and performance. Nevertheless, limited empirical studies have been done to show that firms with higher configurational consistency with normative theory on multiple dimensions have better performance than firms with only two dimensions. Our research, to our knowledge, is the first attempt to adopt a configurational approach to examine the contingent effects of an environmental factor (legal environment) and organizational factors (network characteristics and learning experience) on innovation performance.

In order to describe the best configuration of internal and external factors for fostering innovation performance in a network, we propose the concept of network appropriateness, which is defined as the complementary fit between structural hole positions, learning experience, and legal environment. Under this condition of network appropriateness, all three factors will complement one another to create the most conducive environment for firms' innovation performance. Improvement of any one factor will improve firms' innovation performance. On the contrary, a status of network inappropriateness is reached when firms with a high degree of closeness centrality possessing high levels of learning experience are in a weak legal environment. Under such a condition of network inappropriateness, the higher the degree of closeness centrality, the higher learning experience the firm has, and the weaker the legal environment is, the lower its level of innovation will be.

Implications

Our research has many theoretical and practical implications. First, it echoes the work of Porter and Siggelkow (2008) on contextuality. In their article, Porter and Siggelkow mentioned that "contextuality of both activity configurations and interactions poses significant challenges for empirical work because identifying contextuality often requires an in-depth knowledge of the

activity systems of each firm, or data point. Such in-depth knowledge is difficult to obtain for large samples. However, our framework suggests practical directions for large-sample research” (Porter & Siggelkow, 2009: 50). In response, we examined how the configuration and interactions of two different categories of contextual factors, namely learning experience and legal environment, with the characteristics of networks, such as structural hole positions and closeness centrality, may lead to differences in innovation performance.

Our research also shows that while structural hole positions and closeness centrality have opposite effects on firms’ innovation performance, learning experience plays a role as a mutual learning multiplier that could magnify such effects, whether they are positive or negative. Our research also shows that in order for firms in structural hole positions to obtain high innovation performance, they should possess high levels of learning experience and be in a strong legal environment. In this case, learning experience and legal environment play complementary roles, reinforcing each other’s effect on the relationship between structural hole positions and innovation performance. The innovation performance of firms with high closeness centrality will be harmed if they are in this type of network location. Moreover, a high level of learning experience will do further harm to their innovation. Such harm will be exacerbated in a weak legal environment.

Thus, in order for firms in an emerging market such as China to achieve the best innovation performance, they should choose to locate at broker positions in the network or build more broker relationship with their partners. By doing so, they can enjoy the benefit—maximized innovation performance—brought by network appropriateness, by improving their learning experience and legal environment. If they unfortunately find themselves located in central positions in the network and have difficulty building more broker relationship with their

partners, they should consider either cut their cost of learning, by investing less in R&D, or their legal environment, by moving to places with better intellectual property protection, in order to overcome the negative effect of the central position.

Limitations

The first limitation of our research is that we do not consider the moderating effect of the legal environment on the relationship between network characteristics and innovation performance. The results of the data analysis show that the legal environment positively moderates the relationship between structural hole positions and innovation performance, but negatively moderates the relationship between closeness centrality and innovation performance. The reason we do not include the moderating effect in our research is twofold. First, the main focus of our research is on how learning experience can affect the network's innovation performance. Second, we take into account the legal environment for the purpose of discussing the network appropriateness we proposed in Hypotheses 3.2 and 3.4, in which we also explained how the legal environment could provide a context for the study of these three-way interactions.

The second limitation of our research is the potential reverse interaction between the two independent variables, structural hole positions and closeness centrality, and the moderating variable, learning experience (Andersson, Cuervo-Cazurra, & Nielsen, 2014). Such a reverse interaction may pose a challenge to the validity of our interpretation of the moderating effect of the focal factors.

The third limitation of our research is that when we discuss the three-way interaction, we emphasize the moderating effect of the legal environment on the relationship between the interaction variable *structural hole positions* \times *learning experience* and innovation performance. Some may argue that learning experience could have a moderating effect on the relationship

between the interaction variable *structural hole positions* × *legal environment* and innovation performance. This is possible. However, this possibility does not contradict our conclusion, since our primary focus is on the three-way interaction among those three variables and the how conducive of network appropriateness is to innovation performance. The same is true for the other three-way interactions among closeness centrality, learning experience, and legal environment.

Conclusion

Firms' network characteristics, such as closeness centrality and structural hole positions, could have a direct affect on their innovation performance. However, such relationships could be contingent on other factors. In this research, we introduce two contingency variables—learning experience, which acts as an internal factor in firms, and legal environment, which acts as an external factor in firms—to examine the well-studied relationship between network characteristics and innovation in different contexts. Our results shows that, while structural hole positions play an important role in explaining firms' innovation performance, firms' level of learning experience is complementary to this relationship. Firms in structural hole positions will exhibit even higher innovation performance if they have higher levels of learning experience than those who have lower levels of learning experience. We also find that while closeness centrality has a negative effect on innovation performance, the levels of firms' learning experience negatively moderate this relationship.

CHAPTER 4

A SYMBIOSIS VIEW ON SUBSIDIARY INITIATIVE: THE JOINT EFFECTS OF INFORMAL INSTITUTIONAL DISTANCE, TRUST, AND COMMUNICATION EFFECTIVENESS IN EMERGING MULTINATIONAL CORPORATIONS

How is entrepreneurship initiated from the bottom of a corporation, especially for multinational corporations (MNCs) from the emerging economies? By 2011, more than 13,500 companies in China had set up around 18,000 subsidiaries in 177 countries around the world, with a total amount of investment of 424,780 billion US dollars (Chinese Ministry of Commercial). However, due to the differences of geographic, culture, and institutional environments between the host country and China, how to manage and control these subsidiaries is a key challenge for managers of these Chinese MNCs. On the one hand, the long geographical, cultural, and institutional distance increases the concern of headquarters about the operation of subsidiaries. On the other hand, the headquarters lack of the necessary information and knowledge to effectively control the subsidiaries. This problem is getting even more complex if the headquarters want to promote the corporate entrepreneurship of the subsidiaries. It is widely accepted that companies can benefit from corporate entrepreneurship by achieving higher overall performance, foreign profit, and growth in revenue (Zahra & Garvis, 2000). For example, corporate entrepreneurship can help firms to use their existing knowledge and resources in new markets (Shama, 1995). However, undertaking corporate entrepreneurship activity could also be very costly and risky. Corporate entrepreneurship encompasses three main components: product innovation, proactiveness, and risk taking (Miller, 1983; Zahra, 1991), which all involve commitment of time and resource in extremely uncertain environments as well as high discretion of subsidiaries to make critical decisions. Thus, the nature of headquarters-subsidiary

relationships and corporate entrepreneurship creates a dilemma for MNCs: whether they should take a firm control or grant enough autonomy to their subsidiaries. Such a dilemma, however, could be solved by incorporating an old but never-ending element of the relationship between two entities — trust.

Headquarters-subsidary relationships in MNCs have been well-studied for many years (Martinez & Jarillo, 1989). Various facets of the headquarters-subsidary relationship such as centralization, formalization, control and coordination, and heterarchy, have been investigated (Birkinshaw, 1997). However, how the relationship between headquarters and subsidiaries is affected by trust, a significant parameter in evaluating the relationship between two entities, remains unknown. Meanwhile, research that examines factors, such as institutional distance, that might affect trust between headquarters and subsidiaries, are also scant. These questions are important for international business, entrepreneurship, and strategic management research as more and more MNCs have built subsidiaries overseas and those subsidiaries are granted more or less discretion in conducting entrepreneurship activities.

The motivation of this article stems from the unique setting that these dual relationships between headquarters and subsidiaries offer and seeks to fill the gap of the literature of subsidiary initiative. Specifically, extant literature shows that subsidiary initiative can be affected by many factors, such as the degree of centralization of decision making (Birkinshaw, 1999; Gupta & Govindarajan, 1994), subsidiary credibility (Birkinshaw, 1999), subsidiary leadership (Birkinshaw, 1999; Ghoshal & Bartlett, 1988), behavioral context (Birkinshaw, 1999; Ghoshal & Bartlett, 1988), and market dynamism (Birkinshaw, 1999). However, most of this research focuses on the attributes of the subsidiary, rather than the dual relationship between headquarters and subsidiary. This is problematic because subsidiary initiative, which is a type of

organizational strategy, is heavily affected by the association between headquarters and subsidiary, such as communication effectiveness, trust, and institutional distance. Thus, instead of looking solely at the subsidiary, we are trying address the research question by looking at both sides of the relationship, headquarters and subsidiary. For example, we look at the discrepancy of informal institutional environment between headquarters and subsidiary and examine how such discrepancy may affect headquarters-sub subsidiary trust, which further influence subsidiary initiative performance. We also want to examine whether communication effectiveness between them is conducive or detrimental to the two relationships above. Taking all the factors together, we want to introduce a symbiosis view that takes all these factors into account in explaining the determinants of subsidiary initiative. We develop a new symbiosis view which is depicted in figure 1.

This research thus contributes to entrepreneurship literature in the following ways. First, our study enriches our knowledge about corporate entrepreneurship by introducing trust in the headquarters-sub subsidiary relationship and examines how trust between them can affect performance in general and subsidiary initiative, which is a unique form of corporate entrepreneurship, in particular. Second, our symbiosis view enriches the literature of MNCs from the emerging economies by looking at how informal institutional distance may change the trust between headquarters and subsidiaries. We establish the relationship between informal institutional environment and the trust between headquarters and subsidiaries in multinational corporations. Finally, our symbiosis view further shows how communication effectiveness between headquarters and subsidiaries may moderate the two relationships mentioned above.

Theoretical Background

Initiating entrepreneurship within MNCs is a big challenge, especially for the subsidiaries located in geographically remote and culturally diverse settings. The relationship between headquarters and subsidiaries can be both cooperative and conflicting. On one hand, a vertical interdependence exists between headquarters and subsidiaries. The headquarters commit resources and motivate subsidiaries to reach the organizational goal, while the subsidiaries, as a response, comply with the organizational strategy and contribute to the overall goal of MNCs by generating profit and providing knowledge and locational advantages (Goold, Campbell, & Alexander, 1994). On the other hand, subsidiaries are often confronted with various kinds of conflicts with headquarters due to the heterogeneity of cultures (Ayoko, Härtel, & Callan, 2002), stakeholder interests (Zietsma & Winn, 2007), or institutional contexts (Kostova, Roth, & Dacin, 2008; Morgan, 2003). First, due to culture, geographic and task distance, vast information asymmetry exists between headquarters and subsidiaries. The subsidiary possesses exclusive information that may result in opportunistic behavior. To verify such information, headquarters have to commit substantial resources and time. Second, headquarters and subsidiary have conflicting interests. The goals of subsidiaries are incompatible with the goal maximizing strategy of the headquarters of MNCs (Kaufmann & Roessing, 2005). Local environment of subsidiary always requires a different sets of goals than headquarters can incorporate during the goal setting period (Doz & Prahalad, 1984). Meanwhile, subsidiary management is typically interested in short-term goals such as maximizing profit and sales while headquarters management emphasize the collective and long-term goal of the whole organization. Third, the conflict can be caused by the “global integration-local responsiveness” paradox (Doz & Prahalad, 1984). The interdependence between headquarters and subsidiaries increases

uncertainty and the necessity of information exchange in order to control subsidiaries especially those located in geographically or culturally remote settings (Doz, 1980; Galbraith, 1973).

According to Birkinshaw and Hood (2000), the headquarters-subsidiary relationship is the most important relationship of MNCs. Other scholars believe that little is known about the conflict between headquarters and subsidiaries within MNCs.

Despite the existing research about headquarters-subsidiary relationships and the importance of subsidiary initiative to MNC's innovation performance, there is a research gap regarding what kind of headquarters-subsidiary relationship and intra-organizational atmosphere is conducive to subsidiary initiative. In order to answer this question, we introduce a symbiosis view as the primary lens to examine the context of the headquarters-subsidiary relationship.

The term symbiosis, which originates from biology, refers to the close, long-term associations of unlike organisms (Wilkinson, 2001). In this study, we borrow this term to describe the cooperative and interdependent relationship between headquarters and subsidiary of MNCs. Similar to the symbiosis of two different creatures, in order to survive and thrive the headquarters and the subsidiary must reach a status of reconciliation even though the culture and ideology of these two entities are totally different. Under such circumstances, each side of the dual relationship will play a complementary role to each other.

Informal Institutional Distance and Trust

Trust has been defined in various ways under different social contexts and conditions. In our research, following Doney, Cannon, and Mullen (1998), we define trust as the willingness to rely on another partner and to adopt actions that may make one vulnerable to the other partners. A wealth of research has been done on trust. Extant literature shows that trust can reduce transaction costs (Dore, 1983; Noordewier, John, & Nevin, 1990), improve manager-

subsidiary relationships, establish competitive advantages, strength strategic alliances (Browning, Beyer, & Shetler, 1995; Gulati, 1995), help the implementation of strategy and improve managerial coordination (McAllister, 1995), and facilitate long-term interorganizational relationships (Ganesan, 1994; Ring & Van de Ven, 1992).

Distance has been identified as a major hurdle of trust building between two entities. According to Deza and Deza (2006), distance refers to the opposite side of the degree of closeness between any two entities. In the context of MNEs, distance is defined as the differences between any two countries (Håkanson & Ambos, 2010). It is widely accepted that longer distance is associated with bigger difficulties to collect, analyze, and interpret information about the market where the subsidiary is located and to do business overseas (Håkanson & Ambos, 2010). Scholars in international business and strategy all have examined the effect of different types of distance on firms performance. For example, geographic distance, which stands for the physical separation between two countries, is an indicator of trade resistance between two countries due to the transportation and communication costs associated (Beckerman, 1956; Leamer, 1974). Culture distance, which is differences of religion, value, and norms between two countries, is found to impede communication and interaction between two entities and tends to introduce misunderstandings (Boyacigiller, 1990; Manev & Stevenson, 2001). Economic distance, which is the differences in the economic development between two countries, may lead to ease of transferring business models between countries (Ghemawat, 2001; Mitra & Golder, 2002).

Beside the distances mention above, institutional distance is another example of the differences between headquarters and subsidiary in MNC research. Institutional distance refers the extent of disparity between host and home institutions (Kostova, 1996). Such disparity works

as both opportunities and challenges to the headquarters and subsidiaries of MNCs. Previous literature shows that institutional distance acts as a major cause of foreignness (Zaheer, 1995). Even though the literature on distance is voluminous, we still lack clear and consistent understanding of how distance may affect different organizational outcomes (Drogendijk & Zander, 2010; Tihanyi, Griffith, & Russell, 2005).

Institutional theories have been widely applied to study multinational corporations, which operate under diverse institutional pressures and in multiple institutional environment (Xu & Shenkar, 2002). Social actors, such as entrepreneurs and multinational corporations, are embedded in different institutional environment that provide “the rules of the game” (North, 1990). Generally speaking, there are two kinds of institutions, formal and informal. Formal institutions include political rules, laws, legal decisions, and economic issues (Peng, 2000), which constrain the ways of private property rights, the development of skills and knowledge, access to finance, and labor relations (Whitley, 2005). In contrast, informal institutions, which include “codes of conduct and norms of behavior which are embedded in culture and ideology” (Peng, 2000), determine patterns of behavior such as trust, identity, collaboration, and subordination (Whitley, 1999). Informal institutional distance may increase the difficulty of business operation in the host country by increasing the costs and risks of doing business, making it harder to transfer the former management model (Gelbuda, Meyer, & Delios, 2008), adapt to local preferences and practices (Slangen & Van Tulder, 2009), affect the entry mode choice (Anand & Delios, 1997) and so on. In this paper, we will focus on the informal institutional distance since it fits with our research question better.

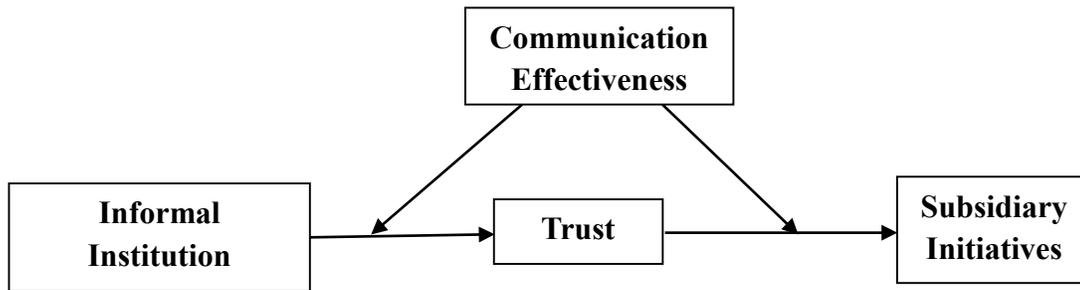


Figure 4.1. Theoretical framework

How does informal institutional distance affect headquarters-subsidary trust? When the informal institutional distance between headquarters and subsidiary is high, two mechanisms that may affect the relationship between them. First, the headquarters will have a lack of knowledge about the new environment that the subsidiary is in (Benito & Gripsrud, 1992). According to Guar and Lu (2007), the lack of knowledge of the new environment may cause two kind of consequences: unfamiliarity hazards originate from the lack of knowledge of the host environment (Caves, 1971), while relational hazards are caused by problems when managing the headquarters and subsidiary relationships at a distance. For example, in countries with lower informal institutional distance, the bureaucracy may hinder the development of economy and bribery is a common practice in doing business. Unfamiliarity hazards include monitoring costs, dispute settlement, opportunistic behavior of subsidiaries, and lack of trust (Buckley & Casson, 1998; Henisz & Williamson, 1999). Second, such a long informal institutional distance will increase the difficulty of communication between headquarters and subsidiary. As a consequences, it will be harder for each side to understand the aspirations of the other, to transfer organizational routines between each other, to manage conflict occurred, and to adapt to the local environment (Kostova, 1999; Xu & Shenkar, 2002). The subsidiary firm may act

opportunistically, a behavior that will increase the cost of coordination and monitoring for headquarters (Gomes-Casseres, 1990). Thus, higher informal institutional distance makes it is harder to build trust between headquarters and subsidiaries. We argue that:

Hypothesis 4.1. The longer the informal institutional distance between the headquarters and the subsidiary, the lower trust between them for MNCs from China.

Trust and Subsidiary Initiative

Previous literature shows that trust can promote various social processes, such as broad role definition, communal relationships, high confidence in others, help-seeking behavior, free exchange of knowledge and information, subjugation of personal needs and ego for the greater common good, and high involvement (Anderson & Williams, 1996; Clark, Oullette, Powell, & Milberg, 1987; Morrison, 1994), which can lead to “the development of synergistic team relationships in an organizational setting, which, in turn, can lead to superior performance” (Jones & George, 1998).

As a specific form of corporate entrepreneurship (Birkinshaw & Ridderstråle, 1999), subsidiary initiative has received more and more attention in entrepreneurship and international business research. Following Birkinshaw and Ridderstråle (1999), we define a subsidiary initiative as a discrete, proactive undertaking that advances a new way to use the resources of a branch outside the home country of the multinational corporation. A subsidiary initiative always starts from an overseas subsidiary of a multinational corporation, rather than the headquarters. In our research, all the initiatives are of foreign subsidiaries of Chinese MNCs.

Since subsidiary initiative is a unique type of corporate entrepreneurship, any factors that are beneficial to corporate entrepreneurship will be beneficial to subsidiary initiative as well. Among these factors, headquarters support, work discretion, and time availability could be the

consequences of trust between headquarters and subsidiaries. First, when the trust between headquarters and subsidiary is high, the subsidiary will receive more support from headquarters. The support, such as funding, talents, and technology, have all proved to be indispensable elements of innovation and corporate entrepreneurship. Second, higher trust between the headquarters and the subsidiary implies that the headquarters will give more discretion and autonomy to the subsidiary. As a result, the subsidiary has more freedom to allocate its time, resources, and energy to more innovation and riskier corporate entrepreneurship activities. Third, when the headquarters has a high trust of the subsidiary, due to either the good track record or the high capability of the subsidiary, it will exert less time pressure on the subsidiary. Thus, the subsidiary can afford to work on some long-term, more innovative projects that take longer time rather than to worry about its short-term performance such as revenue and profitability .

Altogether, we argue that:

Hypothesis 4.2. The higher the trust between the headquarters and the subsidiary, the higher extent of the subsidiary initiative for MNCs from China.

Potential Moderating Effect of Communication Effectiveness

Both theoretical and empirical evidences suggests that informal institutional distance has a negative effect on trust and that trust, in turn, has a positive effect on subsidiary initiative. However, such relationships exist only under an ideal environment in which there are no other variables being taken into consideration. In a real multinational environment, the relationships between informal institutional distance and trust and between trust and performance of subsidiary initiative could be affected by the effectiveness of communication between headquarters and subsidiary. Headquarters-subsidiary communication improves the flow of knowledge and information from headquarters down and from subsidiaries up (Burgelman,

1983). Effective communication is also an indicator of strong relationships between headquarters and subsidiary, which will in turn boost the chance of fund raising (Bower, 1970). Previous research shows that effective communication is positively related to subsidiary initiative.

Turning first to the relationship between informal institutional distance and trust, previous literature indicates that, in an environment with longer informal institutional distance, the headquarters will lack of knowledge and information of the culture and ideology of new environment. A subsidiary located in a foreign environment is at a disadvantage in communicating effectively with host country constituents due to the different values, norms, beliefs, and worldviews resulting from the informal institutional distance (Kostova, 1997). However, effective communication will increase the frequency, speed, and volume of headquarters-subsidary information exchange, thus helping the headquarters to pick up the knowledge in the subsidiary's cultural and ideological environment better and faster. Meanwhile, effective communication can also help both sides to understand the aspirations of each other, to transfer organizational routines between each other, to manage conflict occurred, and to facilitate daily operations to enhance coordination of each other. Thus, we argue that:

Hypothesis 4.3. Communication effectiveness between the headquarters and the subsidiary positively moderates the relationship between informal institutional distance and trust for MNCs from China.

Turning next to the link between trust and subsidiary initiative, this relationship can also be moderated by communication effectiveness. As we argued earlier, informal institutional distance negatively affects trust, and trust, in turn, is instrumental to subsidiary initiative. Since higher trust between headquarters and subsidiary can lead to better headquarters support, work discretion, and time availability, we believe that communication effectiveness may strengthen

the relationship between trust and subsidiary initiative. First, when the headquarters and the subsidiary can communicate effectively, they can exchange information about the innovation project more frequently, thoroughly, and in a timely manner. As a result, the headquarters is able to understand the progress and status of innovative projects of the subsidiary and to provide necessary support in time. Second, when higher trust can help the subsidiary gain more discretion from the headquarters, better communication between them can help the headquarters make better decisions about the extent and scope of discretion it should grant to the subsidiary. If the innovation project proceeds well, more discretion can be granted. Otherwise, it can exert more control on the subsidiary. Third, with better communication, the headquarters can decide the proper amount of time it can allocate to headquarters and subsidiary the subsidiary for its initiative. Extant literature shows that either too long or too short of schedule can be detrimental to the development of the innovation project. Overall, the link between trust and subsidiary initiative will be stronger when the headquarters-subsidiary communication is more effective.

Thus, we argue that:

Hypothesis 4.4. Communication effectiveness between the headquarters and the subsidiary positively moderates the relationship between trust and subsidiary initiative for MNCs from China.

To sum up, in this study we propose and empirically test a mediation model of the role of trust in the informal institutional distance and subsidiary initiative relationship. The model (exhibited in figure 4.1) suggests that between the headquarters and the subsidiary in MNCs, longer informal institutional distance is harmful to the trust between them, and trust, in turn, promotes subsidiary initiative. Further, the model also proposes that both of these relationships are moderated by communication effectiveness.

Methods

Sample and Data Collection

Our research context is in China, one of the biggest emerging countries in the world. We focus specifically on mainland Chinese MNCs (excluding Taiwanese, Hong Kong and Macau firms) engaging in outward foreign direct investment (FDI) projects. In order to identify the sample firms for the study, we utilized the publication named “The 2010 Statistical Bulletin of China’s Outward FDI” by the Ministry of Commerce of China. According to the report, by 2010, around 13,000 Chinese firms were involved in overseas FDI. However, the list of firms is not available. By searching reports published by the central and provincial Chinese governments, we collected 1,381 firms with full contact information. Then we developed survey questionnaires targeting the top decision makers working in the headquarters (Mainland China) and overseas subsidiaries of these firms. The respondents should be qualified as senior executives such as CEO, general manager, owner, director, or senior manager who is directly in charge of the firms’ FDI projects. For each firm, pairwise respondents, one from the headquarters and the other from the overseas subsidiary, were asked to complete the questionnaire. In the questionnaire, the respondents are supposed to recall to their firm’s most recent overseas FDI project and respond to all questions relevant to the project. The questionnaire was initially developed in English and translated into Mandarin later by a bilingual expert. In order to examine the accuracy of translation, we hired another bilingual expert to back-translate the questionnaire into English so that we can compare the original English version and the back-translated English version. Only minor differences were noticed. After minor adjustments were made, the final Mandarin version was ready to use.

To boost the response rate, a two-step procedure was adopted to conduct the survey. In the first step, we contacted a representative from each firm by telephone after which the detail of the research project was delivered via facsimile. In the second step, we distributed questionnaires to those identified respondents, one from the headquarters and the other from the subsidiary. Before the survey, we received consent from those two respondents that the survey would be remained confidential and the answer would not be shared with each other. We adopted a two-phase process to deliver the survey. First, questionnaires were sent to the identified respondent in the headquarters, after which three rounds of reminders were followed via telephone and email during the next six weeks. The second phase started as soon as the questionnaires from the headquarters were received. During this phase, we distributed the questionnaires to the selected respondents of the overseas subsidiaries. Five rounds of reminders followed during the next 10 weeks. In the end, 392 pairs of questionnaires were collected from both headquarters and subsidiaries. There is no multi-level issue in our data since each response was based upon a single overseas FDI project. After careful examination, we found that a total of 83 questionnaires were invalid. 34 of those were incomplete, four firms were based in Hong Kong, and 45 questionnaires had missing values. After excluding those observations, our sample ended up with 299 valid observations, yielding a 21.65 percent of response rate.

Common Method Bias

Since the data are collected via survey instruments and by using some perceptual data (Podsakoff, MacKenzie, Lee, & Podsakoff, 2003), common method bias is a potential concern (Chang, Van Witteloostuijn, & Eden, 2010). Two ex-ante measures suggested by Chang et al. (2010) were adopted to minimize the impact of common method bias in our research. First, two sets of questionnaires were developed for the same constructs for managers of headquarters and

subsidiaries. This procedure enabled us to utilize information from different sources (Podsakoff et al., 2003) so the information for the dependent variables and independent variables was collected from different sources. As mentioned earlier, we administered the survey process in two stages and started the collection of the subsidiary information no sooner than all the questionnaires from the headquarters were received. This measure helped us to reduce the likelihood that answers from both headquarters and subsidiaries were shared with each other. Second, we made it clear in our survey that there were no right or wrong answers for all the questions and that the anonymity of respondents' identities as well as the confidentiality of their responses would be assured. According to Chang et al. (2010), such data collection procedures encourage survey respondents to answer questions as honestly as possible, so the responses will be less biased.

Variables and Measurements

Dependent Variables

Following the work of Birkinshaw, Hood, and Jonsson (1998), we operationalize subsidiary initiative as a construct with five questions (see the Appendix). A 5-point scale ranging from "1" ("strongly disagree") to "5" ("strongly agree") was employed in our research. The construct exhibits high reliability. The Cronbach's alpha is .82 for the headquarters dataset and .79 for the subsidiaries dataset. We used the subsidiary initiative from headquarters as the dependent variable in the regression.

Independent Variables

Informal institutional distance is about the differences of culture and ideology between headquarters and subsidiary. According to Scott (1995), the regulative dimension of institution includes rule setting, sanctioning, and monitoring activities while normative dimension is related

to how activities should be conducted and specifies legitimate means of pursuing valued ends. We use normative distance between headquarters and subsidiary to measure informal institutional distance. To operationalize the construct of informal institutional distance, following Gaur and Lu (2007), we use seven questions on topics such as government's transparency, bureaucratic problems, and local's authority's independence to depict the norms to conduct business operation in a country. These questions generated a Cronbach's alpha of .75 in the headquarters questionnaire, and a Cronbach's alpha of .74 in the subsidiary questionnaire.

Following the work of Ganesan (1994), we operationalized trust with seven questions of 5-point scale. Each of the seven questions used captures different aspect of trust, such as the frankness with each other, reliability, openness, and honesty. The reliability of the construct is $\alpha = .72$ for the subsidiary and $\alpha = .73$ for the headquarters. We used variables from the subsidiary side as the independent variables and moderate variable.

Moderation Variable

Communication effectiveness is measured by eight questions to evaluate the quality of formal and informal communications happening between headquarters and subsidiary. Adapted from Anderson and Weitz (1989) and Menon, Bharadwaj, and Howell's (1996) work, questions such as whether the partner is candid, responsive, open, effective, and clear during communication are used to measure to extend of communication effectiveness. The construct generates a reliability of $\alpha = .79$ for the subsidiary and $\alpha = .82$ for the headquarters.

Control Variables

A total of 11 control variables were included in our model. Firm's age means the years the subsidiary was established. Size is operationalized as the log of the total assets of the focal firm. Following Chan and Makino (2007), we included three types of FDI motivation, market

seeking, resource seeking, and asset seeking, as three dummy variables. We used variables *Hchingov* and *Hforeign* to control the ownership composition of the headquarters. They are operationalized as the percentage of the firm owned by Chinese government and foreign investors respectively. When a firm decide to enter a foreign market, there are two entry modes. One is greenfield mode, which means to create a new venture. The other is acquisition mode, which refers to acquiring an existing venture (Barkema & Vermeulen, 1998; Hennart & Park, 1993). We used dummy variables *greenfield* and *acquisition* to control for the entry mode of the focal subsidiary. We included dummy variable *strategy* to control the marketing strategy of the firm's outward FDI. When it is equal to 1, it means that the firm uses standardize product or marketing strategy in different markets to reduce costs; otherwise it means that the focal firm matches different national condition by extensively customize product offering or market strategy. Dummy variable *joint venture* was used to control whether the focal subsidiary is a joint (when it is equal to 1) venture or not (when it is equal to 0). We also controlled industries of both headquarters and subsidiaries as dummy variables. We used dummy variable *country* to differentiate whether the subsidiary is located in developed countries or developing countries. When country equals to 1, it means the focal subsidiary is in developed countries, which include the United States, Canada, Japan, Korea, British, Germany, France, and Singapore. When country equals to 0, it means that the firm is in developing countries, including Vietnam, Laos, Angola, Zambia, Iran, Indonesia, Kazakhstan, and Angola.

Table 4.1. Descriptive statistics and correlations of variables

Variables	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
1. SI	1																
2. IID	.37	1															
3. Trust	.36	.29	1														
4. CE	.22	.24	.56	1													
5. Age	.15	.09	.09	.02	1												
6. Size	.34	.22	.02	-.09	.32	1											
7. Government	.25	.25	.01	.01	.14	.28	1										
8. Foreign	.02	-.03	-.12	-.12	.18	.18	-.25	1									
9. Green Field	-.12	-.18	-.01	.04	-.09	-.28	-.06	-.23	1								
10. Acquisition	.14	.16	.11	.08	.15	.12	.09	-.04	-.46	1							
11. Market	-.01	.12	.18	.16	.02	-.10	.01	-.05	.06	.06	1						
12. Resource	.10	-.01	-.04	-.06	.08	.27	.06	.20	-.13	-.03	-.46	1					
13. Asset Seek	.08	.08	.14	.12	.05	.06	-.01	.11	-.07	.07	-.13	.02	1				
14. Country	.12	.12	.00	-.12	.17	.25	.11	.09	-.18	.08	-.12	.00	.04	1			
15. Joint Venture	-.06	.00	-.15	-.21	-.04	.15	.02	.28	-.50	-.51	-.12	.14	-.06	.11	1		
16. Total Assets	.27	.24	-.07	-.07	.19	.50	.38	.10	-.32	.09	-.10	.18	.00	.33	.22	1	
17. Strategy	-.01	.05	.03	-.04	-.13	.01	.02	-.02	-.01	.01	-.05	.10	.13	.05	-.01	.07	1
Mean	3.58	3.63	3.83	3.85	11.50	6.28	48.66	9.71	.31	.32	.70	.32	.23	.57	.36	21.55	1.34
Std. Dev.	.59	.50	.49	.53	7.78	2.31	42.16	15.99	.03	.03	.03	.03	.03	.03	.03	.18	.03

SI = subsidiary initiative; IID = informal institutional distance; CE = communication effectiveness

Table 4.2. Results of Regressions

	Baseline 1	Model 1	Model 2	Baseline 2	Model 3	Model 4	Model 5	Model 6	Model 7
Dependent Variables	Trust	Trust	Trust	SI	SI	SI	Profitability	ROI	ROA
	Estimate (S.E.)								
Independent Variables									
IID (H1)		.12* (.06)	.12* (.05)		.26*** (.05)	.28*** (.05)	.15** (.05)	.13** (.05)	.92 (1.17)
Trust (H2)					.15* (.06)	.14* (.06)	.04 (.05)	.09† (.05)	.47 (1.32)
SI							.17** (.05)	.14** (.05)	1.65 (1.50)
Interactions									
IID × CE (H3)			.08* (.04)						
Trust × CE (H4)						-.08* (.04)			
Moderator									
CE	.55*** (.05)	.51*** (.05)	.50*** (.05)	.27*** (.05)	.11 (.06)	.10 (.06)	.03 (.05)	.00 (.05)	.76 (1.29)
Control Variables									
Age	-.02* (.01)	-.02* (.01)	-.02* (.01)	-.01 (.01)	-.01 (.01)	-.01 (.01)	.00 (.01)	-.01 (.01)	.11 (.14)
Size	-.04 (.16)	-.07 (.15)	-.07 (.16)	-.11 (.14)	-.10 (.14)	.08 (.10)	.00 (.03)	-.10 (.14)	1.24 (.56)
Government Share	.03 (.11)	.11 (.12)	.10 (.12)	.13 (.10)	.13 (.10)	.09 (.07)	.00 (.00)	.13 (.10)	-.07* (.03)

	Baseline 1	Model 1	Model 2	Baseline 2	Model 3	Model 4	Model 5	Model 6	Model 7
Dependent Variables	Trust	Trust	Trust	SI	SI	SI	Profitability	ROI	ROA
	Estimate (S.E.)								
Foreign Share	-.13 (.13)	-.11 (.13)	-.09 (.13)	-.03 (.12)	.02 (.12)	-.08 (.08)	.00 (.00)	.02 (.12)	-.05 (.07)
Country	.09 (.07)	.08 (.07)	.08 (.07)	.10 (.06)	.11 (.06)	.06 (.04)	.02 (.10)	.11 (.06)	.24 (2.16)
Means of Establishment	-.01 (.01)	-.01 (.01)	-.02 (.01)	-.01 (.01)	-.00 (.01)	.01 (.01)	-.01 (.01)	-.00 (.01)	.01 (.01)
Primary Motivation	.00 (.00)								
Primary Strategy	-.16 (.10)	-.08 (.10)	-.08 (.10)	.24** (.09)	.19* (.09)	.16** (.06)	.24** (.09)	.19* (.09)	.16** (.06)
Joint Venture	-.20* (.09)	-.18 (.09)	-.26 (.16)	-.23* (.09)	-.20* (.09)	-.14 (.09)	-.23* (.09)	-.20* (.09)	-.14 (.09)
Internationalization	-.16 (.10)	-.08 (.10)	-.08 (.10)	.24** (.09)	.19* (.09)	.16** (.06)	.24** (.09)	.19* (.09)	.16** (.06)
Industry Effects					Controlled				
Constant	1.21 (.89)	1.05 (.87)	.33 (.55)	1.14 (.79)	.03 (.10)	-.19 (.48)	3.07*** (.52)	2.28*** (.51)	16.14 (11.39)
R ²	.3837	.3948	.4037	.2537	.3266	.3362	.2292	.2356	.3012
Adjusted R ²	.3526	.3618	.3689	.2216	.2928	.3005	.1810	.1878	.2456

Note: Seven industry dummies are included, but not reported here.

† p < .1; * p < .05; ** p < .01; *** p < .001.

Results

Table 4.1 shows the basic statistics such as construct means, standard deviations, and correlations of all variables. The matrix shows that the correlations between variables are low, so multicollinearity is not a problem in our study.

Hypothesis Tests

Hypothesis 4.1 proposes that informal institutional distance (IID) between the headquarters and the subsidiary is negatively associated with trust between them. Results regarding this hypothesis are shown in Model 2 of Table 4.2 and indicate that, contrary to our hypothesis, informal institutional distance is positively related to trust ($\beta = .12, p < .05$).

Hypothesis 4.2 predicts that trust is positively related to subsidiary initiative and is supported by the results ($\beta = .15, p < .001$).

Hypothesis 4.3 predicts a moderation effect of communication effectiveness on the relationship between informal institutional distance and subsidiary initiative. The results of Model 2 in Table 4.2 provide support of such a moderation effect ($\beta = .08, p < .05$). Consistent with our predictions, the relationship between informal institutional distance and trust is stronger when the communication effectiveness is higher between the headquarters and the subsidiary.

Hypothesis 4.4 proposes a moderating role of communication effectiveness on the relationship between trust and subsidiary initiative. As shown in Model 4 of Table 4.2, the result is counterintuitive: Communication effectiveness actually negatively moderates the link between trust and subsidiary initiative ($\beta = -.08, p < .05$).

Mediating Role of Trust

To test the proposal that trust mediates the relationship between informal institutional distance and subsidiary initiative, we adopted the bootstrapping analysis procedures with 5,000 replications (Efron & Tibshirani, 1993; Mooney, Duval, & Duval, 1993). Table 4.3 presents the

results of the analysis. The results indicate that indirect effect from informal institutional distance to subsidiary initiative is 0.067 and such an indirect effect is 95% likely to range from 0.025 to 0.126, suggesting that the indirect effect is significant (Preacher & Hayes, 2004).

Robustness

We conducted robustness check by substituting the variables collected from the subsidiary side with variables collected from the headquarters side. For example, we changed variable “trust” responded by subsidiary managers with “trust” responded by headquarters managers. We did the same exchange with variables communication effectiveness, informal institutional distance, and subsidiary initiative, and ran the same models as in table 4.3. The results are consistent in all the hypotheses that exhibit good robustness of our model and quality of our data collection. We also checked the correlations between variables collected from both headquarters and subsidiaries. The correlations of the four main variables, subsidiary initiative, informal institutional distance, trust, and communication effectiveness, are .72, .68, .68, and .63 respectively, which exhibit acceptable agreement between headquarters and subsidiaries responses.

Post-Hoc Test

Previous literature shows that international corporate entrepreneurship activities can help companies to achieve higher overall performance such as profitability and growth (Bossak & Nagashima, 1997; Zahra & Garvis, 2000). We also conducted a post-hoc analysis by looking at how subsidiary initiative may affect headquarters’ performance. We regressed subsidiary initiative on three different performance variables of headquarters, profitability, return of investment (ROI), and return on asset (ROA). As Model 5 and 6 shows in Table 4.2, subsidiary initiative is positively associated with headquarters’ profitability and ROI.

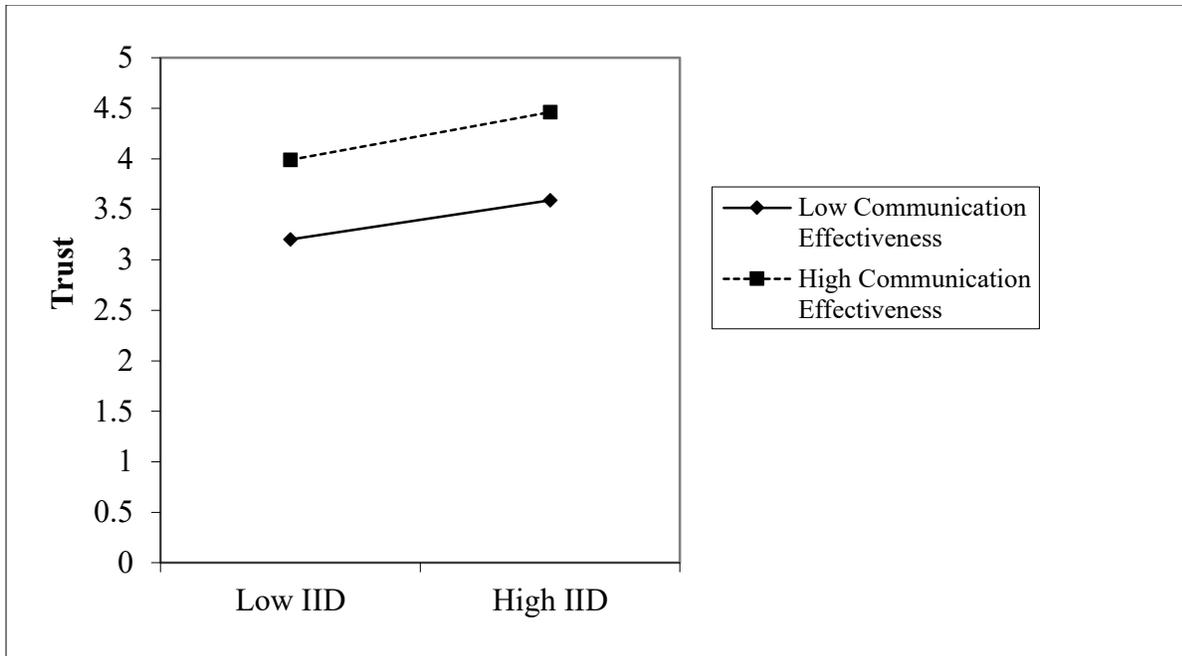


Figure 4.2. Moderating effect of communication effectiveness on IID and trust

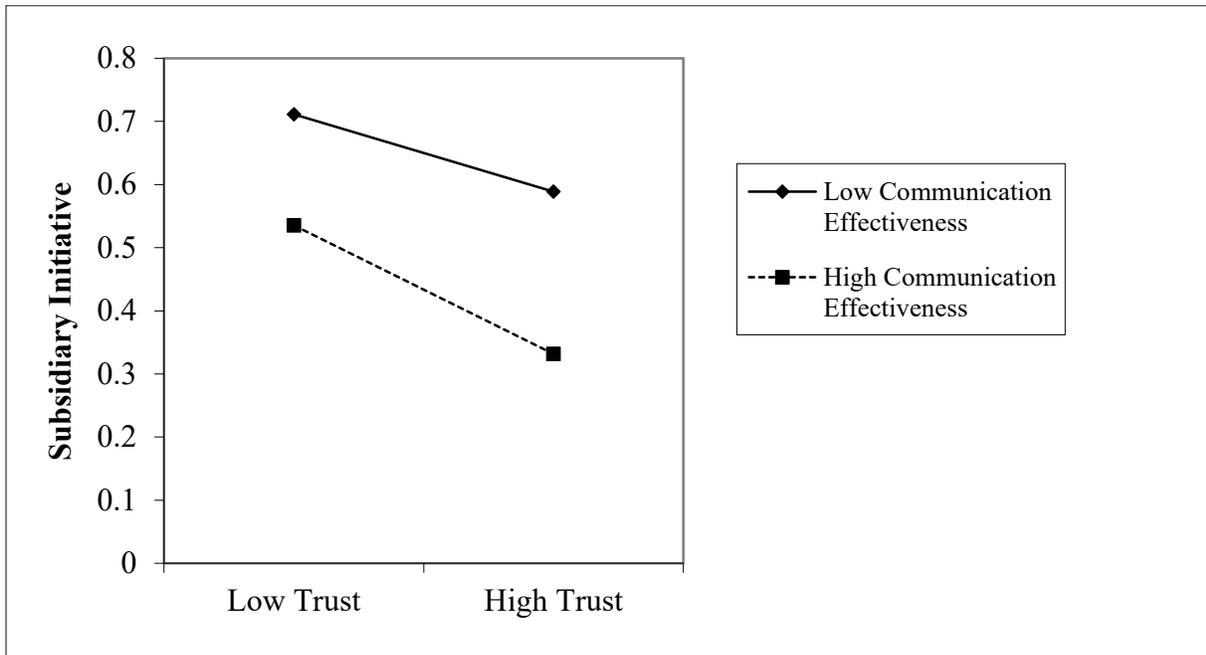


Figure 4.3. Moderating effect of communication effectiveness on trust and subsidiary initiative

Table 4.3. Indirect effect of informal institutional distance on subsidiary initiative through trust

Mediator	Indirect Effect	Boot SE	Bias-Corrected Bootstrap 95% Confidence Interval	
			Lower	Upper
Trust	.257	.051	.157	.358

Note: bootstrapping based on n = 5000 subsamples

Discussion

Key Findings

Our study investigated how the informal institutional distance can affect subsidiary initiative through trust between headquarters and subsidiaries. Meanwhile, we also examined the moderation effect of communication effectiveness on the relationships above. In order to empirically test such proposals, we collected data from both sides of pairwise headquarters and subsidiaries of multinational corporations. Counter to our hypothesis, informal institutional distance is proved to be positively associated with trust between headquarters and subsidiary. Such a result can be explained by the reason that, in order to alleviate the challenges of liability of foreignness, headquarters of MNC need to give enough autonomy to their foreign subsidiaries (Herrmann & Datta, 2002; Rao, Krishna Erramilli, & Ganesh, 1990). When informal institutional distance is long, it will be challenging for headquarters to overcome the unfamiliarity hazards (Makino & Delios, 1996). By putting more trust on subsidiaries, such as retaining less ownership and granting more autonomy, the headquarters can gain more information about the local market, enhance local legitimacy, and share the local firm's reputational capital (Yiu & Makino, 2002). As a result, for headquarters that have long informal institutional distances with their subsidiaries, rather than taking a firm control and granting little discretion to subsidiaries, they will benefit more from subsidiaries if they allocate more trust to their foreign partners. On the other side, when subsidiaries have higher trust with their headquarters, they will have more

autonomy, time, and resources to devote to innovation activities, which will, in turn, improve subsidiary initiative performance. Our findings are consistent with the previous research in this regard.

Our results also reveal different roles that communication effectiveness plays on the relationships between informal institutional distance and trust and between trust and subsidiary initiative. As we expected, communication effectiveness positively moderates the relationship between informal institutional distance and trust. However, communication effectiveness negatively moderates the relationship between trust and subsidiary initiative. When higher trust leads to higher subsidiary initiative, such a positive relationship will be weakened when communication effectiveness between headquarters and subsidiary is high. This result is interesting. Such a counterintuitive result may stem from the fact that, if the subsidiary wants to focus on innovative initiatives, it should work as a separate entity from its headquarters and without any interference. When the trust between the headquarters and the subsidiary is high, it will create an ideal environment for the subsidiary to conduct innovative initiative. However, if the communication effectiveness is high, which means the subsidiary has to communicate openly, candidly, and continuously with the headquarters, it will consume huge amount of time and energy and slow down the decision making process of the subsidiary. Thus, the advantage that trust can bring to subsidiary initiative will be undermined. We believe that trust and communication are complementary with each other in helping firms to improve their subsidiary initiative performance. As a result, higher communication effectiveness will negatively moderate the relationship between trust and subsidiary initiative.

Our results also indicate that trust actually plays a mediating role between informal institutional distance and subsidiary initiative. As we know, informal institutional distance refers

to the cultural and ideological distance between the headquarters and the subsidiary country, and such a distance determines patterns of behavior such as trust, identity, collaboration, and subordination. While the cultural and ideological force of the informal institutional distance may affect subsidiaries' performance, it will not affect the performance in a direct way. Rather, such distance will determine the trust, identity, and collaboration between headquarters and subsidiary. Then the trust, identity, and collaboration will further influence the subsidiary's performance, such as profit, innovation, and initiative. Thus, similar to the symbiosis of two different creatures, in order to survive and thrive, the two entities will reach a status of reconciliation even though the culture and ideology of the headquarters and the subsidiary are totally different. Under such circumstances, each side the dual relationship will play a complementary role to each other. The higher the difference between each other, the more trust they will grant to each other. The trust between the headquarters and the subsidiary plays as the media that the institutional difference can exert its power through on subsidiary initiative.

Contributions

Our study makes significant contributions to extant literature in three ways. First, our study sheds light on the international business study by showing how the informal institutional distance between the headquarters and the overseas subsidiary may determine the trust between them. While trust plays a fundamental role among any dual relationships in the business world, we still lack of understanding of how it may be affected by informal institutional distance.

Second, the present research adds to our understanding of how informal institutional distance may affect subsidiary's performance. While most of the previous research has examined the relationship between informal institutional distance and MNC performance, the study is among the first batch of research that examines how the informal institutional distance may

affect subsidiary initiative, a unique form of corporation entrepreneurship. Our research also proved that subsidiary initiative is beneficial to MNCs headquarters' performance such as profitability and ROI.

Third, our research findings also enrich our knowledge of corporate entrepreneurship, specifically subsidiary initiative. The findings show that beside financial support (such as fund), material (such as equipment), and intellectual (such as research and development personnel), psychological support, that is, trust, plays an important role in boosting subsidiary's entrepreneurship initiative.

Fourth, the research also shows the importance of communication between headquarters and subsidiaries of MNCs. Our results reveal that while effective communication helps to close the gap caused by institutional distance and enhance trust between them, it will attenuate the positive affect of trust on subsidiary initiative.

Fifth, our research also adds new knowledge to conflict management literature by introducing the symbiosis view. Headquarters and subsidiaries are conflicting parties (Kaufmann & Roessing, 2005), especially when they are located in countries with totally different cultural and ideological environments. The symbiosis view suggests that, despite the long informal institutional distance, the headquarters and the subsidiary can play a complementary role to each other and such a complementary role is also dynamic. The headquarters can overcome the outcome, such as the liability of foreignness, of such long informal institutional distance by granting more trust to its subsidiary and improving the communication effectiveness between them. More headquarters-subsidiary trust will further improve subsidiary initiative performance, but the headquarters should grant the subsidiary more autonomy by reducing the communication between them.

Implication

This study has significant implications for extending the research on headquarters-sub subsidiary relationship. Our mediation framework provides a more comprehensive explanation of the relationship between informal institutional distance and subsidiary initiative.

The findings of this research also bear some important practical implications. First, our research provides theoretical backup to MNCs that give enough trust to their subsidiaries with whom they have high cultural and ideological distance. MNCs from emerging countries have set up operations by acquisition, merger, and branch office, around the world during the past several decades. However, due to the cultural and ideological difference between host country and parent country, no single cooperation strategy can be applied to handle subsidiaries with different informal institutional distance. Meanwhile, different cooperation strategies may result in different performance consequences, such as profitability, revenue, innovation, and growth. Our research shows that when the informal institutional distance is high, it will be helpful for headquarters to grant more trust to subsidiaries so they will have more freedom and autonomy to conduct entrepreneurial initiatives. For example, when Volvo, the European carmaker, was acquired by Geely, another multinational automaker originating from China, huge cultural and ideological gaps existed between them. If Geely gave little trust to its subsidiary Volvo and kept a rigid control of its daily operation, then Volvo would lose its motivation of entrepreneurial initiative. However, compromises have been made between Volvo and Geely that, as long as it is within the strategy of Geely, Volvo would have the freedom to make it strategic moves such as developing new models and technologies. Just as Geely Chairman Li Shufu said, “I see Volvo as a tiger. It belongs to the forest and shouldn’t be contained in the zoo.”

Second, our research also indicates the importance of communication between headquarters and subsidiaries. Our research shows that communication between the headquarters and the subsidiary is actually a two-edged sword. On one hand, while the headquarters grants more trust to the subsidiary when the informal institutional distance is long, better communication between them can further strengthen such a positive relationship. On the other hand, while the subsidiary can benefit from the trustworthy relationship with the headquarters by improving its entrepreneurial initiative, more communication could weaken such a benign relationship. Thus, headquarters of MNCs should be selective in the type of information they communicate with their subsidiaries at different stages. At the early stage of the headquarters-subsidiary relationship, they should have more communication with each other which is helpful in building a more trustworthy relationship. However, if the subsidiary starts to undertake any entrepreneurial projects that are innovative and risky, they should avoid frequent communication with each other to guarantee the independency and autonomy of the subsidiary. Then the subsidiary reaches the stage of “isolated freedom”, referring to a situation in which a subsidiary enjoys a substantial amount of autonomy but does not have much connectivity with the parent-side in terms of information-sharing (Asakawa, 2001). In this stage, local autonomy becomes particularly important and excessive communication becomes harmful to the relationship.

Limitations and Future Research

Although the results of this research improved our understanding of the corporation entrepreneurship as well as MNC strategy management, they are subject to a few limitations both empirically and theoretically. First, we operationalize informal institutional distance as the normative distance between host and parent country. Even though normative institutional

distance is an important indicator of informal institution distance, further research may add other dimensions, such as cultural distance, in the construct.

Second, although the study is carefully designed to measure the key variables such as trust, it did not include other possible mediators, such as centralization, formalization, and commitment, between informal institutional distance and subsidiary initiative. Although we found that trust fully mediated the relationship between informal institutional distance and subsidiary initiative in this research, IID may also influence subsidiary initiative through other mechanisms not examined in the present study. Further research can be done to investigate the mediation effect of other variable between the IID and subsidiary initiative.

APPENDIX

Measurement of informal institutional distance, trust, communication effectiveness, and subsidiary initiative.

A. Informal institutional distance (for subsidiaries)

Please indicate your perceived levels of Informal Institutional Distance between China and Host Country:

1. Political system's adaptation to economic challenges.
2. Government policies' adaptation to economic realities.
3. Transparency of government toward its citizens.
4. Political risk.
5. Degree of bureaucracy hinders economic development.
6. Bureaucratic corruption.
7. Local authority's independence from central government.

B. Trust (for headquarters)

1. Sub has been frank in dealing with us.
2. Promises made by Sub are reliable.
3. Sub is knowledgeable regarding its operation.
4. Sub does not make false claims.
5. Sub is not open in dealing with us (R).
6. If problem arises, Sub is honest about it.
7. Sub has problems answering our questions (R).

C. Communication effectiveness (for headquarters)

1. We communicate candidly with each other.
2. Sub always tell us everything we need to know.
3. We are responsive to Sub's need for information.
4. Our communication is open and effective.
5. We have continuous interaction with each other.
6. We both communicate clearly.
7. Our staff communicate openly.
8. We have extensive formal and informal communication.

D. Subsidiary initiative (for headquarters and subsidiary)

Please indicate to what extent have the following activities occurred in your subsidiary over the past 10 years?

1. New products developed in host country and then sold internationally.
2. Successful bids for corporate investments in host country.
3. New international business activities that were first started in host country.
4. Enhancements to product lines which are already sold internationally.
5. New corporate investments in R&D or manufacturing attracted by Chinese management.

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