

## ABSTRACT

Title of Dissertation: NAVIGATING THROUGH EXTREME ASYMMETRY:  
PARTNERSHIPS BETWEEN ENTREPRENEURIAL  
VENTURES AND ESTABLISHED FIRMS

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Nowadays, technology-intensive industries are permeated with partnerships between young/small ventures and large/established firms, where the ventures make technology commitments to the established firms. The partners involved in these partnerships are extremely asymmetric in a variety of dimensions. However, alliance literature seems to suggest that partnerships between highly dissimilar firms are less likely as well as less effective. Thus, the purpose of this dissertation is to address two research questions: (1) Why do some entrepreneurial ventures decide to make a technology commitment to an established firm while others do not? (2) Given the decision to commit, why do some ventures create more value from the partnership than others? I examine these questions within the context of the Partner Networks Program of Alpha Corporation<sup>1</sup>, one of the major IT companies. This is a public program established to foster Alpha Corporation's collaboration with a large number of entrepreneurial independent software vendors (ISVs). I began the study with a series of field interviews. I

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<sup>1</sup> In order to preserve confidentiality, Alpha Corporation and Partner Network Program in this dissertation are both pseudo names.

then conducted a quantitative study for which data were collected from public archives, Alpha Corporation's internal archive, and a web-based survey of ISV partners.

Results reveal that entrepreneurial ventures in the same alliance portfolio of an established firm are competing for attention of the established firm in order to leverage value from the partnership. As such, a venture's decision to commit to the partnership is not only driven by its need for legitimacy and resources, but also determined by its expectation of its future ability to gain the established firm's attention. After the venture has committed to the partnership, its value creation from the partnership is largely a function of its attention-capturing ability. Such ability is predicted not only by the venture's attractiveness to its established partner as well as the venture's proactive behaviors, but also by the interactions between its attractiveness and proactiveness. In specific, the venture's proactive behaviors can substitute for the more visible aspects of its attractiveness, but magnify the less visible aspects of its attractiveness. This dissertation enhances our understanding of partnerships between entrepreneurial ventures and established firms, and contributes to a number of literatures.

**NAVIGATING THROUGH EXTREME ASYMMETRY: PARTNERSHPS  
BETWEEN ENTREPRENEURIAL VENTURES AND ESTABLISHED FIRMS**

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## DEDICATION

To my beloved husband, Yuanzhen Chen, who gives me unsubstitutable love, support, and inspiration!

And to my beloved parents, Yongfa Cao and Yafeng Gu, who show tremendous understanding and encouragement throughout all my past years!

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## CHAPTER 1: INTRODUCTION

### 1.1. Phenomenon of Interest

Technology-intensive industries are often characterized by extensive inter-organizational collaborations. In particular, partnerships between entrepreneurial ventures and established firms have become increasingly common. For established firms, teaming up with young and small ventures can enable them to take advantage of the latter's flexibility, variety, and innovativeness, so that they are able to remain entrepreneurial and adaptive in a dynamic environment (Rothaermel, 2001; Singh & Mitchell, 2005; Zhang, Baden-Fuller, Manematin, & Nesta, 2005). As such, many established firms in technology-intensive industries have tended to create an ecosystem with entrepreneurial ventures (Leland & Hoang, 2005). For the latter, allying with large, powerful industry incumbents may be a way to access needed resources as well as to obtain interorganizational endorsement from more established partners, which can significantly improve their performance and market value (Stuart, Hoang, & Hybels, 1999).

A partnership between an entrepreneurial venture and an established firm can be characterized as a partnership between extremely asymmetric firms. Such asymmetry can be understood in a number of ways. First, an established firm typically enjoys far higher status, possesses far more resources, and has far broader competitive scope than its venture partner. Consequently, these very dissimilar characteristics lead to significant inter-partner differences in organizational structures and routines (Hannan & Freeman, 1977). Second, an entrepreneurial venture typically competes across a narrow technology and/or market scope. Thus, its collaboration with an established firm often spans its entire competitive scope. However, for its established partner, such collaboration may only span

a very tiny portion of its competitive scope (Khanna, Gulati, & Nohria, 1998). As such, the entrepreneurial venture is much more dependent on and vulnerable to the partnership. Essentially, it lacks bargaining power in the partnership (Lavie, 2004). Third, it is very common for an established firm to partner simultaneously with a large number of firms, including a large number of entrepreneurial ventures. Besides covering its broad competitive scope, a large alliance portfolio also enables the established firm to identify and pursue preferred options in the market through a collaborative strategy. Because of its abundant resources, an established firm is able to maintain a large alliance portfolio. In contrast, an entrepreneurial venture is constrained by its scarce resources to manage simultaneously a large alliance portfolio. Therefore, to the established firm, partnering with entrepreneurial ventures implies a one-to-many relationship. Yet to the entrepreneurial venture, partnering with an established firm means almost a one-on-one relationship.

Despite the growing prevalence of partnerships between entrepreneurial ventures and established firms, especially in technology-intensive industries, the literature on this phenomenon has been limited. In particular, little is known from the perspective of entrepreneurial ventures, which are highly dependent, vulnerable, and powerless in such partnerships. At least two questions remain unanswered: Given all the obvious disadvantages, why do some entrepreneurial ventures enter into these partnerships, and why are some ventures able to leverage more value out of such partnerships? The alliance literature, in fact, has concluded that partnerships between dissimilar firms tend to be less likely (Chung, Singh, & Lee, 2000) as well as less effective (Saxton, 1997). This is because significant differences in capabilities, structures, and power would be associated



with problematic inter-firm knowledge transfer and integration (Hamel, 1991; Lane & Lubatkin, 1998; Mowery, Oxley, & Silverman, 1998). While a handful of studies have looked at alliances between highly asymmetric partners from the perspective of established incumbent firms to understand their motivation and value creation from the partnership (Rothaermel, 2001; Singh & Mitchell, 2005; Zhang et al., 2005), we know little about the decisions and behaviors of entrepreneurial ventures in this context. Therefore, the purpose of this dissertation is to fill this void by studying how entrepreneurial ventures navigate through extreme asymmetry in partnering with much stronger and more powerful firms.

This line of inquiry is important, because it addresses a paradox implied in the arguments from the entrepreneurship literature and the alliance literature. The entrepreneurship literature focuses on the growth of entrepreneurial ventures, and argues about the benefit of the ventures' partnering with established firms. Scholars have provided evidence that when partnerships with established firms are successful and lasting, they can significantly fuel the entrepreneurial venture's growth and performance (Stuart et al., 1999). However, according to the traditional alliance literature, entrepreneurial ventures should be cautious about forming such partnerships. This is because their disadvantageous position in the partnership (i.e., weak, vulnerable, dependent, powerless) necessarily results in a high cost for the partnership and also prevents them from realizing value from the partnership (Khanna et al., 1998; Lavie, 2004; Saxton, 1997). As such, there seems to be inconsistency between the arguments derived from these two literatures. The key to resolving this paradox is to explain the variations among entrepreneurial ventures: Given the cost and benefit identified distinctly

by these two literatures, how do entrepreneurial ventures balance this cost and benefit in their decision about whether to partner with an established firm? And how do they minimize the costs and maximize the benefits after they choose to partner? Hence, this dissertation is important in bridging these two literatures and resolving this inconsistency.

This study is conducted within the context of the Partner Networks Program (PNP) of Alpha Corporation, a program established in March 2004 to foster collaboration between Alpha Corporation and independent software vendors (ISVs). Alpha Corporation is one of the leading companies in the information technology industry, while most of the ISVs in this partnership program are young entrepreneurial companies. In the following section, I describe the nature of this program. I argue that this program presents a rich opportunity to examine the dynamics of inter-firm partnerships in contexts where extreme asymmetry among the partners is the norm rather than the exception. In particular, it presents a rich opportunity to examine entrepreneurial ventures' decisions as well as behaviors in allying with a prestigious industry leader.

## **1.2. Field Setting: Partner Networks Program (PNP) of Alpha Corporation**

In this sub-section, I describe the field setting in detail. I start with the landscape of the information technology industry, a discussion which will lay the groundwork for a better understanding of Alpha Corporation's strategy in the partnership program. I then describe why Alpha Corporation established the PNP, how the program is structured, and how the partnerships are operated in PNP.

### **1.2.1. Landscape of the Information Technology Industry**

The information technology (IT) industry is one of the fastest growing industries of the past few decades. It has been spurred by breakthroughs in a variety of sciences and

technologies, including material science, mathematical science, and networking technologies. The adoption of information technology into the operations of the corporate world has been phenomenal.

The IT industry, particularly the part of the IT industry which targets business enterprises, is composed of four major sectors. First is the *hardware* sector, which mainly involves the production and sales of servers, storage, and networking equipment. The major suppliers in this sector include IBM, HP, and Sun Microsystems.

The second sector in the IT industry involves *operating systems*, which, in a functional sense, sits on top of the hardware. Operating systems integrate a computer's various capabilities and transform the raw computer languages into platforms of human logic, on which application software can be developed. There are two major types of operating systems. One is Unix-like open-standard operating systems. Unix is a trademark of The Open Group, an industry consortium that advocates open standards and global interoperability of information infrastructure. Unix has a number of variants, including free software like Linux and BSD, IBM's AIX and OS/2, Sun Microsystems' Solaris, and HP's HP-UX. In contrast to these open-standard systems is Microsoft's Windows operating system. For personal computers, the Windows system is close to a monopoly. However, for enterprises, due to the increasing interest in open standards systems, the market share for Windows has shrunk.

The third sector in the IT industry is *middleware*, and this is a relatively new sector in the industry. As the application software becomes more and more complex and distributed, there has proven to be a need to create a layer that lies between operating systems and applications so as to better support the application development and delivery

process. Middleware takes the form of, for instance, web servers, application servers, and content management systems. Similar to the operating systems sector, the middleware sector is again divided into open standards middleware and proprietary middleware. Open standards middleware is based on Java language developed by Sun Microsystems, and in particular, the Java 2<sup>nd</sup> Enterprise Edition (known as J2EE). The biggest J2EE-based middleware players include IBM and BEA. IBM has a portfolio of middleware products, such as Websphere (transaction management and integration), Lotus (collaboration and human interaction), Rational (software and system development), and Tivoli (intelligent management and integration). BEA's middleware products include Weblogic AS and Tuxedo. The proprietary middleware mainly refers to Microsoft's .NET suite. The specific products of the .NET suite include: IIS, Sharepoint, AS, BizTalk, etc.

The fourth sector in the IT industry is *application software*. This refers to the software that is directly applied to perform specific business tasks, for instance, management of human resources and customer relationship. Application software directly interacts with human users, and functionally sits on top of the hardware, the operating system, and the middleware. Some of the biggest application software vendors are Microsoft, SAP, and Oracle. Alpha Corporation used to be in the application software sector as well. However, as will be discussed later, Alpha Corporation decided to exit this market and seek partnership with independent software vendors (ISVs).

Firms in these four IT sectors can sell their technologies to customers directly, or they can reach customers through resellers and system integrators. *Resellers* refer to firms that purchase technologies (hardware, operating system, middleware, or application software) from suppliers and resell them to users. In the reselling process, they may add

to the technology some additional features that are valuable to specific customers, and thus become value-added resellers (VARs). One well-known reseller is Ingram Micro. *System integrators* are firms that put together all four components of information technology as a business solution for specific customers. These firms are usually consulting companies that start with the customer's specific business problems, and look to integrate the most appropriate pieces of hardware, operating systems, middleware, and application software. Some prominent system integrators are IBM Global Services, Accenture, and BearingPoint. Figure 1 depicts the landscape of the IT industry, with relationships between different sectors and components of the industry.

### **1.2.2. Alpha Corporation's Strategic Decisions and Its Partnership Program**

According to my interviews with senior managers within Alpha Corporation, the PNP is intended to play a key role in helping to implement some of the major strategic decisions made at the very top levels of the company in response to the recent trends in the IT industry. These decisions include the following. First, Alpha Corporation decided to focus increasingly on being a provider of solutions to business problems, rather than on merely selling discrete pieces of hardware, software, and services. This is based upon the observation that end customers in each industry move towards buying IT solutions rather than discrete hardware or software products.

Second, Alpha Corporation decided to exit the "application software" business and to focus its internal research and development efforts only on infrastructure i.e., hardware (HW), operating systems (OS), and middleware (MW). In turn, Alpha Corporation decided to partner with independent software vendors (ISVs) for application software. This way, Alpha Corporation not only benefits from more efficient resource

allocation due to a more focused strategy, but is also able to take advantage of different ISVs' market niches to expand its own market presence. Because there can be no solutions without application software, these partnerships would become a core part of Alpha Corporation's strategy.

Third, in addition to large corporate customers, Alpha Corporation decided to focus more aggressively on targeting small-and medium-sized businesses (SMB). By around 2000, Alpha Corporation had concluded that the total size of the IT market in the SMB sector had not only become as big as that in the large corporate sector, but was growing faster. Young ISVs, with their focus on developing application software for industry and geographic niches, are often better partners in targeting the SMB sector than software giants such as SAP.

Fourth, it has become increasingly true that the design, marketing, and implementation of IT solutions requires a tailored focus on the specific needs of each industry. In other words, each industry has distinct solution areas that require specific industry knowledge and expertise. For instance, in the retail industry, there are such potential solutions offered by information technology as store operations, consumer-driven supply chains, on-demand workplaces, enterprise data warehouses, merchandising, and multi-channel retailing. In the healthcare industry, potential IT solution areas include healthcare collaborative networks, clinical decision intelligence, healthcare plan administration, patient-centric healthcare portals, and payer services portals. To better tailor its sale of IT products and solutions to fit specific industry needs, Alpha Corporation decided to reorganize all parts of its various divisions around specific industries, known as "industry verticals."

Traditionally, Alpha Corporation's partnership programs were heavily oriented toward reseller partners, who resell and redistribute Alpha Corporation's discrete hardware and software products while adding customer-specific value to the technologies in the reselling process. However, given the recent trends in the IT industry and the above strategic decisions made at the very top level of the firm, starting in 2000, Alpha Corporation has significantly shifted the focus of its partnership programs from resellers to ISVs. The Partner Networks Program (PNP), launched in March 2004, is part of its \$1 billion investment to increase its commitment to ISVs. The mission of the PNP is to serve as the structural mechanism to cultivate and foster partnerships between various divisions in Alpha Corporation and thousands of typically young and small ISVs located all around the world. These partnerships are meant to be win-win relationships between Alpha Corporation and the entrepreneurial ISVs, as from the sale of a solution to a customer, Alpha Corporation gains revenue from selling its infrastructure technology, and the ISV gains revenue from selling its application software.

### **1.2.3. Structure of the Partner Networks Program (PNP)**

The PNP is run as a public web-based community, and is essentially a portal for young and small ISVs to collaborate with Alpha Corporation. All the information about the PNP is publicly listed at Alpha Corporation's website.

The program is coordinated between two groups within Alpha Corporation. First is the ISV & Developer Relations Group. This group designs and maintains the macro structure for the PNP, including, as will be detailed later, the tiered structure, rules of upgrading, benefit packages, and so on. This group is also in charge of the marketing, recruiting, and evaluation of PNP. The other group in Alpha Corporation in charge of the

PNP is the Sales & Distribution Group. This group sends client executives to work with ISVs that have made technology commitments to Alpha Corporation, with the purpose of jointly closing deals and selling IT solutions as the joint products of Alpha Corporation and the corresponding ISVs.

Due to the industry-specific nature of IT solutions nowadays, the PNP has aligned the ISV partners along 12 industry verticals. Aside from some managers in the ISV & Developer Relations Group who run the common PNP structure, the other personnel in these two groups are all aligned along the industry verticals. The 12 industry verticals so far are Banking, Financial Markets, Healthcare & Life Sciences, Retail, Telecommunications (these six verticals were foundationally introduced in March, 2004), Government, Insurance (these two were introduced in June 2004), Auto (this was introduced in September 2004), Fabrication & Assembly, Wholesale, Media & Entertainment, and Education & Learning (these four were introduced in February 2005). All the industry networks share common structure, but are managed by industry-specific teams from the two groups in Alpha Corporation.

The PNP is designed as a tiered structure. First of all, any ISV can sign up on the website as a *Tier-1 Partner*. To be a Tier-1 Partner, the ISV just needs to provide Alpha Corporation with its contact information, with no cost and no technology commitment to it. At that time, an ISV can start enjoying certain benefits such as downloading technology guides, getting discounts for tradeshows with Alpha Corporation, and networking at Alpha Corporation-hosted conferences. No substantive collaboration between the two firms is involved at this level, but ISVs can get to know the PNP better



through observation of and participation in the events so as to decide whether or not they want to further upgrade the relationship.

When the ISV enables its application to run on one piece of Alpha Corporation's hardware and one piece of its middleware products with one customer reference, it is then able to upgrade to the *Tier-2 Partner*. Becoming an Tier-2 Partner denotes the start of the ISV's technology commitment to Alpha Corporation, and the partnership between Alpha Corporation and the ISV becomes real and substantive. Importantly, the choice of commitment is totally voluntary on the part of ISVs. In return for an ISV's commitment, Alpha Corporation provides an enhanced set of benefits, especially in marketing, sales, and networking. In particular, Alpha Corporation will assign client executives to work with the ISV. Also, only at this point is the ISV allowed to put the emblem of "Alpha Corporation Business Partner" on its website.

The Tier-2 ISVs can then choose to go up to an even higher level: *Tier-3*. At this level, the ISV is required to enable its application to run on one piece of Alpha Corporation's hardware and two pieces of its middleware, and submit one white paper that showcases a customer reference. Tier-3 ISVs can enjoy even more customized support from Alpha Corporation in terms of technology, marketing, and sales.

As the ISVs go up the tiers, their technology commitments to Alpha Corporation are increased. At the same time, Alpha Corporation provides them with increased benefits. Figure 2 outlines the tiered structure of the PNP, and Table 1 details the benefit package that Alpha Corporation provides for ISVs at the different levels of the PNP. Out of the benefits (resources) that Alpha Corporation provides for ISVs, some resources, especially some technology resources, can be accessed through Alpha Corporation's

website, to a certain extent, on a self-serve basis. For instance, an ISV can download the various technology and solution guides from Alpha Corporation’s website; an ISV can use Virtual Innovation Center online to test its new products. However, many resources, especially those concerning marketing and sales, are obtained through Alpha Corporation’s client representatives. For instance, Alpha Corporation’s client representatives work with the ISVs to find potential customers, have customer meetings, to close deals together.

By rule, the partnerships in PNP are not equity-based. That is, Alpha Corporation does not take any equity stake in the ISV’s ownership structure. Also, because Alpha Corporation has publicly announced its decision to not be in the “application software” business, there is also little likelihood that, at some stage, Alpha Corporation may wish to acquire any one or more of these ISV partners. Thus, it is anticipated that these partnerships would remain “inter-firm” for an indefinite period of time.

**Table 1: Partner Networks Program Benefits and Resources**

**Marketing Resources:**

	Tier-1	Tier-2	Tier-3
<b>Generate Demand</b>			
Business Partner Application Showcase		•	•
Direct mail and telemarketing		•	•
Hosted customer meeting			•
KnowledgeStorm Web lead generation services		•	•
KnowledgeStorm Technology Services Directory	•	•	•
Web conferencing		•	•
SoftGuide Web lead generation services (German-speaking market only)	•	•	•
<b>Generate Awareness</b>			
Discounted advertising package		•	•
solutions-daily.com		•	•
Published case study			•
Business Partner Client Reference Program	•	•	•
Professionally-produced solution brief (Government only)			•
Emblems and logos		•	•
<b>Gain Insight</b>			
Industry research and analysis	•	•	•

On demand government: Continuing the e-government journey (Government only)			•
Routes-to-market business planning workshop (Healthcare and life sciences only)			•
Express Advantage: Industry sales aids	•	•	•
Express Advantage: Industry insights	•	•	•
ForwardView	•	•	•
IdeaWatch	•	•	•
<b>More Partner Benefits</b>			
Encore event solutions	•	•	•
Marketing campaign guide	•	•	•
Marketing consulting services	•	•	•
Linux on POWER marketing benefits	•	•	•
Business Partner Leaders for Linux	•	•	•

**Selling Resources:**

	Tier-1	Tier-2	Tier-3
<b>Close Deals</b>			
Sales Connections		•	•
Hosted customer meeting			•
Software Value Incentive	•	•	•
Global Services Lead Pass program for Business Partners	•	•	•
Global Financing	•	•	•
ServerProven and System Storage Proven rebates	•	•	•
Brand-specific sales courses offered by the Virtual Innovation Center	•	•	•
<b>More Partner Benefits</b>			
Published case study			•
Business Partner Client Reference Program	•	•	•
Public sector industries attach rates	•	•	•
Express Seller toolkit	•	•	•
SOA business value assessment toolkit	•	•	•
SOA SMB Business Partner playbook	•	•	•
Business Partner Innovation Centers	•	•	•
Innovation that matters in the public sector (Education and learning, government, and healthcare and life sciences only)	•	•	•

**Technical Resources:**

	Tier-1	Tier-2	Tier-3
<b>Technical Enablement Support</b>			
Get started with the Virtual Innovation Center	•	•	•
Innovation Centers for Business Partners	•	•	•
Architecture consultations	•	•	•
developerWorks	•	•	•
Virtual Loaner Program	•	•	•
Migration station	•	•	•
<b>Solutions and Technologies</b>			
Product guides for industry solutions	•	•	•
SOA Business Partner enablement	•	•	•
Express Advantage: Solutions Builder Express	•	•	•
Solutions Consultant Express Tool	•	•	•
Managed Hosting - application enablement program	•	•	•
Software as Services financial and business model workshops	•	•	•
Systems Application Advantage™ for Linux (Chiphopper™)	•	•	•

Solutions development for Alpha Corporation Systems	•	•	•
Emerging business opportunities	•	•	•
<b>More Partner Benefits</b>			
E-mail technical support	•	•	•
Software in action demonstrations	•	•	•
Evaluation Software Center for ISVs	•	•	•
Business Partner Innovation Centers	•	•	•

**Training Resources:**

	Tier-1	Tier-2	Tier-3
<b>Technical Skill Building</b>			
Get started with the Virtual Innovation Center	•	•	•
Access hands-on training at the Innovation Centers for Business Partners	•	•	•
Building solutions on products 101: Express and enterprise editions	•	•	•
Professional certifications	•	•	•
developerWorks	•	•	•
<b>Sales Skill Building Resources</b>			
Business Partner Innovation Centers	•	•	•
<b>More Partner Benefits</b>			
Solutions development for Systems	•	•	•
Partner technical webcasts	•	•	•

**Collaboration Resources:**

	Tier-1	Tier-2	Tier-3
<b>Network and Collaborate</b>			
Industry network connection events	•	•	•
Business Partner Application Showcase		•	•
Partner Networks advocate		•	•
Industry network discussion forums	•	•	•
Sales Connections		•	•
<b>More Partner Benefits</b>			
Value Network initiative for Linux and grid		•	•
Business Partner Connections	•	•	•

Since its creation in March 2004, the PNP has attracted thousands of ISVs. For example, take the two foundational verticals—Healthcare & Life Sciences (HCLS) and Retail. By July 1, 2005, 986 ISVs had joined the HCLS network. Among them, 299 had made technology commitments and upgraded to Tier-2. Out of these 299, 51 had further upgraded to Tier-3. With regard to the Retail network, by July 1, 2005, there were 979 ISVs in it, and 261 of them had made technology commitments to Alpha Corporation and upgraded to Tier-2. Out of these 261, 25 had further upgraded to Tier-3.

As one General Manager for ISV and Developer Relations in Alpha Corporation remarked, “Some of them are little, teeny companies, but some of those will grow into

giants” (Forbes, 2005). The prospect is that when the small ISVs grow into industry giants, they will then be transferred from PNP, which is a public program, into private accounts with Alpha Corporation, with negotiated benefits and ways of collaboration, just as how Alpha Corporation currently maintains cooperative relationships with established ISVs like SAP and Siebel.

Alpha Corporation’s strategic initiative to partner with a large number of entrepreneurial ventures is not at all atypical of large industry incumbents. As scholars point out, it is very common, especially in technology-intensive industries, for established firms to seek cooperation with new entrants in the industry in order to keep pace with technology and market evolution, as well as to keep options for future growth. In fact, many incumbent firms all have similar partnership programs that aim to foster collaboration with entrepreneurial ventures. However, according to the advanced industry analyst IDG, Alpha Corporation’s PNP has a better-crafted structure than the partnership programs of other firms in the same industry (IDG’s report in 2006). Its rules and structure allow me to better track key decisions and behaviors of entrepreneurial ventures in their collaboration with an established firm. I thus choose Alpha Corporation’s PNP as the research setting for this study.

### **1.3. Research Questions**

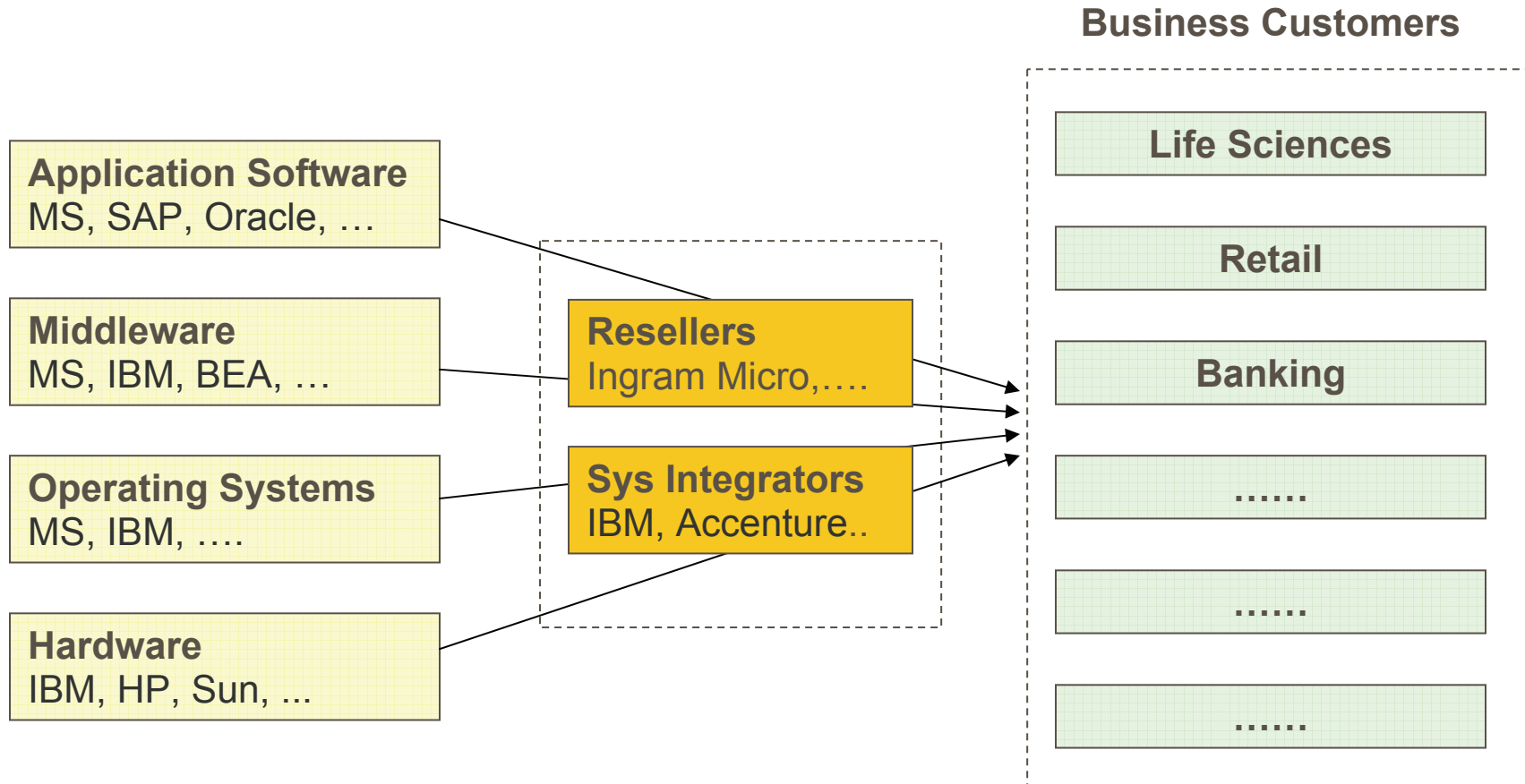
As noted earlier, this dissertation aims to examine partnerships between entrepreneurial ventures and established firms (i.e., highly asymmetric partners) from the perspective of the former. Specifically, I seek answers to the following two interrelated questions: **(1) Why do some entrepreneurial ventures decide to make a technology commitment to the established firm while others do not? And (2) given the decision**

**to commit, why do some ventures derive more value from the partnership than others?** As this study is grounded in the empirical context of Alpha Corporation's PNP as described above, the two research questions can also be translated into the following. First, why do some ISVs choose to upgrade to the Tier-2 while others do not? Second, among those Tier-2 ISVs, why do some derive more value from the partnership than others? While there are two levels of choice for ISVs—upgrading to Tier-2 and upgrading to Tier-3—I regard the first choice as more critical for ISVs, because this is a to-do or not-to-do choice. Once they choose to make a technology commitment to Alpha Corporation, it will be a relatively easier decision to increase that commitment.

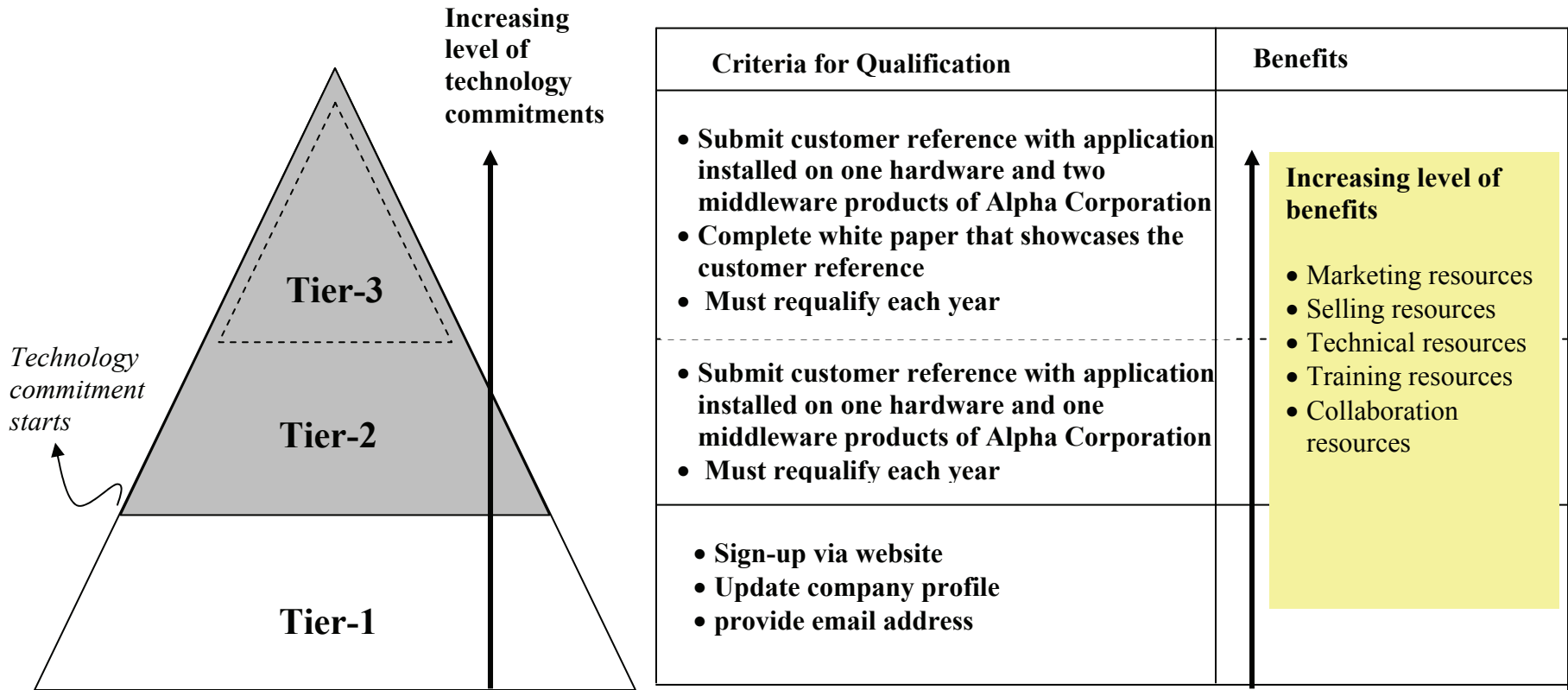
Also, in this dissertation, I use the phrase “making a technology commitment to the established firm” interchangeably with “forming a partnership with the established firm.” Given my empirical setting, making a technology commitment, i.e., the ISV's upgrading to Tier-2, is *the* indication of forming a substantive partnership with the established firm. Although Alpha Corporation also calls ISVs at the Tier-1 its partners, they are not real partners.

This research project was undertaken in two phases. I first conducted a number of interviews to understand the phenomenon. The interviewees included Alpha Corporation's PNP managers, Alpha Corporation client representatives, and Alpha Corporation's partnership contacts in randomly selected ISVs. I then developed a theoretical framework and empirically tested the framework with a large-sample quantitative study.

**Figure 1: Landscape of the Information Technology Industry**



**Figure 2: Design of Alpha Corporation’s Partner Networks Program – Tiered Structure: Qualification and Benefits**





## **CHAPTER 2: THEORETICAL BACKGROUND**

In this section, I review the relevant literatures. As this study is anchored in the alliance setting, I first review the extant research on alliances and networks. Then, I review the alliances by entrepreneurial ventures in particular.<sup>2</sup> As ecology constitutes one important theoretical root for my central argument, I also review ecology theory and discuss its implications for my study.

### **2.1. Extant Research on Alliances and Networks**

The phenomenon of alliances and networks is one of the most heavily researched topics in the strategic management literature. The extant research on alliances and networks covers various aspects of the phenomenon, including the formation of alliances, the governance of alliances, the evolution of alliances, the performance of alliances, and the performance advantage for firms entering alliances (for a review, see Gulati, 1998). Researchers have also studied various types of alliances, including supplier-buyer partnerships (e.g., Dyer, 1996; Zaheer, McEvily, & Perrone, 1998), transaction collaborations (e.g., Chung et al., 2000; Sorenson & Stuart, 2001), licensing and agency agreements (e.g., Li & Atuahene-Gima, 2002), and innovation alliances (e.g., Kotabe & Swan, 1995; Oxley & Sampson, 2004; Powell, Koput, & Smith-Doerr, 1996; Shan, Walker, & Kogut, 1994). Corresponding to my two research questions—alliance formation and value creation from the alliance—I review the alliance literature on these two topics respectively

#### **2.1.1. Literature Review of Alliance Formation**

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<sup>2</sup> In this dissertation, I use “partnership” and “alliance” interchangeably. In the literature, both of them refer to inter-firm cooperative relationships.

Researchers have discussed firms' various motivations to form alliances.

Following Eisenhardt and Schoonhoven (1996), I integrate these studies in the framework of the resource-based view. As Eisenhardt and Schoonhoven put it, "resources provide both the needs and the opportunities for alliance formation" (1996: 138). Firms tend to form alliances when they need additional resources for strategic purposes (i.e., driven by need), or when they have the resources to know, attract, and engage partners (i.e., driven by opportunity).

With reference to the need-driven factors, researchers have documented that firms seek partnerships in order to get access to critical resources that they need for key activities, such as production (Dyer, 1996), innovation (Ahuja, 2000; Eisenhardt & Schoonhoven, 1996; Pisano, 1990), market development (Rothaermel & Deeds, 2004), and internationalization (Leiblein & Reuer, 2004). In order to achieve various strategic goals, it often proves necessary for the firm to acquire resources through alliances. For instance, alliances enable the firm to gain market power over competitors (Hagedoorn, 1993; Santos & Eisenhardt, 2005), to share risks when its current market position is vulnerable (Ohmae, 1989; Miner, Amburgey, & Stearns, 1990), to cope with environmental changes and technological discontinuity (Park, Chen, & Gallagher, 2002; Rothaermel, 2001), to overcome inertia and initiate changes (Rosenkopf & Almeida, 2003), and to create options for future growth (Kogut, 1991).

Regarding the opportunity-driven explanation, a firm's propensity to form partnerships is a function of the opportunities available to it. The origins of opportunities are two-folds. First, the opportunities result from the firm's awareness of potential partners that it can approach for cooperation. It has been pointed out that the social

position that the firm is embedded in matters. The social relations with which the firm and its management are endowed can be sources of knowledge as to who may be potential partners (Chung et al., 2000; Eisenhardt & Schoonhoven, 1996; Rosenkopf, Metiu, & George, 2001; Walker, Kogut, & Shan, 1997), and who would be less hazardous partners (Gulati, 1995a, 1995b; Gulati, 1999). Second, the opportunities also result from the superior or unique characteristics of this focal firm that attract potential partners. This could involve factors such as whether the firm has prestige or valuable resources that others would like to access (Ahuja, 2000; Stuart, 1998), whether the firm has complementary assets that others would like to exploit (Chung et al., 2000; Rothaermel, 2001), whether the firm is embedded in a large network that can offer wide industry connections (Singh & Mitchell, 2005), and whether the firm is located in an attractive regional cluster that others want to draw on (Rothaermel, 2002).

Although “need-driven” and “opportunity-driven” are two distinct motivations for firms to form partnerships, firms may ally out of both reasons. In particular, forming alliances to gain additional resources can be regarded as an exploration activity, whereas forming alliances to utilize existing resources can be viewed as an exploitation activity (March, 1991).

Furthermore, in exploring and exploiting resources, firms can choose between alliances and mergers and acquisitions. According to Williamson (1975), firms tend to choose inter-firm mechanisms that have the lowest transaction cost. Transaction costs involved in alliances include the partner-specific asset investments, the opportunism by the partner, and the uncertainty associated with the partnership outcomes (Dyer, 1997). Transaction costs of mergers and acquisitions involve the integration uncertainty and the

increased complexity of the organization (Datta, 1991; Weber & Camerer, 2003). Firms choose alliances over mergers and acquisitions in specific cases when they perceive lower transaction costs for alliances.

### **2.1.2. Literature Review of Value Creation from Alliances**

As identified in the above section, the two motivations for firms to seek partnerships are to explore resources in need and to exploit resources at hand. Thus, the value creation of the alliance can be gauged by the degree in which the partner firms have explored and/or exploited resources as expected through the alliance. From this perspective, there are two aspects associated with a value-creating partnership. On the one hand, the resources that the firm means to exploit through the partnership are utilized to a maximal extent. On the other hand, the resources that the firm means to explore from the partnership are successfully assimilated. In other words, a successful partnership is characterized by effective exchange and combination of resources between the partner firms. Literature has pointed out that the effective transfer of resources is a function of the level of resources that the recipient firm currently possesses (Cohen & Levinthal, 1990), and also, the closeness of the resource base between the two firms (Lane & Lubatkin, 1998).

Researchers have identified various alliance management factors with regard to how this resource exploration/exploitation process can be carried out effectively in the partnership. Kale, Dyer, and Singh (2002) argue that by having a dedicated alliance function, with the intent of strategically coordinating alliance activities as well as capturing and disseminating alliance-related knowledge, a firm can realize greater success with alliances. Several studies have highlighted that a higher level of

embeddedness of the partner firms will facilitate the resource exchange and combination through the partnership, and thus enhance the value creation from the partnership. For instance, the alliance will perform better when the partner firms have a prior history (Kogut, 1989), when they share the decision making for the partnership (Saxton, 1997), and when there is a “dyadic attachment” between the partners (Levinthal & Fichman, 1988). It is also pointed out that individuals matter in the interorganizational relationship. For instance, Seabright, Levinthal, and Fichman (1992) highlight the role of individual attachment in the partnership. Zaheer et al. (1998) show that both interorganizational and interpersonal trust can be influential in the exchange process.

Overall, these studies suggest that a value-creating partnership not only requires structural compatibility between the partners, but also importantly, dedication and engagement from both sides.

## **2.2. Extant Research on Alliances by Entrepreneurial Ventures**

As my dissertation takes the perspective of entrepreneurial ventures, I specifically review the literature on alliances by entrepreneurial ventures. This literature is at the intersection of the alliance research and the entrepreneurship research. Based on my review, literature related to alliances by entrepreneurial ventures generally revolves around three issues.

The first issue deals with why and how entrepreneurial ventures may be attractive to established firms as alliance partners. Literature suggests that entrepreneurial firms are less subject to inertial routines and cognitive constraints than industry incumbents (Christensen & Bower, 1996; Tripsas & Gavetti, 2000). They are often a source of disruptive innovation and competence-destroying technological discontinuities (Tushman

& Anderson, 1986; Foster, 1986; Sorensen & Stuart, 2000). Therefore, established firms are motivated to seek cooperation with new entrants in order to adapt to the environmental and technological changes. Through these alliances, they learn new technologies from the new entrants and keep pace on research and development (Hagedoorn & Schakenraad, 1994; Pisano, 1990); they can also leverage existing complementary assets (Rothaermel, 2001; Teece, 1992).

The second issue is with regard to how entrepreneurial ventures construct their own alliance portfolio. Eisenhardt and Schoonhoven (1996) argue that the rate of alliance formation of entrepreneurial firms is related to its strategic position (such as competition intensity, market stage, and firm strategy) as well as social position (such as top management team size and connections). Rothaermel and Deeds (2004) find that a new biotech firm's alliance portfolio is constructed in such a way that it is integrated into the product development path. In particular, the number of exploration alliances predicts its products in development, which in turn predict the number of exploitation alliances, leading to products on the market. Baum, Calabrese, and Silverman (2000) show that startups should consider the composition of their alliance network, and that a startup can benefit more when its alliance network is bigger, more diverse, filled with fewer rivals or rivals with a narrower business scope, and filled with higher-quality partners. Ozcan and Eisenhardt (2006), from inductive case studies, find that in nascent markets, entrepreneurial ventures are more likely to construct a strong alliance portfolio (i.e., a high number of deep ties to prominent partners) if they form partnerships early in the market development, approach different types of partners simultaneously rather than

sequentially, learn how to form and manage ties with several firms during market emergence, and do not include competitors in the portfolio.

The third issue in this literature involves how alliances matter in entrepreneurial ventures' various entrepreneurial activities, such as innovation, internationalization, liquidation, market demarcation, etc. For instance, Deeds and Hill (1996) find that the number of strategic alliances that a new technology venture forms has a curvilinear effect (inverted-U) on its new product development. Rothaermel and Deeds (2005) have confirmed this finding, and further point out that alliance type and alliance experience moderate the relationship. Leiblein and Reuer (2004) provide empirical evidence that international collaborations aid an entrepreneurial firm's development of a foreign sales base. Stuart et al. (1999) show that new ventures that have prominent partners will go public more quickly and with higher market valuations than those that link to less prominent partners. Santos and Eisenhardt (2005) find that new ventures in nascent markets use alliances to demarcate new markets, or more particularly, use alliances as a power mechanism to deter entry of powerful potential rivals, to clarify the market boundary, and to shape the industry structure to its advantage.

In sum, this set of literature recognizes the need for entrepreneurial ventures to build alliance networks so as to explore resources required for their growth. It has also discussed benefits from partnering with established firms. However, little has been studied about how to achieve successful partnerships with established firms in the first place, given the various potential problems identified in the alliance literature. This is exactly where my dissertation intends to make a contribution.

### **2.3. Ecology and Its Implications for Alliances by Entrepreneurial Ventures**

This study focuses on partnerships between highly asymmetric firms. As noted earlier, one important aspect of this extreme asymmetry is the asymmetry in alliance portfolios. Often times, an established firm partners with a large number of entrepreneurial ventures simultaneously and operate in a one-to-many manner. Yet an entrepreneurial venture, with much more scarce resources, maintains a much smaller alliance portfolio, and spends much more time and energy in a single partnership with an established firm. As such, the dyadic relationship between the entrepreneurial venture and the established firm is embedded in the broader context of the latter's entire alliance portfolio. In other words, such a dyadic relationship is necessarily influenced by the fact that the established partner is allying with many other similar ventures at the same time.

I argue that the influence of the established firm's entire alliance portfolio on a specific dyadic relationship within the portfolio is in parallel to how ecologists model the influence of the environment on individual organizations. Ecologists analyze a firm's founding, mortality, and change not from the characteristics of the firm itself, but through the standpoint of the environment that is composed of a collectivity of firms (Baum, 1996; Singh & Lumsden, 1990; Aldrich, 2001). One fundamental argument is that firms seek resources from the environment for survival and growth, but the environment has a limited resource-carrying capacity (Stinchcombe, 1965). Therefore, within a population (defined as a group of firms that share common attributes like the clients they serve, the goods and services they produce, and the technology they employ, Haveman, 1992), the firms necessarily compete for resources for survival and growth (Hannan & Freeman, 1984).



Ecologists have two major explanations for the organizational founding rate in a population. The first is the population dynamics explanation. Research has shown that prior founding and failure in a population affect the subsequent rates of founding (Barnett & Amburgey, 1990; Carroll & Hannan, 1989; Carroll & Huo, 1986; Delacroix & Carroll, 1983; Halliday, Powell, & Granfors, 1987). In general, prior foundings signal a fertile niche to potential entrepreneurs, and thus encourage subsequent founding. However, such positive effect levels off and eventually turns into a negative effect. This is because competition for resources increases as foundings increase, which finally discourages new foundings. Likewise, failures influence subsequent foundings in two ways. Initially, failures release resources that can therefore be reassembled into new foundings, thus encouraging subsequent foundings. However, as failure rate further increases, it signals a hostile environment to the potential entrants, which thus discourages future foundings.

The second explanation of the founding rate in a population is the density-dependence explanation. It is similar to the population dynamics explanation but not identical to it. The density-dependence explanation also predicts a curvilinear effect of prior foundings on subsequent foundings, but with a slightly different argument (Hannan & Carroll, 1992; Hannan & Freeman, 1989). Density dependence refers to the dependence of population process on the size of the population itself. Initial increase in the population density leads to an increase in the institutional legitimacy of this population (Aldrich & Staber, 1988). Such increased population legitimacy thus enables any population member to gain resources from the resource controllers who have acknowledged the legitimacy of this population (Zucker, 1986). Therefore, the initial increase of population density encourages subsequent foundings. However, as the

population passes the legitimacy threshold and continues to grow, competition among population members is exacerbated, which, in turn, depresses founding rates.

Through an ecological lens, entrepreneurial ventures that are within one established firm's alliance portfolio can be viewed as a distinct population where the established firm controls and distributes resources to all members within the population. As such, when entries into this alliance portfolio increase, this increases the total demand for attention from the established firm (Ocasio, 1997). As the established firm has a limited attentional capacity, which is similar to the limited carrying capacity of the environment (Stinchcombe, 1965), the competition between entrepreneurial ventures within this portfolio will necessarily increase. This will conceivably have an impact on subsequent entries of entrepreneurial ventures into this alliance portfolio, as well as on the dynamics and outcomes of relationships for ventures already inside this portfolio. This argument will be elaborated upon more in the next section.

## CHAPTER 3: HYPOTHESES

Corresponding to the two research questions stated above, I study this phenomenon in two stages. The first stage is the pre-commitment stage, when entrepreneurial ventures make a decision whether or not to make a technology commitment to the established firm. In the context of Alpha Corporation's PNP, the decision of making a technology commitment, i.e., upgrading to Tier-2, is voluntary on the part of ISVs. The second stage is the post-commitment stage when entrepreneurial ventures try to derive value and benefits from the partnership.

Prior literature has implied that the major motivations for entrepreneurial ventures to enter a partnership with an established firm are to seek legitimacy and resources for their further growth. The theoretical framework for the first research question, i.e., stage 1 of the phenomenon, is based on this argument. While legitimacy can be gained simply by symbolic association with the established firm, accessing its resource entails far more uncertainty. Using an ecology lens, I argue that after forming the partnership with an established firm, the entrepreneurial venture becomes part of the alliance portfolio of that established firm, and thus is subject to the contextual influences of that entire portfolio. In particular, competition for the established firm's attention becomes a key mechanism through which an entrepreneurial venture accesses the resources of its established partner and creates value from the partnership. This thus forms the overarching theoretical underpinning for my stage 2 model. Below, I elaborate the research models for the two stages in detail.

### **3.1. Stage 1: Decision to Commit**

Entrepreneurial ventures typically experience two large challenges: lack of legitimacy and lack of resources. These two challenges are related to what ecologists term the liability of newness and the liability of smallness (Baum, 1996; Hannan & Freeman, 1984). Liability of newness focuses on the disadvantage of being young. As a new organization, it has not yet developed accountable and reproducible routines (Stinchcombe, 1965). Consequently, the stakeholders do not have enough information, and thus are uncertain about its value, quality, and reliability. This lack of legitimacy will in turn affect its ability to acquire resources from the relevant resource controllers. Liability of smallness, on the other hand, focuses on the disadvantage of being small in size. By being small, the venture does not possess the needed resources to compete, and hence is subject to a high failure rate. Liability of newness and liability of smallness are often empirically coexistent, as younger firms are typically smaller as well. Besides, legitimacy and resources are linked in such a way that a more legitimate firm is likely to obtain more resources, obtain resources of higher quality, and obtain resources at more favorable terms than a less legitimate firm (Galaskiewicz, 1985; Lounsbury & Glynn, 2001; Meyer & Rowan, 1977; Suchman, 1995). However, at the conceptual level, legitimacy and resources are two distinct constructs. Arguably, both are imperative needs for growing ventures.

Scholars point out that both legitimacy and resources can be gained through partnerships (Baum et al., 2000; Eisenhardt & Schoonhoven, 1996; Stuart et al., 1999; Stuart, 2000). In particular, established firms are desirable alliance candidates in this regard. First, established firms enjoy prominence in the industry and thus are perceived to be of high quality and reliability by the general public. Such favorable perception by the

public can be transferred to their partners. By partnering with a prominent firm, the entrepreneurial venture is able to get endorsed, which is similar to earning a form of certification (Rao, 1994) or licensing (Baum & Oliver, 1991). This shapes the public perception that it has withstood the due diligence process of a highly capable evaluator (Stuart et al., 1999). The entrepreneurial venture, therefore, will gain higher public attributions of its quality and reliability. By simply symbolic association, such interorganizational endorsement can take effect almost immediately and without uncertainty as soon as the partnership forms.

Besides being a source of effective endorsement, established firms can also be a source of resources for entrepreneurial ventures. Established firms typically possess abundant as well as superior resources. The fact that they have sustained long-run competition in the industry and become established is a proof of their resource advantage (Barney, 1991). In technology-intensive industries, typically established firms not only possess superior technology resources, but also superior complementary resources (downstream resources that help commercialize and exploit technology resources, Teece, 1986). In fact, studies conclude that established firms' survival from technological discontinuities is often attributed to their possession of complementary assets (Tripsas, 1997; Rothaermel, 2001). For entrepreneurial ventures, which are constrained by resource scarcity, partnering with established firms can be a means of getting access to the latter's resources. However, literature has also suggested that this process is associated with uncertainty and cost, and that the effectiveness of accessing resources from the partner is influenced by many factors (Kale, Singh, & Perlmutter, 2000; Mowery et al., 1998; Ring & Van de Ven, 1992; Zaheer et al., 1998).

The model that I advance in the following section is based on the assumptions developed above that two important motivations for an entrepreneurial venture to seek partnership with an established firm are the quest for legitimacy and the quest for resources. In particular, institutional density of such a partnership exerts external pressure for the venture to enhance legitimacy, whereas the firm's *ex ante* level of legitimacy and resources determines the internal need for legitimacy and resources.

### **Pre-commitment Institutional Density**

Scholars point out that the important factors that organizations need to take into account are other organizations in the environment (Aldrich, 1979; Pfeffer & Salancik, 1978). Institutional theory posits how a firm's behavior is influenced by that of the other firms (Meyer & Rowan, 1977; Scott, 1987). One important theme in the institutional theory is imitation (Haunschild & Miner, 1997), or bandwagon effects (Abrahamson & Rosenkopf, 1993), or mimetic isomorphism (DiMaggio & Powell, 1983). That is, individual firms tend to resemble other firms and conform to institutional practice. Importantly, firms tend to more resemble other firms that face similar environmental conditions (DiMaggio & Powell, 1983; Scott, 1987). Applying this notion to the context of my study, I argue that technology commitments by entrepreneurial ventures to an established industry incumbent will create institutional pressure for the not-yet-committed ventures, which thus are likely to follow suit and also make technology commitments to that established firm. In particular, I argue that the density (diffusion) in the same industry that the focal venture is serving and the density (diffusion) in the same geographical cluster in which the focal venture is competing create the strongest pressure for the focal venture.

With regard to the industry diffusion of such a partnership, there are three ways to understand its institutional influence and an entrepreneurial venture's conformity. The first understanding is that the not-yet-committed ventures fear bad performance because their competitors have become more legitimate through partnering with an established industry leader. Entrepreneurial ventures serving the same industry are close competitors. They compete for the same set of industry-specific resources, such as customers, knowledge workers, and investors. The best resources often go to the most legitimate firms. This is because by investing in more legitimate firms, the resource holders can gain greater return for themselves (Galaskiewicz, 1985; Lounsbury & Glynn, 2001; Meyer & Rowan, 1977; Suchman, 1995). When competitor ventures have formed partnerships with the prestigious firm, this sends an important signal to the resource holders in the industry that they are backed up by a highly capable industry leader. They will in turn obtain better resources from various resource holders and in turn enhance their competitive position in the industry. As such, the not-yet-committed ventures will be competitively disadvantaged, and feel the need to follow suit in order to attract resources on favorable terms and avoid bad performance.

The second way to understand the industry diffusion of such a partnership and an entrepreneurial ventures' conformity is that the not-yet-committed ventures fear appearing different from the many committed ventures and thereby losing legitimacy. When more and more ventures serving the same industry have formed partnerships with the established firm, this will more or less become recognized as a standard institutional practice, regardless of whether this practice is effective or efficient. Research shows that firms that act in accordance with industry norms are perceived as more legitimate and

receive more survival “credits” (Lounsbury & Glynn, 2001; Meyer & Rowan, 1977; Suchman, 1995). For entrepreneurial ventures, which do not enjoy high legitimacy in the first place, deviating from the institutional practice can further jeopardize the venture’s legitimacy as perceived by the public and, importantly, by the resource holders in the industry (Aldrich & Fiol, 1994; Elsbach, 2003; Zucker, 1987). When forming a partnership with the established firm has more or less become an industry norm, resource holders in the industry tend to supply resources to ventures that conform to this practice. For the not-yet-committed ventures, they will be in a disadvantageous position to attract those resources. This pressure thus prompts them to conform to the practice by also forming this partnership.

The third way to understand why diffusion of partnering with an established firm leads to conformity by the not-yet-committed ventures in the same industry is that entrepreneurial ventures learn to gain legitimacy (Baum et al., 2000; Levitt & March, 1988). Entrepreneurial ventures serving the same industry tend to watch closely one another due to their similar resource portfolio and common markets (Chen, 1996). There also exist many channels for information exchange among them, such as industry publications, common stakeholders, and employee mobility (Song, Almeida, & Wu, 2003). Often times, one venture’s practice can easily be observed by other ventures serving the same industry. Therefore, when other ventures have made technology commitments to the established firm, consequently enjoying higher legitimacy and better performance, this creates a positive model for the not-yet-committed ventures. Research suggests that organizations tend to imitate strategies that appear to produce positive outcomes and avoid those that produce negative outcomes (Bandura, 1977; Conell and



Cohn, 1995). Therefore, from observing the favorable outcomes of the committed ventures, the not-yet-committed ventures are likely to follow suit and pursue the partnership. When more and more ventures make technology commitments to the established firm, this further enhances others' perception that such a partnership will lead to a positive outcome, and thus further induces imitation by more ventures.

These three ways of understanding are theoretically distinct but empirically integrated. In sum, when the practice of partnering with an established firm is diffused in the industry, it creates an external pressure for the not-yet-committed ventures to enhance their legitimacy, and thus conform to this practice. The greater the density is, the greater the pressure for the conformity. Therefore, I advance the following hypothesis:

*H1a: Technology commitments to the established firm by other ventures within the industry will have a positive impact on the entrepreneurial venture's likelihood of making a technology commitment to the established firm.*

Besides the density (diffusion) within the industry that the entrepreneurial ventures serve, I contend that the density (diffusion) of such a partnership in the same geographical cluster will also have a strong impact and induce the other ventures to conform. The arguments are similar to those concerning the influence of industry diffusion, but underlying the arguments is one important assumption of localized competition. That is, entrepreneurial ventures within the same geographical cluster have more intense competition than those across geographical clusters. Therefore, their need for legitimacy for the sake of competition is also influenced by the conditions in the same geographical cluster.

The notion of localized competition has been widely discussed in various literatures, including literatures in ecology (Baum & Mezias, 1992; Carroll & Wade, 1991), agglomeration economics (Arthur, 1990; Krugman, 1991), and entrepreneurship (Audia, Freeman, & Reynolds, 2005; Stuart & Sorenson, 2003). There are two observations underlying localized competition. First, similar business enterprises tend to cluster in physical space so as to facilitate resource sharing, resource mobilizing, and knowledge spillover (Arthur, 1990). In particular, there is evidence that entrepreneurial ventures tend to cluster where critical resources are available, such as technology supply, capital supply, and potential customers (Stuart & Sorenson, 2003). Second, resources are much easier to be mobilized within geographical clusters than across them. Some resources are highly locally embedded and are difficult to move across geographical clusters. For instance, universities as potential technology suppliers are rather location-specific; human capital, oftentimes, cannot move freely across national borders. In addition, it is often the entrepreneurs' social networks that help them obtain and mobilize resources (Shane & Cable, 2002; Zimmer & Aldrich, 1987), but social relationships tend to localize geographically (Festinger, Schachter, & Back, 1950; Kono, Palmer, Friedland, & Zafonte, 1998; Sorenson & Stuart, 2001). Based on the above two observations, on one hand, ventures in the same geographical cluster tend to be similar and have similar organizational resource requirements. On the other hand, there are often barriers to leveraging resources from outside the geographical cluster. One direct consequence is that entrepreneurial ventures in the same geographical cluster compete intensely for local resources. Studies consistently show that localized competition has a great competitive

impact on the failure rate at the local level (Baum & Mezias, 1992; Carroll & Wade, 1991; Swaminathan & Wiedenmayer, 1991).

Due to the effect of localized competition, entrepreneurial ventures' need for legitimacy so as to acquire better local resources is reinforced when other similar ventures in the same geographical cluster have formed partnerships with a prestigious industry leader. Consistent with the first point I elaborated in the industry density section above, the first way to understand the influence of such geographical cluster diffusion is that the not-yet-committed ventures fear losing competitive advantages to the local competitors who have become more legitimate through partnership with the established firm. As the local resource holders will supply resources to more legitimate firms within the geographical cluster, this drives the not-yet-committed ventures also to catch up and improve their legitimacy level by forming such partnerships.

In accordance with the second understanding of the industry diffusion of making a technology commitment to an established firm, geographical cluster diffusion induces subsequent conformity because the non-conforming ventures fear appearing different from their local competitors and thus appearing illegitimate. When many other local ventures have formed such a partnership, the not-yet-committed ventures will feel compelled to follow in order not to raise local resource holders' doubts about their legitimacy, which would otherwise jeopardize their ability to acquire resources from them.

Corresponding to the third perspective about the impact of industry diffusion of such partnerships, geographical cluster diffusion enables the ventures to learn from their local competitors regarding gaining legitimacy through partnering with the established

firm. As local ventures are often close competitors, they tend to monitor one another's activities more closely. Besides, there is tremendous evidence that geographical proximity makes information about local competitors more available through such additional channels as local media and direct interactions (Pouder & St. John, 1996; Smith & Grimm, 1991). As such, organizations tend to be more aware of the actions of nearby competitors (Gaba, 2006; Taylor & Greve, 2000). When they observe that local ventures are benefiting from making technology commitments to an established firm, they are likely to mimic this strategy with the purpose of reaping that benefit as well.

In brief, I argue that given the localized competition, the diffusion of partnership with an industry leader in the geographical cluster will prompt the other local ventures also to make commitments and thereby enhance their legitimacy. The degree of such density is positively related to the degree of pressure for the conformity. Thus, I propose the following:

*H1b: Technology commitments to the established firm by other ventures in the same geographic cluster will have a positive impact on the entrepreneurial venture's likelihood of making a technology commitment to the established firm.*

### **Pre-commitment Legitimacy**

While institutional density (diffusion) creates exogenous pressures that drive the entrepreneurial ventures to conform, their decision to commit to the partnership is also a function of the degree of their internal need. In this subsection, I focus on the venture's internal need for legitimacy, which is a reverse function of its *ex ante* legitimacy level. Obviously, the lower its pre-commitment legitimacy, the greater its need for legitimacy,

and the more likely that the venture seeks to improve its legitimacy level by forming a partnership with the established firm.

Scholars have identified various sources of legitimacy besides conformity to the institutional practice. First of all, winning awards or certification contests can legitimize organizations. Such contests serve as credentialing mechanisms that build the reputations of organizations by creating a status hierarchy. In studying the survivors of the American automobile industry, Rao (1994) found such credentials are especially helpful for startup organizations, and cumulative victories in these contests can better their survival prospects.

Second, media can play an important role in legitimizing organizations. Media records public knowledge, directs public attention, and shapes public perceptions through informing, highlighting, and framing (Baum & Powell, 1995; Deephouse, 2000; Hoffman & Ocasio, 2001). It serves as an institutional infomediary, and is viewed as a propagator of legitimacy (Pollock & Rindova, 2003). Firms that have a higher volume of media exposure and more favorable media exposure are typically viewed as more legitimate, as media coverage makes these firms perceived as worthy and meaningful. In their study of IPO markets, Pollock and Rindova (2003) found evidence that media-provided information adds to new IPOs' legitimacy and thus influences investor behavior.

Third, an organization will be legitimized when it is associated with legitimated or prominent entities. It is pointed out that actors' reputations are constructed in part from the identities of their associates (Blau, 1964). Studies consistently show that status can be transferred between parties in an association. For instance, in their study of child care service organizations in Metropolitan Toronto, Baum and Oliver (1991) find that

organizations with institutional linkages enjoy higher legitimacy and exhibit a significant survival advantage. Podolny and Stuart (1995) provide evidence that inventions in uncertain technological areas are more likely to become widely important when they have been previously adopted by high-status organizations. Stuart et al. (1999) show that new ventures that are associated with prominent partners, prominent owners, and prominent investment banks achieve better performance. The effect of these associations is stronger when the public is in a higher degree of uncertainty in evaluating the focal organization.

Fourth, legitimization can be gained via a variety of organizational communication means, such as naming, story-telling, and proper use of verbal accounts (Aldrich & Fiol, 1994; Elsbach, 1994; Lounsbury & Glynn, 2001; Wade, Porac, & Pollock, 1997). These communication means can be viewed as a way of symbolic and impression management that draw stakeholders' attention to the desired information and convey it in a way that is meaningful and positive to them. By creating an interpretive framework that is favorable to itself, the organization is likely to be perceived as legitimate. For instance, Lounsbury and Glynn (2001) described how entrepreneurial stories facilitate the crafting of a new venture identity that builds organizational legitimacy among various stakeholders. Elsbach (1994) demonstrated that the way spokespersons construct and use verbal accounts matters in managing perceptions of organizational legitimacy following controversial events.

Through the above identified mechanisms, entrepreneurial ventures may have built legitimacy to varying extents. A venture that has already accumulated a moderate amount of legitimacy may not feel highly compelled to take further action to add to it. In contrast, a venture that has not had the above indicators and thus ranks low in the

legitimacy level may be desperate to pursue the opportunity of partnering with the established industry leader. Thus, I hypothesize the following:

*H2: An entrepreneurial venture that has a lower level of legitimacy will be more likely to make a technology commitment to the established firm.*

### **Pre-commitment Resources**

As noted, the quest for resources is also an important motivation for entrepreneurial ventures to make technology commitments to the established firm. While virtually all entrepreneurial ventures are constrained by resource scarcity, their degree of resource scarcity determines their degree of need for resources. This in turn accounts for the variation in their eagerness to seek partnership with the established firm. To some extent, the quest for resources accounts for the quest for legitimacy, for a legitimate firm is arguably in a more favorable position to obtain resources (Galaskiewicz, 1985; Lounsbury & Glynn, 2001; Meyer & Rowan, 1977; Suchman, 1995). While with an improved level of legitimacy, the venture has a better potential to attract resource holders of all kinds, including human capital and financial capital holders, the quest for resources discussed here is more partnership-specific, i.e., resources that can be accessed from the partner. Specifically, for entrepreneurial ventures in technology-intensive industries, there are two types of resources that they are in need of and that can potentially be accessed from partnering with an established industry leader.

The first involves the technology resources that are directly related to product development. Technology resources include patents, technology know-how, and tacit knowledge held by scientists and engineers. Compared with industry leaders, entrepreneurial ventures often possess limited resources of such kinds. Typically, they

target specific technology niches but lack scope and maturity. Another type of resources that entrepreneurial ventures can potentially get from an established partner is the complementary resources that can turn the technology resources into real market profits (Teece, 1986). These resources include customer base and marketing, sales, and service workforce. Complementary resources are often a significant bottleneck for entrepreneurial ventures. Especially for ventures in technology-intensive industries, they are often established by technology founders with certain niche advantage in technology, but are rarely born with marketing and sales capabilities that are comparable with established firms. As such, an established firm is attractive to entrepreneurial ventures because of its superb technology and complementary resources. Entrepreneurial ventures which are low in resource levels are thus more eager to seek partnership with the established firm. This leads to the following hypothesis:

*H3: An entrepreneurial venture that has a lower level of resources will be more likely to make a technology commitment to the established firm.*

Thus far, I have outlined the framework to understand why, given an opportunity to partner with an established industry leader, some entrepreneurial ventures choose to make a commitment while others do not. In summary, I argue that ventures pursue such a partnership in order to seek legitimacy and resources. Their differential external pressures and internal endowment determine their degree of need for legitimacy and resources, which thus influences their decision.

### **3.2. Stage 2: Value Creation from the Partnership**

In this section, I focus on the second stage of the phenomenon when the entrepreneurial venture has already made a technology commitment to the established



firm and now has to leverage value from the collaboration. As noted earlier, when the entrepreneurial venture enters the alliance portfolio of its established partner, their dyadic relationship is also influenced by the broader context of the established firm's entire alliance portfolio. The ecology theory posits that firms in the same population demand similar resources from the environment, yet as the environment has a limited carrying capacity, they compete for resources (Hannan & Freeman, 1984; Stinchcombe, 1965). In parallel, since all the entrepreneurial ventures comprising the established firm's alliance portfolio have similar needs and similar demands from their established partner, they engage in competition for the latter's attention. Getting attention of the established partner is important, as this means that the venture is able to get more resources.

Researchers have pointed out that just like a human being, a firm's actions are directed by what its attention is focused on (Ocasio, 1997). Therefore, the established firm allocates resources among ventures in its alliance portfolio based on the attention it distributes among them. Consistent with Ocasio (1997), attention in this context is defined to encompass the noticing, encoding, interpreting, and focusing of time and effort by the established firm on its venture partners. Similar to a human being, a firm is also limited by attentional capacity (Simon, 1947). Therefore, attention is often selective, particularly when the number of stimuli is overwhelming (Hansen & Haas, 2001; Hoffman & Ocasio, 2001). Given the large alliance portfolio, it is inevitable for the established firm to be selective in their attention distribution and to attend to some partners better than others.

The venture that gets more attention from its established partner can access more of its resources, and importantly, access resources that are more tailored to this venture. In Alpha Corporation's PNP, such resources involve the specialized support that Alpha

Corporation's client executives provide to resolve partner-specific technological issues and to sell partners' products. When an ISV captures more of Alpha Corporation's attention, its client executives will spend more time and effort with this ISV. Also, knowing this venture and its products better, the client executives will be able to provide better-quality support. As a result, the ISV will benefit more from the partnership.

Consistent with the ecology reasoning, I argue that competing for attention is the central mechanism through which an entrepreneurial venture access resources from its established partner so as to derive value from the partnership. This logic was implicit in one prior study by Singh and Mitchell (1996). They show that when a partner of the focal firm adds a new partner, the focal firm is likely to lose commitment from this partner. This exactly implies the competition effect between firms that are structurally equivalent within the same alliance portfolio.

Therefore, my premise for the Stage 2 framework is that the value that an entrepreneurial venture derives from partnering with an established firm is a function of its ability to draw the established partner's attention. Specifically, I discuss two major constructs that explain a venture's ability to gain attention: its attractiveness and proactiveness.

On one hand, in the established firm's alliance portfolio, ventures that better serve the motives, interests, and values of the established firm will be considered more attractive and attention-getting, as they are the ones that the established firm will purposefully look for in order to satisfy its internal needs and interests. On the other hand, ventures that take more proactive actions with regard to the partnership can capture more attention because they appear more "intrusive" and visible, and are more demanding for

attention. I contend that being attractive to the established firm and being proactive with the partnership are the two main factors that enable entrepreneurial ventures to gain attention and leverage value from the partnership.<sup>3</sup> In the following, I illustrate these two aspects of attention-getting capability respectively and discuss specific variables.

### **3.2.1. Attractiveness**

An entrepreneurial venture is more attractive when it can better serve the values and interests of the established firm. I argue that such attractiveness can come from either exogenous factors or endogenous factors. A venture is exogenously more attractive when it is in a smaller alliance portfolio and is one of the fewer choices that the established firm can rely on to meet its values and interests. A venture is endogenously more attractive when it is of higher internal quality that can more efficiently serve the established partner's values and interests. Below, I discuss four variables pertaining to venture's attractiveness. The first variable is institutional density (including industry density and geographical cluster density), which indicates a venture's exogenous attractiveness. The next three variables are venture's post-commitment legitimacy, resources, and collaborative scope with the established firm (including technology collaborative scope and market collaborative scope). These indicate a venture's endogenous attractiveness.

#### **Post-commitment Institutional Density**

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<sup>3</sup> There is a parallel reasoning in the psychology literature on how human beings distribute attention (Hilgard, 1962; Morgan & King, 1971; Whittaker, 1965). First, one pays attention to those aspects of the world that relate to his motives, and satisfy his interests and values. For instance, when one is hungry, he is likely to be aware of restaurants in the city. This factor can be understood as one's internal motivation in their attention distribution. The second factor, however, is related to the intrusive characteristics of the stimuli themselves. Among all the objects, one is likely to notice those that are intrusive, such as bigger, more intense, contrasting, moving, and repetitive. Intrusive objects catch human eyes more easily.

As discussed in the Stage 1 model, other organizations in the environment exert influence on the focal firm (Aldrich, 1979; Pfeffer & Salancik, 1978). In this stage, a focal entrepreneurial venture's attractiveness to its established partner is determined by the number of other ventures that are already in the portfolio, a function of institutional density of such partnerships.

The notion of crowding underlies this argument. Consistent with prior research (Baum & Singh, 1994; Podolny, Stuart, & Hannan, 1996; Stuart, 1998), crowding reflects the degree to which an entrepreneurial venture's focus, either industry focus or geographical focus, is shared by many other ventures in the same alliance portfolio. Some ventures are in a crowded space within the alliance portfolio, where many other ventures also specialize and compete. In this case, they have more direct competitors and are undifferentiated in this portfolio. When density increases, the space will become more and more crowded. Here I again discuss density in terms of industry density and geographical cluster density, where the former reflects the number of already-committed ventures serving the same industry, and the latter reflects the number of already-committed ventures competing in the same geographical cluster.

Density of such partnerships in a certain industry will make this industry space crowded within the established firm's alliance portfolio. For the established firm, forming partnerships with entrepreneurial ventures serving a variety of industries reflects its ambition on all these fronts. When there are only few committed venture partners in a particular industry, the established firm will not feel that it has been successful in this industry yet. Out of its own interest, it will go to great lengths to support these venture partners, which are considered to be important pioneers in its effort in this industry.

Making these partnerships successful can substantially build a successful model for the still-hesitant ventures and create its positive reputation in this industry so as to attract subsequent partnerships. To this end, the established firm will be motivated to distribute a lot of attention to these ventures, and work with them more. These ventures, accordingly, can benefit more. In some sense, this is like “first-mover advantage” (Lieberman & Montgomery, 1988), where the first movers have the privilege to enjoy all the resources. However, in a crowded industry where the established firm already owns many committed venture partners, the established firm might feel that it has already been reasonably successful in this industry. In this case, the addition of another committed partner does not necessarily bring the same utility to it as the first few pioneer partners in this industry. As a result, the newly committed venture may not attract as much of its attention as its predecessors in this space.

Furthermore, when the number of committed ventures in the same industry grows, the newly-entered ones will find it more difficult to differentiate themselves from the already-committed ones. As the ones that committed earlier may have already covered all the sub-spaces, the newly-entered ones will find themselves overshadowed by many other ventures that exhibit similarities but occupied the space earlier. Therefore, ventures that enter the crowded industry space of the portfolio will not be as attractive to the established firm as those that enter a less crowded space. These ventures will typically find it more difficult to stand out and thus catch less attention from their established partner. This leads to the following hypothesis:

*H4a: Technology commitments to the established firm by other ventures within the industry will have a negative impact on the entrepreneurial venture's value creation from the partnership with the established firm.*

The same logic can be applied to the situation when entrepreneurial ventures enter a less crowded geographical space in the established firm's alliance portfolio. These ventures will appear more attractive to the established partner, as they enjoy "first-mover advantage" and are regarded as the pioneering endeavor by the established firm to achieve success in these particular geographical clusters. The established firm will greatly attend to these partnerships, and set them up as positive models in order to induce commitments from more ventures in these geographical clusters. However, the ventures that enter a crowded geographical space may not be as attractive, for they may only represent marginal utility to its established partner by the time they enter. Besides, it is more difficult for them to differentiate themselves when there are already many similar ventures specialized in the same geographical space of the portfolio. Thus, these ventures will find themselves less capable of competing for the established firm's attention. Therefore, the hypothesis is as follows:

*H4b: Technology commitments to the established firm by other ventures in the same geographic cluster will have a negative impact on the entrepreneurial venture's value creation from the partnership with the established firm.*

Importantly, the entrepreneurial venture's attractiveness as determined by the degree of institutional density is exogenous. That is, its attractiveness to the established firm is judged by its structural position in the alliance portfolio, which is a function of

other similar ventures. Below, I discuss three factors that determine the endogenous side of the venture's attractiveness.

### **Post-commitment Legitimacy**

An entrepreneurial venture's legitimacy level determines its attractiveness to the established firm. Specifically, ventures that enjoy a higher level of legitimacy are considered to be more attractive to the established firm. As noted earlier, legitimacy is the degree to which the broader public views a company's activities as socially acceptable and desirable (Suchman, 1995). Thus, when the entrepreneurial venture is perceived to have higher legitimacy, chances are that its products will be accepted more widely, more quickly, and more effectively than products of ventures of lower legitimacy, even after the similar endorsement by the established partner. As such, the established firm will find it more efficient and cost effective to collaborate with more legitimate ventures. In contrast, when the established firm collaborates with a venture of lower legitimacy, they may need to spend extra time and effort to convince the potential customers of the desirability of their joint product or services, thus slowing down the collaboration. This is certainly not to the interest of the established firm.

Moreover, a more legitimate firm demonstrates greater ability to obtain resources in general (Suchman, 1995). While the established firm can provide its venture partner with many valuable resources that are needed to create value from the partnership, such as technology support and marketing support, there are yet many other resources that are also critical to establishing an effective partnership but the established firm is not as capable of providing: for instance, human capital and financial capital of the venture. More experienced and talented human resources, including top managers and workforce,

can substantially add to the effectiveness of the partnership (Hambrick & Mason, 1984). Similarly, financial capital is also critical for ventures, so that they can fund various activities that can add to the effectiveness of the partnership. Research shows that ventures that appear more legitimate are able to recruit more high-quality human capital (Williamson, 2000), and are also able to raise more financial capital (Stuart et al., 1999). The ability of the venture to acquire various resources is conducive to the partnership, which is to the interest of the established firm. Thus, the venture will appear more attractive to the established firm, who will in turn distribute more attention to it. Thus, I propose the following:

*H5: An entrepreneurial venture that has a higher level of legitimacy will be able to create more value from the partnership with the established firm.*

#### **Post-commitment Resources**

An entrepreneurial venture's attractiveness to its established partner is also determined by its resource conditions. The ventures that possess better resources are able to attract more attention from the established firm. Again, ventures with better resource endowment can better meet the interest of the established firm, as they turn out to be more effective collaborators, and have better potential to make the partnership productive.

This argument hinges on the notion of absorptive capacity, which refers to the firm's ability to value, assimilate, and apply new resources and knowledge from the outside (Cohen & Levinthal, 1990; Zahra & George, 2002). Research has consistently shown that the capacity to absorb resources and knowledge from the outside is a function of the firm's *ex ante* resource level (Cockburn & Henderson, 1998; Cohen & Levinthal, 1990; Veugelers, 1997). Firms with a higher level of *ex ante* resources are in a better



position to appreciate the utility of external resources and transform them into internal use. In contrast, firms that are very scarce in resources themselves will find it difficult to recognize the value of outside resources as well as to exploit them effectively. This concept has also been applied to the context of inter-organizational partnerships, where researchers argue that a firm's resource condition determines the extent to which it can absorb and take advantage of the resources from its partners (Lane & Lubatkin, 1998; Mowery et al., 1998).

Applying the notion of absorptive capacity, I argue that entrepreneurial ventures that have better resources will be able to utilize the partner's resources more productively, and thus are regarded as more attractive partners to the established firm than ventures that are very slim in resources. Again, the two main resources that the entrepreneurial venture attempts to obtain from its established partner are technology and complementary resources. Thus, the venture's own levels of technology and complementary resources become important determinants. In the setting of Alpha Corporation's PNP, when an ISV is equipped with more engineers (one indicator of technology resources), chances are that it can understand the technical knowledge provided by Alpha Corporation more deeply and/or more quickly. Consequently, it can develop products that run on Alpha Corporation's technological platform more effectively and reduce the time-to-market. As this also benefits Alpha Corporation, it is motivated to give more time and attention to this ISV. Also, when the ISV has a larger marketing workforce (one indicator of complementary resources), it will be able, for example, to follow up more quickly with the leads generated from the joint tradeshow. This increases the chances as well as the speed of selling products jointly to the customers. Therefore, for its own interest, Alpha

Corporation will purposefully pay more attention to this venture and expedite cooperation with it. This line of argument leads to the following hypothesis:

*H6: An entrepreneurial venture that has a higher level of resources will be able to create more value from the partnership with the established firm.*

Thus far, the reader might notice that for the variables of institutional density, legitimacy level, and resource level, the prediction for the first stage outcome is exactly the opposite to the prediction of the second stage outcome. Indeed, besides the different lines of logics underlying these predictions, the times when these variables are observed are also different. In the first stage, the variables are observed as pre-commitment variables, whereas in the second stage, they are post-commitment variables.

### **Collaborative Scope**

The attractiveness of the entrepreneurial venture to its established partner is also gauged by the scope of collaboration. The venture that has a broader collaborative scope with the established firm has more potential to create value from the partnership. This benefits not only the venture, but the established firm as well. Thus, the established firm is motivated to pay more attention to this venture.

As identified in the prior literature, collaborative scope in a partnership is often seen as a multidimensional construct (Oxley & Sampson, 2004). First, there is the vertical scope of collaboration. This refers to the extent to which the partners combine multiple and sequential functions or value chain activities within the alliance, including research and development, manufacturing, and marketing. Due to its relative ease of measurement, prior studies tend to adopt this conceptualization (Oxley & Sampson, 2004; Reuer, Zollo, & Singh, 2002). In addition, there is also the horizontal scope of collaboration. This is

typically related to the size, functional areas, and complexity of the collaborative activities. In this study, I focus on the horizontal scope of collaboration. In my empirical setting, this is where the major variation lies among different entrepreneurial venture partners. While scholars point out the challenge of studying horizontal alliance scope due to lack of data and subjectivity (Oxley & Sampson, 2004), my empirical setting enables me to examine this construct.

In particular, I discuss two types of horizontal scope: scope of technology collaboration and scope of market collaboration. The former refers to the number of technological subfields for which the entrepreneurial venture collaborates with the established firm, and the latter refers to the number of submarkets for which they cooperate. The arguments for both of these dimensions are similar—having a broader scope of collaboration, either in technology or in market, will make the entrepreneurial venture more attractive to its established partner.

A broader collaborative scope implies multiple collaborative efforts among the partners and thus provides a larger base for value creation. Outcomes of partnerships are often conceived of as being highly uncertain (Gulati, 1998). Given the odds of any one collaborative effort turning into a successful outcome, it follows that multiple collaborative efforts between two partners would only increase the overall chances of success and value creation. For instance, for an entrepreneurial venture that collaborates with the established firm in more than one submarket, the partnership has a higher chance of value creation than a case where the venture works with the established firm in just one submarket. This is so because even if the collaboration does not succeed in selling products in one market, there is still the chance that their joint efforts will succeed in

another market. For the established firm, collaborating with these ventures proves more efficient.

In addition, when an entrepreneurial venture has a broader scope of collaboration with the established firm, there is a potential to realize economies of scope. Economies of scope refer to a firm's ability to leverage expertise in one domain to other domains by resource sharing and knowledge spillover (Gimeno & Woo, 1999; Henderson & Cockburn, 1996). Here I posit that in the context of partnership between two firms, collaboration in multiple domains will also have the effect of resource sharing and knowledge spillover. Here is one example of this spillover. Once the two partners have become familiar with each other's processes through collaboration on one piece of technology, this can save costs when they collaborate on another piece of technology. As they are already geared into each other's general processes, they can avoid the confusion that can take place in a first-time collaboration, and they can save extra efforts in resolving such confusion. Therefore, for the established firm, partnering with a venture along two pieces of technologies will be more cost effective than partnering with two ventures on one piece of technology each. Ventures that have a broader collaborative scope turn out to be more attractive to the established firm. Hence, they are more likely to get attention. For these reasons, I posit the following:

*H7a: An entrepreneurial venture that has a greater scope of technology collaboration with the established firm will be able to create more value from the partnership.*

*H7b: An entrepreneurial venture that has a greater scope of market collaboration with the established firm will be able to create more value from the partnership.*

In sum, in this section I have identified factors that account for an entrepreneurial venture's attractiveness to its established partner. I also differentiate exogenous attractiveness and endogenous attractiveness. Importantly, the degree of attractiveness determines the amount of attention and support that the venture is able to get from its established partner, and thus the degree to which the venture can leverage value from the partnership.

### **3.2.2. Proactiveness**

While a venture's attractiveness hinges on its potential to serve the established firm's values and interests, proactiveness involves its intentionality to be "intrusive" and demand attention from its established partner. Proactiveness, in a more general level, is considered to be one dimension of a firm's entrepreneurial orientation (Lumpkin & Dess, 1996). It emphasizes a firm's initiatives, vision, and forward-looking perspective (Miller & Friesen, 1978; Penrose, 1959). According to prior research, proactiveness accounts for a firm's tendency to engage in exploring opportunities for innovative and new-venturing activities in anticipation of future needs (Covin & Slevin, 1989; Lumpkin & Dess, 1996).

I employ this construct in the setting of inter-organizational partnerships. In this context, I conceptualize proactiveness as an entrepreneurial venture's initiatives, vision, and forward-looking perspective to take control of the partnership. In particular, it refers to an entrepreneurial venture's proactive exploration and exploitation of opportunities to approach and engage its established partner. As such, it is a behavioral construct. Proactive behaviors serve as a mechanism through which the venture purposefully demands attention from its established partner.

In general, proactive ventures take the perspective that the success of the partnership is up to themselves more than to the partner, and that it is their own initiatives that make a difference. Proactiveness takes on many forms in the context of a partnership. Proactive ventures, for instance, attend most, if not all, activities invited by its partner; make efforts in networking with executives and key managers within the partner; go to great lengths to build high quality interpersonal relationship with the partner's counterparts; spend extra time evangelizing their products and advantages to the partner; and essentially, create every opportunity possible to get the partner involved. If we consider proactiveness as a continuum, the conceptual opposite of proactiveness is passiveness (Lumpkin & Dess, 1996). Passive ventures, in this context, are those who tend to think that the partner plays a more important role in the partnership and count on the partner for the success of the partnership. Accordingly, they show few initiatives of their own in the partnership.

Being proactive is especially important for entrepreneurial ventures in partnership with established firms. As noted earlier, the established firm typically has a large alliance portfolio, and many of its venture partners appear similar. Therefore, those ventures who take purposeful actions to approach and engage the established partner are able to differentiate themselves and leave stronger impressions. Consequently, these ventures will be better noticed and attended to, and thus, be able to derive more value from the partnership.

However, being proactive with the established partner is not necessarily intuitive to all entrepreneurial ventures. A venture, which is short of resources and legitimacy, would tend to take it for granted that, with prestige and a wealth of resources, its

established partner should lead the partnership. For instance, the established firm typically has a large customer base, and the venture could easily justify the idea that it is its partner's, rather than its own's, job to look for a customer for their joint product. Entrepreneurial ventures vary in their degree of proactiveness with the partnership. In general, researchers have found variation in ventures' entrepreneurial orientation, and proactiveness is one of the dimensions (Lumpkin & Dess, 1996). In this context, the source of variation in ventures' proactiveness could be manifold. For instance, characteristics of organizational leaders can make a difference (Hambrick & Mason, 1984). Top managers that are with more self-efficacy and with internal locus of control are likely to take on partnership strategies that are more proactive. Also, a VC-backed venture is typically more proactive, as VCs are often educators that can urge the venture to be more entrepreneurial and proactive.

In sum, proactive behaviors in the inter-organizational collaboration are especially important for an entrepreneurial venture to capture attention from its established partner, and in turn to create value from the partnership. To put it more formally:

*H8: An entrepreneurial venture that is more proactive in the collaboration with the established firm will be able to create more value from the partnership.*

### **3.2.3. Interactions between Proactiveness and Attractiveness**

So far, I have argued that entrepreneurial ventures that are either attractive to the established partner or proactive in the partnership are able to receive more attention from the partner, and this enhances their value creation from the partnerships. In this section, I further argue that these two sets of factors have an interaction effect. In particular,

proactiveness will have different directions of interaction with exogenous and endogenous attractiveness.

Exogenous attractiveness is determined by environmental/institutional factors rather than firm-specific factors. In particular, it is determined by institutional crowding. If the focal entrepreneurial venture is among the few ventures in the industry or in the geographical cluster that have made technology commitments to the established firm, it is one of the few footholds that the established firm has in the course of building its presence in that industry or in that geographical cluster. The established firm's attention will be quite focused on these venture partners, and they are already highly visible to it. In this case, the venture's proactiveness that aims to increase visibility and demand attention from the established firm does not necessarily have a strong effect, as it is already in the favorable uncrowded institutional structure.

However, proactiveness becomes more effective when its established partner's attention is diluted among many committed ventures in the industry or in the geographical cluster. The venture that enters a crowded space in the alliance portfolio is likely to be unnoticed, as it only represents marginal utility to its established partner compared with its predecessors in this industry or geographical cluster. In this case, taking proactive actions to demand attention can significantly increase its visibility to the established firm, and thus the venture can get much more attention than if it were not proactive.

Taken the above arguments together, for entrepreneurial ventures, the payoff of being proactive in the case of a crowded structure is more than the payoff of being proactive in the case of an uncrowded structure. Being proactive can help the



entrepreneurial venture overcome the disadvantage of being less attractive as a result of unfavorable institutional structure. In other words, proactiveness can substitute for exogenous attractiveness. Thus, I propose the following:

*H9a: An entrepreneurial venture's proactiveness will weaken the negative relationship between industry density and the venture's value creation from the partnership.*

*H9b: An entrepreneurial venture's proactiveness will weaken the negative relationship between geographical cluster density and the venture's value creation from the partnership.*

In contrast to exogenous attractiveness as determined by environmental/institutional factors (i.e., other ventures in the alliance portfolio), endogenous attractiveness originate from factors that are specific to the firm. The endogenous attractiveness reflects the internal quality of the venture. In this context, it is accounted for by the venture's level of legitimacy, level of resources, and collaborative scope in the partnership. Unlike the venture's exogenous attractiveness which is directly visible to its established partner, the internal quality of the entrepreneurial venture is oftentimes not immediately obvious to its established partner. Thus, the venture's proactive behaviors can enhance the visibility of its internal quality to the established firm through initiatives in approaching and engaging the partner. A venture of higher internal quality will benefit more from this increased visibility than a venture of lower internal quality. Because a higher quality venture better serves the interest of its established partner, once this high quality is discovered by the established firm, it will in

turn pay even more attention to this venture, and give more support to it out of its own interest.

However, when the venture is of lower internal quality, even though taking proactive actions to approach and engage the established partner will increase the amount of attention from the latter, this increase in attention is limited. This is because through these proactive behaviors and interactions, the venture at the same time makes its low internal quality more visible to the established firm. It may reinforce the established firm's judgment that the venture is not attractive enough, and thus is not worth more of its attention.

Therefore, being proactive with the partnership can generate a better payoff when the venture is endogenously more attractive to the partner. In other words, by making its high internal quality more visible to the partner, proactive behaviors can magnify the effect of endogenous attractiveness on the venture's ability to gain attention from its established partner. A more endogenously attractive venture with more proactive behaviors can get the highest amount of attention from the established firm. Putting this argument for all the individual aspects of endogenous attractiveness respectively, I have the following hypotheses:

*H10: An entrepreneurial venture's proactiveness will strengthen the positive relationship between its legitimacy level and its value creation from the partnership.*

*H11: An entrepreneurial venture's proactiveness will strengthen the positive relationship between its resource level and its value creation from the partnership.*

*H12a: An entrepreneurial venture's proactiveness will strengthen the positive relationship between its scope of technology collaboration with the established firm and its value creation from the partnership.*

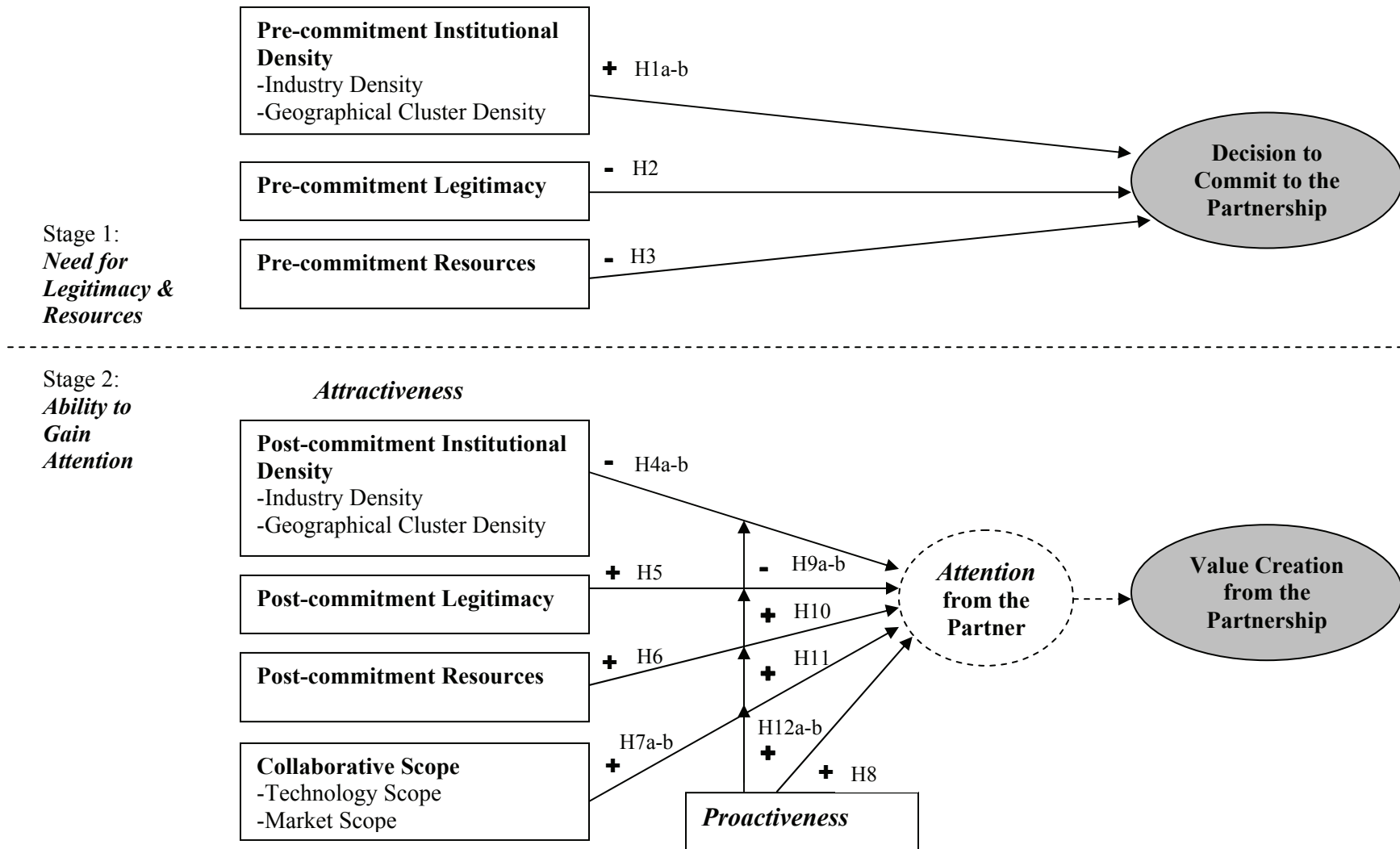
*H12b: An entrepreneurial venture's proactiveness will strengthen the positive relationship between its scope of market collaboration with the established firm and its value creation from the partnership.*

So far, I have laid out the theoretical framework for the second research question.

To recap, at this stage, it is the entrepreneurial venture's ability to capture the attention of its established partner that determines its value creation from the partnership. Ventures that are in a less crowded institutional structure and have greater legitimacy, resources, and collaborative scope will be more attractive to the established firm, and thus are likely to get more attention. Ventures that are more proactive in the collaboration are likely to get more attention. In turn, proactiveness is particularly helpful when the venture is less attractive being in a crowded institutional structure, as well as when the venture is more attractive with greater legitimacy, resources, and collaborative scope.

Figure 3 summarizes the theoretical framework for both stages of this phenomenon.

**Figure 3: A Two-Stage Model of an Entrepreneurial Venture's Partnership with an Established Firm**



## CHAPTER 4: METHODS

This study is composed of two phases. In the first phase, I conducted interviews with both a number of ISVs in the PNP and some people in Alpha Corporation that have responsibilities toward the PNP. The goal of the first phase was to get to know the field setting better and to look for grounded answers to the research questions. After I developed the theoretical framework, I started the second phase to empirically test the model with a large dataset.

### 4.1. Field Interviews

I conducted 22 interviews in total, including 12 interviews with ISVs, and 10 with people in Alpha Corporation. The 12 interviewees on the ISV side were their main contacts in Alpha Corporation's PNP. Their titles were typically VP-corporate development, and in two cases CEO. Three of them were also founders/co-founders of their firms. Out of the 12 ISVs that I interviewed, 7 were in the Healthcare & Life Science (HCLS) industry, 2 in the Retail industry, and 3 in the Software-As-A-Service, one of the Emerging Business Opportunities (EBOs) identified by Alpha Corporation<sup>4</sup>. Out of the 9 ISVs that were in the two industry verticals, 5 of them were already at the Tier-3, 3 are at the Tier-2, and 1 at the Tier-1.

On the side of Alpha Corporation, since the PNP is a joint effort of two of their groups—the ISV & Developer Relations Group and the Sales & Distribution Group—I interviewed people from both groups. The ISV & Developer Relations Group is largely focused on the strategic planning of PNP, such as setting up the directions and rules for

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<sup>4</sup> EBOs are Alpha Corporation's cross-industry infrastructure initiatives. Other examples of EBOs include autonomic computing, pervasive computing, and digital media. EBOs have not been fully aligned into the PNP yet. Therefore, in phase 2 of this study I only focus on industry verticals that are already in PNP. However, ISVs in EBOs face situations similar to those that have already been aligned in industry verticals. Therefore, they are included in the qualitative analysis in phase 1.

the PNP and recruiting ISVs into the program. The Sales & Distribution Group is mainly composed of client executives that champion ISVs within Alpha Corporation and work with them to go to the market. In the former group, I interviewed one senior PNP manager, one manager that is responsible for HCLS industry in the PNP, and two field recruiting managers. In the latter group, I interviewed one manager that sits in the HCLS industry, and three client executives that work directly with ISVs for product development and market initiatives, whose names were obtained from the ISVs we interviewed. Table 2 summarizes the organizations in which these interviewees are situated.

**Table 2: Summary of Interviewees**

	Group		# interviews
ISV	HCLS	Tier-3	4
		Tier-2	2
		Tier-1	1
	Retail	Tier-3	1
		Tier-2	1
	Software As A Service		3
Alpha Corporation	ISV and Developer Relations		6*
	Sales & Distribution (ISV client executives)		4
Total			<b>22</b>

\*I interviewed one manager of this group three times, so the distinct number of interviewees in this group is 4.

All interviews were conducted over the phone, and lasted between 45 minutes to 1.5 hours, with an average length of about one hour. I tape-recorded the interviews<sup>5</sup>, and transcribed them. In all cases, I stressed to the interviewees that all data would be treated as highly confidential, and would not be shared with anyone inside or outside Alpha Corporation. The interviews were semi-structured. I started with a list of protocol questions. Sometimes I went deeper into some questions for more clarification or tailored

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<sup>5</sup> There are three interviews with one senior PNP manager that I was not able to tape record. However, I took detailed notes.

questions to the specific situation. I also gave the interviewees opportunities to discuss additional issues that they considered relevant.

Before interviewing each ISV, I went through its website thoroughly to become familiar with its background information, which helped me save time and ask more tailored questions during the interview. The interviews with the ISVs revolved around 4 topics: 1) nature of the partnership, 2) choice of the partnership, 3) effect of the partnership, 4) evolution of the partnership. Examples of interview questions for ISV informants are attached in Appendix 1.

On the Alpha Corporation side, I have gone through its executive reports and all its press releases in the past five years to gain an idea of how its strategies and partnership programs have evolved. For the first three interviews with Alpha Corporation, the main purpose was to get to know the following: 1) the context, purpose, and scale of its PNP, 2) the strategic structure and design of the PNP, 3) Alpha Corporation's internal organization and responsibilities with regard to this program. Later interviews were more focused on getting information and perspectives on the relationships between Alpha Corporation and ISVs. Examples of interview questions for Alpha Corporation are attached in Appendix 2.

For each of the 12 ISVs that I interviewed, I wrote a case as the basis for qualitative analysis. Appendix 3 contains a sample case write-up. In each case, I first summarized its background information, which is mostly collected from its website and, to a lesser extent, from Alpha Corporation's archive. I then organized the raw interview data under the following topics: 1) evolution of the partnership with Alpha Corporation; 2) choice of Alpha Corporation as a partner; 3) operation of the partnership with Alpha

Corporation; 4) benefits from the partnership with Alpha Corporation; 5) risks and challenges for the partnership with Alpha Corporation; 6) advantages and strategies in partnering with Alpha Corporation.

The interviews and the qualitative phase have greatly familiarized me with the field setting. This phase also helped me shape the hypotheses to be tested in answering the two research questions. Below, I provide some examples where the interviews have informed the hypotheses outlined in the previous section.

When talking about their motivation to join the PNP and make technology commitments to Alpha Corporation, the ISVs all pointed to their inherent need for legitimacy and resources, and the prospect that partnership with Alpha Corporation would meet this need. For instance, one ISV said, *“We are such a teeny company. Just having our name listed on their website gives us so much visibility.”* For some committed ISVs, they put the logo of “Alpha Corporation Business Partner” at the most eye-catching place on their websites as an important signal to their various stakeholders. The notion of institutional pressure on their decision to commit was also implied in the interviews. For instance, one of them mentioned, *“I gave pressure to my main competitor by announcing the partnership with Alpha Corporation. He was so tensed about how come I became a partner of Alpha Corporation.”* That competitor later also became a partner of Alpha Corporation. The ISVs were also attracted by Alpha Corporation’s wealth of resources, which serves as another motivation for them to seek partnership with it. As one of them said, *“Partnering with Alpha Corporation is like a one-stop shopping. They have technology, marketing, customers...It has virtually all the ingredients we need.”*



After an ISV has made a technology commitment with Alpha Corporation and entered its alliance portfolio, it is then subject to the competition for Alpha Corporation's attention in order to gain access to its resources and create value from the partnership. The competition effect is implied from interviews with both the ISV and the Alpha Corporation sides. One client executive in Alpha Corporation told me that he worked with forty ISVs at the same time, and he acknowledged that he prioritized his time and effort to some of them rather than attending to each of them equally well. According to him, *"I have tons of ISVs to work with. Some got to take me more time than the others. I try to know all of their products well, but obviously this is not the truth."* In fact, ISVs are also aware that they are just one of the many partners that Alpha Corporation is teaming up with. One of them said, *"Every time I talked with Alpha Corporation, they say, 'Oh, we got so much business, we got so many players, we got so many ISVs banging on our door.'"* Conceivably, the client executives have limited time and energy that they can spend with ISVs. ISVs that have entered the portfolio thus receive different degrees of attention and thus different degrees of resource access from Alpha Corporation. This, in turn, accounts for the variation in the ISVs' value creation from the partnerships.

The interviews also give evidence as to which ISVs Alpha Corporation and its client executives are likely to pay more attention. First of all, client executives in Alpha Corporation emphasized that they are revenue-driven, as this is part of how their performance is evaluated. Consequently, their attention is directed to the ISVs that are perceived to have the best potential to create value for Alpha Corporation. When ISVs are among the few partners that Alpha Corporation has in a certain industry or geographical cluster, they will be regarded as important partners and get more attention.

For instance, one ISV said, *“Alpha Corporation has given us a surprising amount of attention because this industry just didn’t have a lot of partners yet.”* In addition, according to Alpha Corporation’s client executives, the ISVs’ individual level of quality matters in the process of competition for attention. Interviews with client executives reveal that ISVs’ individual resources and legitimacy are indicators of their quality. *“Definitely, with product advantage recognized in the market, ISV can get more out of the partnership.”* *“If the ISV is partnering with Microsoft, we will be even more interested in it, because it has .NET customers and we can turn those customers into our platform.”* Obviously, ISVs with higher legitimacy and greater resources are attractive partners as perceived by Alpha Corporation.

The interviews further suggested that ISVs’ proactive behaviors can make an important difference in their competition for Alpha Corporation’s attention. As its client executives emphasize a number of times, *“We have ISVs that are more active than others. We offer the same benefits to all of them... We did the demand generation for all, and not all took part in it, so we are going to accelerate with some... They all have the same opportunity building the personal relationship as one of their benefits. We had them meet with our general manager. Some of them came, and some of them didn’t. So I mean, at that point, it’s really up to them to make the difference.”* Overall, these interviews have tremendously helped to clarify the context and have informed the theory with regard to the study of this phenomenon.

## **4.2. Quantitative Test**

### **4.2.1. Sample Selection**

Phase 2 is designed as a quantitative study to test the hypotheses developed earlier. The sample for the quantitative test is selected from two industry verticals in Alpha Corporation's PNP. These two industries are Healthcare & Life Science (HCLS) and Retail. The reason for choosing these two industries is that they were among the first industries in Alpha Corporation's PNP when it was formally launched in March, 2004. Compared with industry verticals that were launched later, these two industries had already attracted a large number of ISVs into Alpha Corporation's portfolio by the time I started this study. And the number of ISVs that had already upgraded to the Tier-2 was larger, thereby giving me a large pool for sampling.

### **Sample for Stage 1**

The first research question, entrepreneurial ventures' decision to commit to the partnership with the established firm, is studied using only archival data. To select samples for this question, I started with all the ISVs that joined the HCLS and Retail verticals of the PNP before March 1, 2005, exactly one year after the program was launched. I observed their status in the PNP by July 1, 2005. This gives me a minimum of four-month window to observe an ISV's status change in the PNP. As will be shown later in Table 4, the average length of time that it took an ISV to make a commitment decision is about three months, if the ISV decided to commit. Thus, four months is a reasonably long time window to stop observing the sample. However, later I will point out that I will use event history analysis that will take into account the right censored data. Also, focusing on ISVs that had upgraded to Tier-2 by July 1, 2005 allowed the ISVs to have at least a six-month tenure in the PNP by the time I delivered the questionnaire in December

2005. According to a number of interviewees, six months is a minimal time period to observe the value creation from the partnership.

In the HCLS vertical, a total of 754 ISVs joined the PNP before March 1, 2005. By July 1, 2005, 252 of these had already upgraded at least to Tier-2 (i.e., made technology commitments to Alpha Corporation). Out of these 252, 48 of them went further onto Tier-3. From this pool of 754 ISVs, I randomly selected 100 Tier-1 ISVs, and selected all 252 ISVs that had made technology commitments to Alpha Corporation (including 204 Tier-2 ISVs and 48 Tier-3 ISVs). The reason why I selected more committed ISVs than non-committed ISVs was that my second research question would be studied only with the sub-sample of those committed ISVs (i.e., ISVs at the Tier-2 or higher). Selecting more committed ISVs would allow me to have a big enough sample size for the second research question. In total, 352 ISVs were selected from the HCLS vertical.

In the Retail vertical, altogether 748 ISVs joined the PNP before March 1, 2005. By July 1, 2005, 211 of them had upgraded to Tier-2 (i.e., made technology commitments to Alpha Corporation). Out of these 211, 23 went further onto Tier-3. The same selection criteria for the HCLS vertical were applied to this Retail vertical. From a pool of 748 ISVs, I randomly selected 100 Tier-1 ISVs, and selected all 211 ISVs that had made technology commitments to Alpha Corporation (including 188 Tier-2 ISVs and 23 Tier-3 ISVs). In total, 311 ISVs were selected from the Retail vertical.

Putting the selected ISVs from the two verticals together, 71 of them were duplicates, as they participated in both verticals and had been selected from both industries. I thus dropped these duplicate records. I further dropped 38 ISVs that could

not be justified as entrepreneurial ventures. These ventures were either bigger than the 500-employee size, or were founded prior to 1970. Additionally, 11 ISVs were dropped because of too many missing data. Therefore, a total of 543 ISVs were in the sample to test the theoretical framework of Stage 1—the decision to commit to the partnership.

Table 3 depicts the sampling steps.

Out of these 543 ISVs in the final sample, 192 ISVs were at the Tier-1, 290 ISVs were at the Tier-2, and 61 ISVs were at the Tier-3. Also, 278 of these 543 ISVs were from North America (including 250 US firms and 28 Canadian firms), 228 from Europe, 26 from Asia Pacific, 7 from Latin America, and 4 from the Middle East. In addition, out of these 543 ventures, 48 of them were public, 98 were VC-backed private, while the remaining 397 were non-VC-backed private. Ten of them were spun off from other companies, and 20 of them were divisions of their parent companies. Figure 4 describes the composition of the sample for the Stage 1 test.

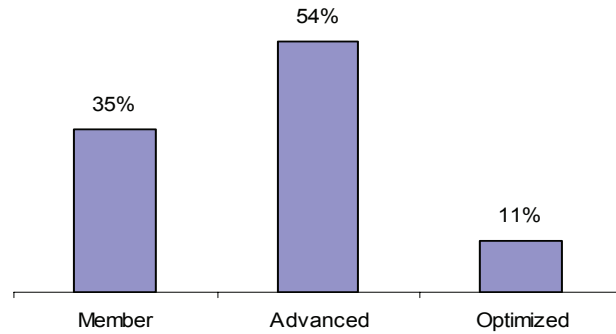
Table 3: Sampling Steps (Stage 1)

Steps	HCLS			Retail		
	Tier-1	Tier-2	Tier-3	Tier-1	Tier-2	Tier-3
1. ISVs that joined PNP by 3/1/2005	754			748		
2. Level of these ISVs by 7/1/2005	502	204	48	537	188	23
3. ISVs selected to the sample	100 (randomly selected)	204 (all)	48 (all)	100 (randomly selected)	188 (all)	23 (all)
4. Less 71 ISVs that were duplicate (in both verticals)	$(100+204+48)+(100+188+23)-71=592$					
5. Less 38 ISVs that could not be justified as entrepreneurial ventures	$592-38=554$					
6. Less 11 ISVs that had too many missing data	$554-11=543$					
7. ISVs in the sample for Stage 1 test	<b>543</b>					

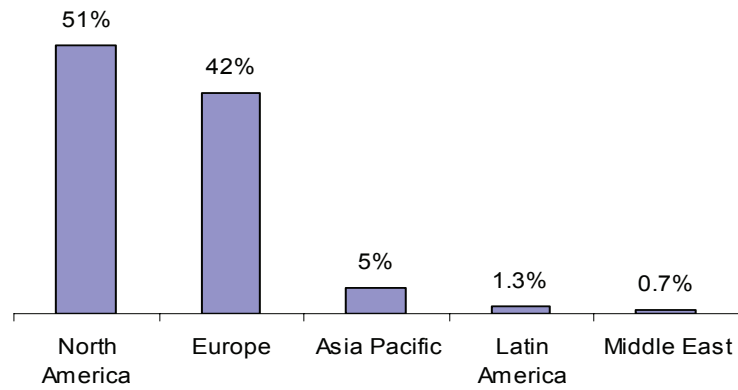
**Figure 4: Sample Composition (Stage 1)**

**n=543**

In terms of status in the PNP:



In terms of geographical location:



In terms of funding status:

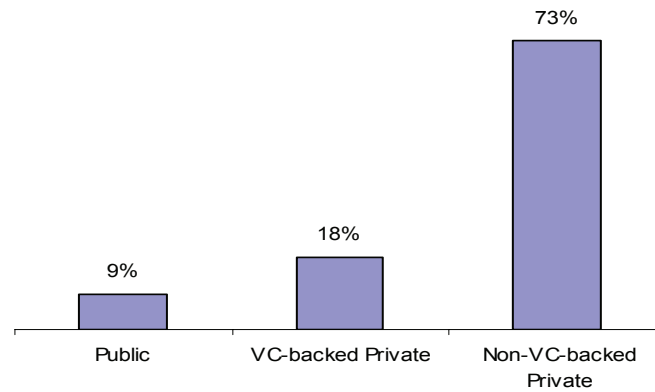


Table 4 provides the statistics for the committed ISVs: the length of time it took the ISVs to make the commitment decision, or more specifically, the number of days it took these ISVs to upgrade from Tier-1 to Tier-2. On average, it took about 3 months for an ISV to make the commitment decision, if it chose to do so.

**Table 4: Number of Days from Tier-1 to Tier-2**

	<b>Range</b>	<b>Mean</b>	<b>S.D.</b>
<b>HCLS</b>	0~369	103.28	82.44
<b>Retail</b>	0~392	90.49	71.22

Note: These statistics are based on the ISVs in the sample for the Stage 1 test that had made technology commitments to Alpha Corporation by July 1, 2005.

### **Sample for Stage 2**

The second research question, entrepreneurial ventures' value creation from the partnership, is studied only with the ISVs that had already made the commitments to Alpha Corporation. Also, it involves not only the archival data, but also data collected from a web-based survey. Therefore, the sample for this question is a sub-sample of the one for the first research question.

First, out of the sample for the first research question, I picked ISVs that had already made the technology commitments to Alpha Corporation by July 1, 2005, which came to a total of 351 firms. Then, I picked ISVs that could be communicated with in English, because the web-based survey was in English<sup>6</sup>. Out of the 351 committed ISVs, 272 are from English-communicating countries, so these 272 ISVs were delivered the web-based survey. Alpha Corporation records the contact information of three categories of point persons—executive contacts, marketing contacts, and administrative contacts.

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<sup>6</sup> Alpha Corporation identifies ISVs from a number of countries as English-communicating, including Australia, Belgium, Bulgaria, Canada, Denmark, Finland, Hungary, Iceland, Indonesia, Ireland, Israel, Malaysia, Netherlands, Norway, Philippines, Romania, Singapore, South Africa, Sweden, Taiwan, Turkey, Ukraine, the United Kingdom, and the United States.

For some ventures, these are the same persons, and for the others, these are different persons. These contact persons are mostly top-level executives of the ISVs, such as CEO, VP, President, and Managing Director. Alpha Corporation provided me with the contacts of all the point persons for each company. For these 272 ISVs, there were a total of 535 contact persons—on average 2 contact persons per company. I thus sent survey invitation to all 535 contact persons. The reason to contact multiple point persons was to get a validity check on some key variables.

All the contact information is considered by Alpha Corporation to be confidential. In order to better reach these firms and individuals, my emails to the surveyees were preceded by an email sent from a senior manager in Alpha Corporation who is in charge of the entire partnership program. That email was to introduce this research project by the University of Maryland, and encourage the ISVs to participate. One day later, I sent out a personalized email to each of the contact persons and provided them with the web link for the survey. I also sent out two reminder emails in the following two weeks. Out of the 535 individuals (in 272 firms) that I contacted, 31 emails were undeliverable. This is either because the company went out of business or was acquired and therefore no longer existed, or the person may have left the company. Out of the 272 ISVs that I contacted, 14 of them were not reached at all, as none of their point persons were reached.

Altogether, 144 individuals from 115 ISVs filled out the survey. For 25 firms, I received more than one response. The response rate at the individual level was  $140/535=27\%$ , and the response rate at the firm level was  $115/272=42\%$ . There is one important reason why the individual-level response rate is lower than the organization-level response rate. Since many of them are very small companies, the individuals could



easily find out that their colleagues had also received the same request for filling out the survey, and therefore discarded this email when they knew that their colleagues had already filled out the survey. I received quite a number of replies telling me that their colleagues had filled out or were going to fill out the survey, so they would not do this redundant task. I replied by explaining to them the importance of multiple responses in this academic study and still requested them to fill out the survey, and a few of them did. As such, I can assume that yet another number of individuals had the intention to fill out the survey, but failed to do so because they thought their colleagues' responses were already sufficient.

For the 25 ISVs for which I received more than one response, I collapsed the responses when I calculated the variables, including the most important variable "value creation from the partnership." As will be discussed later in the measurement section, the responses from multiple individuals were highly consistent, with a very high ICC index. This, hence, also lends credibility to the responses of the other firms for which there was only one responding person.

I performed two sets of tests to check for the non-response bias. First, I compared the ventures that filled out the survey with those that did not filled out the survey. I compared their age ( $F=.056$ ,  $p=.813$ ) and funding status (for "public",  $F=.659$ ,  $p=.417$ ; for "VC-backed",  $F=.000$ ,  $p=.989$ ). The t-tests do not show a significant difference between the responded ventures and the non-responded ventures. Second, I recorded the order of the ventures' responses to the survey (i.e., an indicator of how soon the ventures responded to the survey). I ran the correlation of the response order with the ventures' age ( $r=.022$ ,  $p=.758$ ), funding status (for "public",  $r=.049$ ,  $p=.528$ ; for "VC-backed",  $r=-$

.01,  $p=.906$ ), number of employees ( $r=.216$ ,  $p=.155$ ), revenue ( $r=-.007$ ,  $p=.922$ ), and growth rate ( $r=.071$ ,  $p=.331$ )<sup>7</sup>. None of these correlations are significant, so it suggests that there is no significant difference between early responding ventures and late responding ventures. The reason why, in the first set of tests, I did not compare the responded ventures and non-responded ventures along their number of employees, revenue, and growth rate is that these three variables were collected through the survey, not through the public archives. Overall, these two sets of tests do not show a non-response bias in this sample.

Out of the 115 firms that had filled out the survey, data from 112 firms are usable. Thus, the final sample for the second research question consists of 112 ISVs. Among them, 93 ISVs were at the Tier-2, and 19 at the Tier-3. Also, 78 of them were from North America (including 70 US firms and 8 Canadian firms), 27 from Europe, 5 from Asia Pacific, and 2 from the Middle East. Furthermore, out of these 112 firms, 12 were public, 29 were VC-backed private, and 71 were non-VC-backed private. Three of them were divisions of their parent companies. Table 5 details the sampling steps for the second research question, and Figure 5 describes the sample composition.

**Table 5: Sampling Steps (Stage 2)**

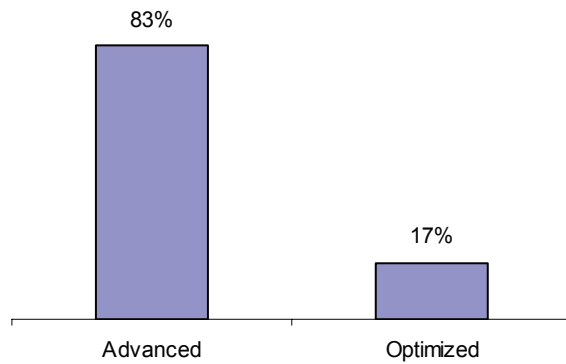
<b>Steps</b>	<b>Number of ISVs</b>
1. ISVs in the first sample	543
2. Out of the above, ISVs that had made technology commitments to Alpha Corporation by 7/1/2005	351
3. Out of the above, ISVs that could be communicated in English	272
4. ISVs to whom the web-based survey was sent	272
5. Out of the above, ISVs that completed the survey	115 (42% response rate)
6. Out of the above, ISVs whose survey responses are usable	<b>112</b>

<sup>7</sup> For ventures from which I received multiple responses, I recorded their response orders based on their first response.

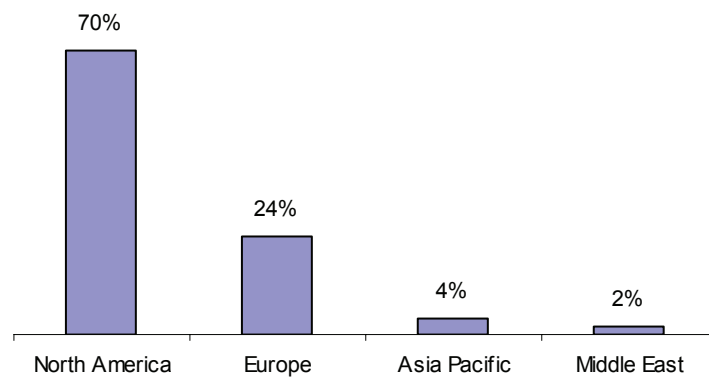
**Figure 5: Sample Composition (Stage 2)**

**n=112**

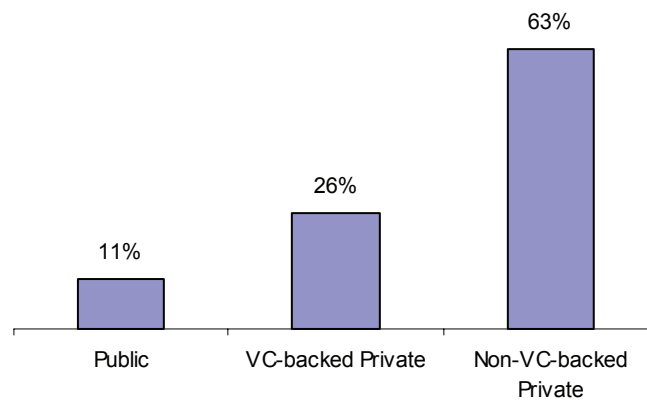
In terms of status in the PNP:



In terms of geographical location:



In terms of funding status:



## 4.2.2. Analytical Methods

### Analysis for Stage 1

Hypotheses 1 to 3 examine the stage 1 phenomenon—the entrepreneurial venture’s decision to make a technology commitment to the established firm. These hypotheses were tested in the sample of 543 ISVs in Alpha Corporation’s PNP. I used discrete-time event history analysis, in particular, a random effect logit model on the longitudinal data that were structured on a monthly basis.

$$\text{logit}(p) = \ln [p/(1-p)]$$

where  $p$  is the probability of an event occurrence. The logit value ranges from negative infinite to positive infinite. A bigger logit value reflects a higher probability of the event occurrence.

In this study, the logit model was used in a longitudinal setting. Each ISV was observed monthly from the month when it signed up as a Tier-1 partner in the PNP till the month it upgraded to the Tier-2. If the ISV had not upgraded to the Tier-2 by July 1, 2005, the end of my observation period, it was treated as a right censored case. Among the 543 ISVs in the sample, the shortest observation period was 1 month, the case where the ISV upgraded to the Tier-2 in the same month it signed on as a Tier-1 partner. The longest observation period was 16 months. In this case, the ISV signed on as a Tier-1 partner in March 2004, the month when the PNP was first launched, but still had not upgraded to the Tier-2 by July 1, 2005. As noted earlier, for those ISVs that chose to upgrade, the average time of their decision was about 3 months. Observing the 543 ISVs on a monthly basis yielded a total of 3407 observations.

The discrete-time model assumes that the events of interest occur at discrete time points. It is often used to approximate continuous-time models particularly when the data for the exact moments of the events are, practically, not precisely recorded (Box-Steffensmeier & Jones, 2004; Yamaguchi, 1991). Besides, the discrete-time model has an advantage over continuous-time models with Cox's method in the handling of ties. Events are tied when two or more subjects in the sample have the event at the same time. The presence of many ties can lead to a serious bias in parameter estimates when using Cox's method. But the discrete-time model can handle ties without introducing bias in parameter estimates (Box-Steffensmeier & Jones, 2004; Yamaguchi, 1991). In my case, the events (i.e., the ISVs' upgrading to the Tier-2) were recorded on a monthly basis, so the data were closer to the continuous-time observation than the data recorded on a yearly basis, as with most of the studies employing discrete-time models (e.g., Pollock, Fischer, & Wade, 2002). Therefore, in my case, using the discrete-time model with the monthly data can better approximate continuous-time models. On the other hand, there are many ties in my case (i.e., in many cases, more than one ISV upgraded on the same day), so using the continuous-time Cox model will introduce bias into the estimation. For these reasons, I used the discrete-time logit model.

I chose random effect over fixed effect in the logit regression for both conceptual and technical reasons. Conceptually, fixed effect assumes that differences across units can be captured in differences in the constant term, and differences between units can be viewed as parametric shifts of the regression function. The fixed effect model applies only to the units in the sample, but not to additional ones outside the sample. Random effect, however, views individual specific constant terms as randomly distributed across

units. This view would be appropriate if we believe that sampled units were drawn from a large population for which we want to generalize (Greene, 2000; Kennedy, 2003). In my study, my sample is from a larger universe of ISVs that joined Alpha Corporation's PNP. As I also want to make inferences with regard to firms beyond those which were included in my sample, it is more reasonable to assume that differences across firms in the sample are random rather than fixed. Thus, random effect is more appropriate. Technically, as fixed effect accounts for only within-unit effect, but not between-unit effect, it will drop time-invariant variables in the regression. However, random effect accounts for both within-unit and between-unit effects, thus taking the time-invariant variables in the regression. On average, the observation periods for the ISVs in my sample were short, the longest being 16 months. A number of independent variables remained unchanged during these short periods of time, although theoretically they are time dependent. Thus, the fixed effect model will not apply to the independent variables that turned out to be time-invariant. For the above reasons, I chose random effect logit model in the analysis.

However, for robustness check, I also used alternative models to test these hypotheses besides this model. First, I used logit regression using the *cluster* command in Stata 8. The *cluster* command does not treat the data as longitudinal per se, yet it recognizes that the observations are not independent, as the same ISVs were included in the sample multiple times. The *cluster* command calculated Huber-White-Sandwich estimates for the standard errors that correct for non-independence of observations (Roger, 1993; Wooldridge, 2002). Second, I used a number of continuous-time event history models, including the semi-parametric proportional hazards model (Cox), the parametric proportional hazards models (exponential, Weibull, Gompertz), and the

parametric accelerated failure time models (exponential, Weibull, log-normal, log-logistic, generalized gamma). The results are highly consistent across these models, suggesting that the relationships found are very robust.

### **Analysis for Stage 2**

Hypotheses 4 to 10 examine the stage 2 phenomenon—the entrepreneurial venture’s value creation from the partnership. These hypotheses were tested in a subsample of 112 ISVs that had upgraded to at least the Tier-2 and whose survey data were usable. In this stage, the data were structured as cross-sectional, with independent variables observed at the time when the ISV upgraded to the Tier-2, and the dependent variable observed in December 2005. I used Ordinary Least Square (OLS) regression.

One complication in testing Hypotheses 4 to 10 is that since these tests were performed only in a selected sub-sample of ISVs who had upgraded to the Tier-2. There is a potential selection bias. It is suspected that the ISVs that had been selected into this sub-sample already possessed certain qualities to create more value from the partnership. In other words, some variables that explain the ISV’s value creation from the partnership may have already, in the first place, explained the ISV’s decision to commit. As such, according to the regression results, the effects of these variables on the partnership value creation may be inflated, and in this case, the results could not be properly generalized to the population. In particular, in the theorizing, I argue that pre-commitment institutional density, pre-commitment legitimacy, and pre-commitment resources are factors that can explain an ISV’s decision to commit to the partnership; I also argue that post-commitment institutional density, post-commitment legitimacy, and post-commitment resources account for the venture’s value creation from the partnership. Since these post-

commitment variables are highly correlated with the corresponding pre-commitment variables, it is likely that the effects of post-commitment institutional density, post-commitment legitimacy, and post-commitment resources on the venture's value creation from the partnership are inflated.

One way to correct this potential selection bias is to use Heckman's two-stage procedure (Heckman, 1976). This procedure requires two regressions. The first regression is a selection model, involving a probit analysis of the ISV's probability of being "selected" into this sub-sample ( $z = 1$  when the ISV had made a technology commitment and upgraded to the Tier-2).

$$\text{pr}(z_i = 1) = \Phi(w_i' \alpha),$$

where  $w$  is a set of explanatory variables for the selection stage (in this study, the institutional density, the venture's legitimacy, the venture's resources and a few control variables are considered to be predictive of the selection model);  $\alpha$  is the coefficient vector. This probit analysis was done on the entire 543 ISVs that were included in the test of the first research question. I then computed the inverse Mills ratio  $\lambda = \Phi(w_i' \alpha) / \Phi(w_i' \alpha)$  for each ISV.

The second regression is an outcome model, conditional on the firms being selected. In the sample of 112 selected ISVs, I perform OLS regression with all the control variables and the proposed independent variables, but use the inverse Mills ratio  $\lambda$  as an additional regressor in the model. If the coefficient for  $\lambda$  is significant, this means that there exists a selection effect, i.e., ISVs that had made technology commitments inherently tended to create more value from the partnership.



As I also theorize interaction effects, the OLS regression followed a hierarchical order. First, control variables and  $\lambda$  were entered; next, independent variables were entered; finally, interactions terms were entered.

#### 4.2.3. Measurement

As mentioned briefly earlier, data were collected from multiple sources. For the first research question, data were mainly collected from public databases, ISVs' websites (including the historical webpages filed at archival.org), and Alpha Corporation's internal archive. For the second research question, data collected from the web-based survey were further incorporated. The complete version of the questionnaire is attached in Appendix 4. Considering these firms are all software companies, and all the respondents should be technology savvy, a web-based survey should be the most efficient way to collect data. Table 6 outlines the data sources for variables respectively.

**Table 6: Data Sources**

		Public archives	Alpha's archive	Survey of ISVs
<b>Stage 1:</b>				
Decision to commit			√	
Pre-commitment institutional density	Industry density		√	
	Geographical cluster density		√	
Pre-commitment legitimacy	Industry award	√ (ISV website)		
	Media visibility	√ (LexisNexis)		
	Partner Prominence	√ (ISV website)		
Pre-commitment resources	Patents	√ (USPTO)		
	% top executives in marketing/sales/services	√ (ISV website)		
<b>Stage 2:</b>				
Value creation from the partnership				√
Post-commitment institutional density	Industry density		√	
	Geographical cluster density		√	
Post-commitment legitimacy	Industry award	√ (ISV website)		
	Media visibility	√ (LexisNexis)		

	Partner Prominence	√ (ISV website)		
Post-commitment resources	Patents	√ (USPTO)		
	% workforce in marketing/sales/services			√
Collaborative scope	Technology scope		√	
	Market scope		√	
Proactiveness	Benefit usage		√	
	Lead generation		√	
	Customer response generation		√	
<b>Control Variables:</b>				
Funding status		√ (VentureXpert, Yahoo Finance)		
Spun-off		√ (ISV website)		
Division		√ (ISV website)		
Geographical location			√	
Prior history			√	
Venture age				√
Venture size				√
Pre-entry technology standard				√
Tier-3			√	
Time since Tier-2			√	
Relational capital				√

### Variables for Stage 1

*Decision to commit to the partnership.* As described in the empirical setting, Alpha Corporation's PNP has a tiered structure—Tier-1, Tier-2, and Tier-3. The Tier-1 is open to all, and does not need any commitment from the ISVs. Only when the ISV makes a technology commitment to Alpha Corporation does it qualify to upgrade to the Tier-2. Therefore, the variable of “decision to commit” is measured by a dummy. It was coded as 1 if the ISV had chosen to upgrade to the Tier-2, and coded as 0 if it had not made this choice. It should be noted that this measure of “decision to commit” is very conservative. The ISV's upgrade to the Tier-2 implies that it has also implemented its decision. So this measure captures only the serious decisions of ISVs. Again, the data for the first research

question were structured as longitudinal data, so this variable was coded on a monthly basis. This variable was collected from Alpha Corporation's internal archive.

*Pre-commitment industry density.* This is measured by the number of ISVs in the focal industry vertical that had already made technology commitments to Alpha Corporation by the beginning of each month. This variable was collected from Alpha Corporation's internal archive.

*Pre-commitment geographical cluster density.* This is measured by the number of ISVs in the same region that had already made technology commitments to Alpha Corporation by the beginning of each month. The unit for region is "state" for ISVs in North America (US and Canada), and "country" for ISVs outside North America. This variable was coded from Alpha Corporation's internal archive. Since Alpha Corporation only provided me with data of two industry verticals (HCLS and Retail), I aggregated the data of these two industry verticals to code the geographical cluster density. These two industry verticals were two of the six foundational industry verticals in the PNP, and had attracted the greatest number of ISVs by the time I collected data. Although it would be ideal to have data of all 12 industry verticals, HCLS and Retail together was a reasonable representation of all the others.

*Pre-commitment legitimacy.* Consistent with the literature discussed in the hypotheses section, I used three variables to measure legitimacy. First, legitimacy can be gained through winning awards or certification contests (Rao, 1994). I thus used a dummy variable to measure "industry award." It was coded as 1 if the ISV had won any industry award cumulatively by the beginning of each month, and 0 otherwise. This variable was collected from the ISV's website. Second, the media can legitimize

organizations (Deephouse, 2000; Pollock & Rindova, 2003). I thus used a variable “*media visibility*,” which measured the number of times the ISV had appeared cumulatively in the media cumulatively by the beginning of each month. This variable was collected from the Lexis-Nexis “Major Newspaper and Magazines” database. Third, association with prominent entities can improve an organization’s legitimacy (Stuart et al., 1999; Stuart, 2000). I thus measure “*partner prominence*.” This variable is measured by the number of prominent partners in the software industry that the ISV had cumulatively by the beginning of each month. It was collected from the ISV’s website. I regarded the top 20 software firms as the prominent firms in the industry. This list was obtained from the Software Magazine (SoftwareMag.com), and the ranking was based on revenue in the industry<sup>8</sup>.

*Pre-commitment resources.* In the hypotheses section, I pointed out that there are two types of resources which entrepreneurial ventures in technology-intensive industries particularly wish to obtain from an established partner—technology resources and complementary resources. The venture’s endowment of these two types of resources determines its need and, in turn, its motivation to partner with an established firm. I thus measured resources under the headings of “technology resource” and “complementary resource.” *Technology resource* is measured by the cumulative number of patents issued as well as applied for by the ISV by the beginning of each month. Applied patents are those that are still in the process of verification before they can be issued. I included applied patents in this measure because arguably these are also considered part of the venture’s technology resources. Using patents to measure a firm’s technology resources

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<sup>8</sup> According to Software Magazine, the top 20 firms in the software industry in 2004 were: IBM, Microsoft, EDS, Lockheed Martin, Computer Sciences Corp, Accenture, HP, Oracle, Hitachi, SAP, Capgemini, NTT, Unisys, Ingram Micro, Synnex, Affiliated Computer Services, Sun Microsystems, Cisco, and Atos Origin.

is very common in the technology and innovation literature (e.g., Ahuja & Katila, 2001; Mowery et al., 1998). Although debates are going on as to whether patents are the best measure for technology resources, it is by far the most available measure, and it is a highly justified measure for firms in the technology-intensive industries. As the ventures in my sample are all high-tech software companies, patents are a reasonable measure of their technology resources. This variable was collected from the United States Patent and Trademark Office (uspto.gov). *Complementary resource* refers to the firm's resources in marketing, sales, and services, which can potentially turn its technology resources into real profit (Teece, 1986). I measured it as the percentage of executives in the top management team who were in charge of marketing, sales, or services at the beginning of each month. The titles for these executives are typically "Chief Marketing Officer," "VP-Sales," "VP-Professional Services," etc. This variable was collected from the ISV's website. However, out of the 543 ISVs in the sample, only 216 ISVs had data on this variable. As many firms in my sample were non-VC-backed private firms, many of them did not list this information on their websites, and there is no known alternative way to collect data on this variable.

*Control variables.* In this equation, I controlled for the following variables. First, I controlled for the ISV's funding status, i.e., whether the ISV was public, or VC-backed private, or non-VC backed private. It is suspected that the motivation to make a technology commitment to an established firm is different across ventures with different funding statuses, as there are different stakeholders involved in these ventures. I used the non-VC backed private as the omitted category.

Second, I controlled for whether the ISV was spun off from another firm or was an independently established venture. If it was a spun-off venture, it might carry some heritage from its previous parent company, and thus might perform differently from the ventures that were built from scratch.

Third, I controlled for whether the ISV was a division of a firm or was an independent venture. Being a division also implies the chance of spillover in legitimacy and resources from its parent company, which in turn influences its choice of partnership with an established firm.

Fourth, I controlled for the ISV's geographical location, i.e., whether it was from North America, Europe, Asia Pacific, Latin America, or the Middle East. As Alpha Corporation is a global firm but based in North America, the ISV's physical distance from North America can be a factor that accounts for its decision. I used North America as the omitted category.

Fifth, I controlled for the prior history of the ISV had with Alpha Corporation. According to Gulati (1995b), firms that have prior partnership relations are more likely to form the partnership again due to the familiarity. Here I controlled for the number of years since the venture first participated in any of Alpha Corporation's partnership programs. As I described in the empirical setting, Alpha Corporation's partnership program has evolved significantly in the past decade. Initially, its partnership program was heavily oriented towards resellers. Only after Alpha Corporation made strategic change in 1999 with the decision to exit the application software market and focus on the platform technologies, has the focus of its partnership programs shifted to independent software vendors (ISVs). Some ISVs in the PNP have evolved or transformed from

resellers. They were once in Alpha Corporation's other partnership programs targeting resellers, and thus have some pre-history with Alpha Corporation prior to joining the ISV-oriented PNP. Although the collaborative nature and the operation of the ISV-oriented program (PNP) is very different from the reseller programs, it is still arguable that the prior history of relationship and the familiarity can enhance the venture's current decision to seek this partnership again.

### **Variables for Stage 2**

*Value creation from the partnership.* This variable was collected from the survey of the ISVs. Each point person in these ISVs was asked to indicate, on a 1-7 Likert scale, the degree of value derived by his/her company from the partnership with Alpha Corporation in the following ten aspects: technology learning, product development, product sales, customer service, customer acquisition, partner acquisition, market visibility, profitability, raising capital, and long term industry leadership. Scores were averaged across these ten dimensions. The reliability for this variable is .9032. As noted earlier, the respondents to the survey are mostly top-level executives in the ISVs, such as CEO, VP, President, and Managing Director. They are both highly involved in the partnership with Alpha Corporation and their own firms' strategy making. Thus, they are in the best position to assess the value creation from the partnership with Alpha Corporation for their own firms.

For 25 ISVs, this measure was collected from more than one contact person, ranging from 2 persons to 4 persons. For these 25 firms, the intraclass correlation coefficient ICC(1) is .34, which is significantly higher than the acceptable level of 0.1. This means that the responses of different individuals from the same firms are highly

correlated. Their perceptions have reached high agreement, and can well be aggregated. ICC(1) is an index widely used in group-level research (James, 1982). It is determined by performing a one-way ANOVA on the individual level data file using group (firm) membership as the IV. A significant F-value shows that a statistically significant proportion of the variance across individuals is accounted for by group (firm) membership. This proportion can be interpreted in the form of ICC(1):

$$ICC(1) = [MSB - MSW] / [MSB + (k-1)*MSW]$$

where MSB = mean squares between, MSW = mean squares within, k = average group size.

The high value of the ICC(1) index among these 25 firms also gives me confidence in the validity of the responses from other firms where there is only one single respondent.

*Post-commitment industry density.* This is measured by the number of ISVs in the focal industry vertical that had already made technology commitments to Alpha Corporation prior to the commitment of the focal ISV.

*Post-commitment geographical cluster density.* This is measured by the number of ISVs in the same region that had already made technology commitments to Alpha Corporation prior to the commitment of the focal ISV. Again, the unit for region is “state” for ISVs in North America (US and Canada), and “country” for ISVs outside North America. Similarly, since the data of only two industry verticals (HCLS and Retail) were available, I aggregated the data of these two industry verticals to code the geographical density. As argued earlier, although it would be ideal to have data from all



12 industry verticals, HCLS and Retail reasonably approximated all others due to their foundational status as well as the top size of these two industry networks in the PNP.

*Post-commitment legitimacy.* Consistent with “pre-commitment legitimacy” in the stage 1 of the framework, I used three variables to measure the ISV’s post-commitment legitimacy. The first is “*industry award*,” coded as 1 if the ISV had won any industry award prior to its commitment to Alpha Corporation, and 0 otherwise. Second is “*media visibility*,” measured by the total number of times the ISV had appeared in the media prior to its commitment to Alpha Corporation. Third is “*partner prominence*,” measured by the number of prominent partners in the software industry that the ISV had prior to its commitment to Alpha Corporation.

*Post-commitment resources.* Consistent with “pre-commitment resources” in stage 1 of the framework, I measured technology resources and complementary resources respectively. *Technology resource* is measured by the total number of patents issued as well as applied for by the ISV prior to its commitment to Alpha Corporation. As to *complementary resource*, since there are a lot of missing data on top executives who are in charge of marketing, sales, or services, I measured it with the percentage of the firm’s workforce that were in the functions of marketing, sales, and services. This measure was collected from the survey.

*Scope of technology collaboration.* As noted earlier, Alpha Corporation has a range of technologies with which ISVs can choose to collaborate. These include two types of hardware products and six types of middleware products. Under each type of products, there are still sub-pieces of technologies. Altogether, Alpha Corporation identifies 28 sub-pieces of technologies. Therefore, even though two ISVs both make

technology enablement on the same type of product of Alpha Corporation, they may still vary in the scope of technology collaboration, as one might run on more sub-pieces of technologies than the other. Therefore, the scope of technology collaboration is measured by the total number of sub-pieces of technology enablement the ISV has made in collaboration with Alpha Corporation. The data were from Alpha Corporation's internal archive.

*Scope of market collaboration.* As mentioned earlier, the PNP has so far been aligned along 12 industry verticals. Some ISVs participate in more industry verticals than the others, and thus vary in their scope of market collaboration with Alpha Corporation. This variable is thus measured by the number of industry verticals in which the ISV participated in the PNP. These data were provided by Alpha Corporation.

*Proactiveness.* As discussed in the earlier section, in this inter-organizational context, proactiveness is conceptualized as the venture's initiatives in the exploration and exploitation of opportunities to approach and engage its partner. According to Alpha Corporation, there are several indicators of the proactiveness of an ISV in collaboration with it in the PNP.

First, Alpha Corporation provides benefit packages to all the ISVs participating in the PNP (see Table 1). The details and the steps of these packages are listed explicitly on the Alpha Corporation's website. Some ISVs actively use that benefit package while others do not. Alpha Corporation keeps track of the number of benefits the participating ISVs have used. Thus, I used "*benefit usage*" as the first variable to measure an ISV's proactiveness.

In addition, Alpha Corporation tracks the number of leads each ISV has brought to it, as well as the number of customer responses each ISV has generated. Leads are usually considered to be qualified for further pursuit by the partners jointly, whereas the customer responses are considered to be still unqualified prospects. I thus used “*lead generation*” and “*customer response generation*” as the other two variables to measure an ISV’s proactiveness. So in total, three variables are used to measure an ISV’s proactiveness in the PNP. All these three variables were provided by Alpha Corporation.

*Control variables.* I controlled for a number of variables in testing the second stage of the framework. For similar reasons, I first of all controlled for the same variables that are controlled for in the first stage. In particular, I controlled for the following: 1) the ISV’s funding status, again using “non-VC backed private” as the omitted category alternative to “public” and “VC-backed private”; 2) whether the ISV was a spun-off venture or independently established; 3) whether the ISV was a division of a firm or an independent venture; 4) the ISV’s geographical location, again using North America as the omitted category alternative to Europe, Asia Pacific, or the Middle East (since there are no Latin America ISVs in the sample for the second research question, Latin America was not in the equation); 5) the number of years since the ISV first participated in any of the Alpha Corporation’s partnership programs prior to its participation in the PNP.

In addition, there are a few more variables that I controlled for. First, the venture’s age and size. These demographic variables can influence the venture’s ability to capture attention and create value from the partnership. Venture age is measured by the number of years since it was founded. Venture size is measured by the logarithm of its total number of employees.

Second, I control for the venture's pre-entry technology standard. As mentioned earlier when I introduced the empirical setting, in the software industry, there are two major technology standards with which applications can be written. One is based on J2EE. This is an open standard originally introduced by Sun Microsystems. Alpha Corporation's middleware is based on J2EE. There is another major standard introduced by and proprietary to Microsoft, known as .NET. Employing different standards may require different expertise. Shifting from one standard to the other often needs certain migration. Some ISVs work on one standard or the other, while some work on both. Seeking a partnership with Alpha Corporation means that they at least need a commitment to the J2EE standard. To a certain extent, this indicates the degree of asset specificity involved in this partnership. According to past research, partnerships that require a higher level of asset specificity involve higher costs and more risks (Dyer & Singh, 1998; Williamson, 1985). Therefore, I suspect that the ISV's technology standard before it entered the PNP would influence its ability to create value from the partnership with Alpha Corporation. I used two dummy variables—"J2EE" was coded as 1 if the ISV was engaged in the J2EE standard before its participation in the PNP, and 0 if otherwise. ".NET" was coded as 1 if the ISV was engaged in the .NET standard before its participation in the PNP, and 0 if otherwise.

Third, I controlled for whether or not the ISV had upgraded to the Tier-3. The ISV upgrades to the Tier-3 when it has committed to more of Alpha Corporation's technologies. These ISVs are likely to get more value from the partnership than those lower-level ISVs. On one hand, they chose to further upgrade because they had benefited more from the partnership. On the other hand, by definition, Tier-3 ISVs get the most

attention, as they are seen by Alpha Corporation as the most committed and the most serious partners, which are to the best interest of Alpha Corporation. This variable was coded as 1 if the ISV had already been at the Tier-3, and 0 otherwise.

Fourth, I controlled for the length of time since the ISV had made the technology commitment, i.e., the number of days (in hundreds) from when it was upgraded to the Tier-2 until December 15, 2005, approximately when the survey was delivered to collect the data on value creation. Conceivably, the longer the tenure of the ISV at the Tier-2, the more value it is likely to create, for there is a longer time for the two partners to collaborate and close deals jointly. However, as said in the sample selection section, the minimal tenure of ISVs at the Tier-2 in the sample is six months. According to the interviewees, this length of time is already reasonable for an ISV to create value from the partnership.

Fifth, I controlled for the relational capital between the contact persons of the two partner firms. Relational capital refers to the mutual trust, respect, and friendship that reside at the individual level between the alliance partners (Kale et al., 2000). Prior research has identified this construct as an important factor that accounts for the effectiveness of the partnership (Kale et al., 2000; Ring & Van de Ven, 1992; Zaheer et al., 1998). The measure for relational capital is five items on a 1-7 Likert scale following Kale et al. (2000). In particular, the five items are the following: 1) There is close, personal interaction between us; 2) Our relationship is characterized by mutual respect; 3) Our relationship is characterized by mutual trust; 4) Our relationship is characterized by personal friendship; 5) Our relationship is characterized by high reciprocity. Scores were averaged across these five items, with a reliability of .9205. Data for this variable were

collected from the survey of ISVs. If the ISV has more than one respondent, I averaged the values across multiple respondents due to the high ICC(1) index.

## CHAPTER 5: RESULTS

As the models for the two stages involve different samples and different analytical methods, I discuss the results in two stages respectively.

### 5.1. Stage 1: Decision to Commit

#### 5.1.1. Descriptives and Correlations

Table 7 provides the descriptive statistics for all the hypothesized variables as well as some key control variables. Table 8 shows the zero-order correlations between these variables. The two institutional density variables (industry density and geographical cluster density) are positively correlated. One reason is that the geographical cluster density is observed from two industry verticals. Not surprisingly, the three legitimacy variables (industry award, media visibility, and partner prominence) and the two resource variables (patent and marketing executives) are positively correlated with one another. This is consistent with the literature that a firm's high legitimacy facilitates its resource acquisition, so the positive relationships between them are expected (Meyer & Rowan, 1977; Suchman, 1995). Besides, it is also expected that all these legitimacy and resource variables are correlated with the venture's funding status. In particular, public and VC-backed ventures tend to possess more legitimacy and resources. Also, the correlations show that ventures that have a prior history with the established firm tend to have more legitimacy and resources. Although many of these correlations are statistically significant, the values are not high. The high significance level may result from the large sample size.

From the correlation table, the dependent variable—a venture's decision to commit to the partnership—is positively related to the venture being public ( $r=.033$ ,  $p<.1$ ), and being VC-backed ( $r=.097$ ,  $p<.001$ ). This seems to suggest that public and VC-backed

ventures tend to make commitments to Alpha Corporation. Also, consistent with the prior literature (Gulati, 1995b), decision to commit is positively and significantly correlated with the venture's prior history with Alpha Corporation ( $r=.046$ ,  $p<.01$ ).

Coming to the variables of theoretical interest, based on the correlation table, venture's decision to commit is negatively and significantly correlated with industry density ( $r=-.078$ ,  $p<.001$ ), and negatively but insignificantly correlated with geographical cluster density ( $r=-.003$ , ns). These are not consistent with H1a and H1b that hypothesize on the institutional pressures. In addition, decision to commit is positively and significantly correlated with all three legitimacy variables—industry award ( $r=.1$ ,  $p<.001$ ), media visibility ( $r=.084$ ,  $p<.001$ ), and partner prominence ( $r=.041$ ,  $p<.05$ ). These are opposite to the prediction of H2. As to its correlation with two resource variables, decision to commit is negatively but insignificantly correlated with patent ( $r=-.007$ , ns), and positively and significantly correlated with marketing executives ( $r=.077$ ,  $p<.01$ ). These do not seem to support H3. However, a better way to examine these relationships would be the regression on a multivariate basis.

### **5.1.2. Logit Regressions**

Table 9 shows the results of discrete-time event history analysis. These are a set of random effect logit regressions performed to examine factors that account for an ISV's decision to commit to the partnership with Alpha Corporation. Model 1 is the regression on just the control variables. Consistent with the correlation table, public firms and VC-backed firms are more likely to make a commitment to the partnership than non-VC-backed firms, and the effect is stronger for VC-backed firms ( $b=.95$ ,  $p<.001$ ). Whether or not the venture is a spun-off firm or a division of a parent firm do not influence its



decision to commit. Also, the regression does not seem to suggest that the location of the venture is predictive in this question. Having a prior history with the established firm, however, shows a strong positive relationship with the venture's decision to commit ( $b=.08$ ,  $p<.01$ ), which is consistent with prior literature (Gulati, 1995b).

In Model 2, a set of hypothesized predictors are entered to test their main effects. In this model, I leave out the variable of "marketing executives", one measure of a venture's pre-commitment resources. Because there are a lot of missing data for this variable, I enter it separately in Model 3.

As to the institutional variables, contrary to the prediction of H1a, the coefficient for industry density is significant but negative ( $b=-.0018$ ,  $p<.05$ ), suggesting that when more other ventures have committed to the established firm, the focal venture will be less likely to make the commitment. As will be discussed later, I have further performed the curvilinear test and found that industry density has an inverted-U relationship with the venture's decision to commit. Consistent with H1b, the coefficient for geographical cluster density is positive but not significant ( $b=.0059$ , ns), providing a little evidence that ventures are subject to the pressure from similar ventures in the same geographical region. Post-hoc analysis shows that geographical cluster density also has an inverted-U effect on the venture's decision to commit.

Turning to the effect of pre-commitment legitimacy, contrary to H2, all three legitimacy variables have a positive relationship with the venture's decision to commit. In particular, whether or not the venture has received an industry award and the extent to which the venture is visible in the media both have significant effects ( $b=.4440$ ,  $p<.05$  for industry award;  $b=.0042$ ,  $p<.05$  for media visibility). This shows that ventures with

higher legitimacy are more likely to seek partnership with the established firm. As I will interpret in detail later, these ventures anticipate more attention from the established partner and thus more value creation from the partnership. Therefore, they are more motivated to make commitments than ventures with poor legitimacy and thus poor attention-capturing ability.

As far as the venture's pre-commitment technology resource (patents issued and applied for by the venture) is concerned, as expected, this variable is negatively related to the venture's decision to commit ( $b = -.084$ ,  $p < .01$ ), meaning that ventures with poorer technology resources are more likely to seek partnership with the established firm, arguably with the purpose of gaining access to technology resources.

In Model 3, I added another variable that denotes the venture's pre-commitment resources—the percentage of top executives that are responsible for downstream activities such as marketing. This is meant to measure the venture's complementary resources. In a reduced sample where data for “marketing executives” are available, this variable does not appear predictive ( $b = .8826$ , ns). So overall, H3 is partially supported.

In the reduced sample for Model 3, the effects of the legitimacy variables and the resource variables remain consistent with those in Model 2, suggesting the robustness of the findings. However, the effects of the institutional variables have some slight changes. The effect of industry density becomes positive but non-significant, whereas the positive effect of geographical density becomes significant. Such changes suggest that linear relationships might not be robust in examining the effects of these institutional factors. I thus did a post hoc analysis to examine their curvilinear relationships.

### **5.1.3. Post-Hoc Analyses**

I performed some additional analyses. One was to test the curvilinear effect of institutional factors, and the second was to test the interaction between institutional factors and a venture's *ex ante* legitimacy level.

### **Curvilinear Effect of Institutional Density**

Table 10 shows additional analyses on the effect of institutional density on the venture's decision to commit. In this set of analyses, I looked at industry density and geographical cluster density separately, and also looked at industry-geographical density, which refers to the number of other similar ventures in the same industry *and* the same geographical region that had made commitments to the established firm. Consistently, all conceptualizations of institutional density are found to have an inverted-U effect on the venture's decision to commit.

Figure 6 plots these curvilinear shapes. The inflection point for the curve of the industry density is around 125. This means that the initial increase of committed ventures serving the same industry will create an institutional pressure for the not-yet-committed ventures to follow suit. After the number of committed ventures in the industry reaches a certain point (in this sample it is 125), the effect will reverse. For the curve of the geographical cluster density, the inflection point is about 28, meaning that the ventures will first follow the practice of similar ventures in the same geographical region, but after a certain point (in this sample it is 28), the geographical cluster density becomes a negative factor. Not surprisingly, the inflection point for the industry-geographical density, which is around 17, is smaller than that of either the industry density or the geographical cluster density, because this reflects a joint effect of the industry and the geographical cluster density, and thus creates the highest institutional pressure for the

focal venture to follow suit. In addition, from Model 2 in Table 9 and Model 7 in Table 10, where industry density and geographical cluster density are put in the same equation, it shows that industry density has a stronger effect than geographical cluster density on the venture's decision to commit. This is also not surprising, because firms compete for resources more intensely with other firms in the same industry than with other firms in the same geographical region. Therefore, conformity to industry practice is more important than conformity to the practice in the geographical region. However, competition for resources with other firms in the same industry *and* the same geographical region is the most intense.

The upward side of the curvilinear effect is consistent with H1, suggesting that the venture is subject to institutional pressure of conformity. The downward side of the curve, however, implies another part of the story. Related to what I have theorized for the second stage of the phenomenon that once committed, ventures are competing for the attention of their common established partner, and their value creation from the partnership is based on the attention they are able to get from the established partner. Therefore, when the focal venture sees that there are already many committed ventures, making the space crowded, it does not anticipate that it will get enough attention from the partner even if it makes the commitment. Thus, the venture may conclude that it is not worthwhile to make the commitment at all at present. In other words, the shadow of the future influences the venture's present decision. This is what the downward side of the curvilinear effect suggests. It is actually consistent with the findings in the ecology theory that entry into a population will first grow and then decline—prior entry encourages subsequent entry because it signals legitimacy and a fertile niche; but when the

population becomes dense, competition for resources will discourage subsequent foundings (Barnett & Amburgey, 1990; Carroll & Hannan, 1989; Aldrich & Staber, 1988).

### **Interactions between Institutional Density and Legitimacy**

While institutional density creates an external pressure for the venture to pursue legitimacy, the venture's own legitimacy level proves the internal need for legitimacy. I thus examined interactions between them, as reported in Table 11. Out of the six possible interactions, four of them are statistically significant. Industry density and geographical cluster density each interact with industry award and media visibility. Figure 7 plots the interaction effect. All four interactions show the same pattern—ventures of higher legitimacy (with industry award and greater media visibility) are more likely to follow institutional practice. In other words, institutional pressures have a stronger effect for ventures with higher legitimacy.

On the surface, the interactions are counter-intuitive because it is anticipated that ventures with poorer legitimacy are more eager to conform to the institutional trend so as to gain themselves legitimacy, whereas those with more legitimacy may have less need to do so. However, at a closer examination, this finding, again, reflects the theoretical underpinning for the second stage framework concerning the effect of ventures' competition for attention. A venture's motivation to commit is also influenced by its anticipation of its future ability to gain value. A higher level of institutional density of partnerships with the established firm signals that the space becomes crowded in that established firm's alliance portfolio. This will thus deter the ventures with low legitimacy, because it gets even more difficult for low legitimacy ventures to get the attention of the

established firm in a crowded space. However, ventures with higher legitimacy are less concerned about the effect of crowding. They still anticipate attention from the established firm and the value creation from the partnership even though they will be in a crowded space.

I also did the post hoc analysis on the interactions between institutional density and venture's *ex ante* resources. The logic is that firms with poorer resources are more likely to follow the institution. They do so to increase their legitimacy level and in turn acquire more resources. However, in this sample, there do not appear interactions between these two constructs.

#### **5.1.4. Robustness Check**

I have also done several robustness checks of the above findings in two ways. First, I run different statistical models on the data. Second, I include additional control variables. As these control variables were collected through the survey, this set of analyses was done in the surveyed sample. Third, I adopt a more conservative definition of entrepreneurial ventures, and perform tests on a reduced sample in which only private independent ventures are included.

#### **Using Alternative Statistical Models**

In addition to the discrete-time event history technique using random effect logit regression, I ran the analyses using several alternative statistical models, the results of which are reported in Table 12 to 14.

In Table 12, the second column is based on logit regression with data of the same firm clustered. This regression does not recognize the data as longitudinal, but recognizes that the observations from the same firm are not independent. The *cluster* command in

Stata thus corrects for no-independence of observations by calculating Huber-White-Sandwich estimates for standard errors.

The third to sixth columns are based on continuous-time event history technique. Column 3 uses the Cox model. Cox model does not specify the shape of the baseline hazard, so it is a semi-parametric model (Allison, 1984). In contrast, columns 4 to 6 are parametric models that specify the shape of the baseline hazard—column 4 assumes that the baseline hazard follows an exponential distribution; column 5 assumes that the baseline hazard follows a Weibull distribution; column 6 assumes that the baseline hazard follows a Gompertz distribution.

The last column uses logit regression in a cross-sectional sample. For this analysis, I ignore the time component for the dependent variable. All the independent variables were observed when the ISV signed up in the PNP as a Tier-1 partner, and the dependent variable was observed on July 1, 2005. The logic supporting this cross-sectional analysis is that since the maximal time span for the sample firms in the study was 16 months (from March 2004 to June 2005), many independent variables can be reasonably assumed as constant rather than time-varying over these 16 months. The right censoring problem is also arguably not significant in this sample. As described in the sample selection section, I picked ISVs that signed up as Tier-1 partners before March 1, 2005, but observed their status on July 1, 2005, with a four-month interval in between. According to the statistics in Table 4, the average time of the ISV's upgrading to the Tier-2 was about three months. So a four-month interval can reasonably capture all the ISVs that had the intention to upgrade.

I ran all the above different statistical models on the data. Table 12 reports the results for the main effect, Table 13 reports the curvilinear effect, and Table 14 the interaction effect. As shown in these tables, the results for all these analyses are highly consistent both in terms of the sign and the significance level. This gives me more confidence in interpreting the results from the random effect logit regression.

### **Using a Sub-sample with More Controls**

There are a few more control variables that can be justified as relevant in predicting the venture's decision to commit, yet are only available from the survey. I thus did not include them in testing the entire sample. I, however, performed analyses in a sub-sample of those who completed the survey, and included these additional control variables in the analyses. These additional controls are the venture's age, logarithm of its number of employees (as a measure of venture size), and its pre-commitment technology standard. As described in the empirical setting and the methods section for the control variables in stage 2, the two major technology standards in the software industry are J2EE and .NET. These two are not compatible. A venture can develop products that are based on either one of the standards or both. As Alpha Corporation employs the J2EE standard, making a commitment to Alpha Corporation implies certain commitment to the J2EE standard. Therefore, it is expected that ventures that used the J2EE standard prior to the commitment would incur less investment to and thus less risk of the partnership than ventures that used the .NET standard prior to the commitment. It is thus favorable for the already-on-J2EE ventures in their decision to commit to the partnership. In contrast, ventures that employed the .NET standard prior to the commitment would have to make more specific investment for the partnership. This would increase the hazard of the



partnership, and in turn discourage those ventures to make commitments and form such partnerships (Dyer, 1997). I thus used two dummy variables, “J2EE” and “.NET,” to control for this effect of asset specificity.

Tables 15 and 16 show the analyses on the surveyed sample. Table 15 reports the main effect, and Table 16 the curvilinear and interaction effect. The results show that venture age and size (measured by the logarithm of the total number of employees) are somewhat predictive in the models testing the main effect (Table 15), suggesting that relatively older and bigger firms are more likely to commit to the partnership. As expected, the two technology standard dummies (J2EE and .NET) are strongly predictive across all models (Tables 15 and 16). Ventures that have already adopted the J2EE standard are more likely to form a partnership with Alpha Corporation, whereas those that have adopted .NET are less likely to do so.

However, even with additional controls that are highly predictive, the effects for the theorized variables remain consistent with the results in the analyses performed without these additional controls, suggesting that the theorized variables still explain a significant amount of variance above and beyond the additional control variables.

As to the institutional factors, in this sample, the geographical cluster density shows a stronger effect than the industry density (Table 15). One possible explanation is that as the ventures in the surveyed sample were from English-communicating countries identified by Alpha Corporation, they are more geographically concentrated. The majority of them were from North America (69%) and Europe (25%), and were from the countries where there had been more ventures participating in the PNP. Thus, a stronger effect of geographical cluster density can be observed in this sample. In this sample,

geographical cluster density exhibits a strong positive effect on the venture's decision to commit. Relatively speaking, the effect of industry density is not significant. However, both factors still have a strong inverted-U relationship with the venture's decision to commit (Columns 1 and 2 in Table 16), which is highly consistent with the results from the full sample.

The results for the legitimacy and resource factors in the surveyed sample are also very consistent with the findings from the full sample. Again, two of the three factors (industry award and media visibility) are positively related to the venture's decision to commit, but with a slightly lower significance level (Table 15). Also again, patent is found to be negatively related to a venture's decision to commit, but marketing executives are not significantly related. This confirms the pattern from the full sample that ventures with higher legitimacy but poorer technology resources are more likely to commit to the partnership with the established firm.

Furthermore, the interactions between institutional density and a venture's *ex ante* legitimacy level are still highly significant in the surveyed sample even with additional controls (Columns 3-6 in Table 16). This again suggests that ventures with higher legitimacy are more likely to conform to the institutional trend in partnering with an established firm.

### **Using a More Conservative Definition of Entrepreneurial Ventures**

In the literatures of strategic management and entrepreneurship, "entrepreneurial venture" or "entrepreneurial firm" is a broad label for firms that are small, young, and growth-oriented. This is in contrast to the firms that are large, old, and established. As the essence of entrepreneurship is opportunity identification and opportunity exploitation, the

label of “entrepreneurial venture”, in general, reflects a firm’s orientation of innovation and new market entry (Lumpkin & Dess, 1996; Shane & Venkataraman, 2000). In empirical studies, researchers consider entrepreneurial ventures to be such overlapping categories of firms as small businesses (e.g., Steensma, Marino, Weaver, & Kickson, 2000; Wiklund & Shepherd, 2003), new ventures (e.g., Huyghebaert & Van de Gucht, 2004; Zahra, Ireland, & Hitt, 2000), firms going through IPOs (e.g., Stuart et al., 1999; Welbourne & Cyr, 1999), and internal ventures and spun-off ventures from corporate venturing efforts (e.g., Burgelman, 1983; Sapienza, Parhankangas, & Autio, 2004). In this dissertation, I adopt a broad definition of entrepreneurial ventures, that is, firms that are generally young and small, exhibiting innovation- and growth-orientation. Thus, I include public firms, spun-off ventures, and divisions of parent firms. This approach is consistent with many extant studies on entrepreneurial ventures in the field (e.g., Deeds & Hill, 1996; Eisenhardt & Schoonhoven, 1996; Leiblein & Reuer, 2004; Mintzberg & Waters, 1986; Mosakowski, 1991; Rothaermel & Deeds, 2004). As described in the Methods section, the sample is only restricted on age and size, including firms that are less than 30 years old and have fewer than 500 employees.

For a robustness check, I used a more conservative definition of entrepreneurial ventures. In particular, I performed the tests on private independent ventures only, excluding ventures that are public, spun-off, or divisions of parent firms. The rationale to exclude public firms is that the ventures that have gone through the complex IPO process can be significantly different from the privately-held ventures. An IPO may change the goals, orientation, and practices of the firm as it now needs to satisfy a new group of investors and undergo public scrutiny (Certo, Daily, Cannella, & Dalton, 2003;

Welbourne & Andrews, 1996). The IPO process may also initiate and necessitate changes in the firm's capabilities and competencies in order for it to survive in the new situation (Fischer & Pollock, 2004). Therefore, the motivation and strategy for partnerships by a public venture might be different from those of a private venture. The rationale to exclude spun-off ventures and ventures that are corporate divisions is that these ventures, more or less, inherit or gain spill-over of assets, capabilities, and beliefs from the previous or current parent companies. Therefore, they may have a different starting point in partnering with established firms than the ventures that were created independently from the beginning. Although previous tests with "public", "spun-off", and "division" as controls do not show significant effects of these variables, I performed the tests more rigorously on private independent ventures only.

Therefore, I excluded the ISVs in the sample that were public, spun-off, or corporate divisions. This thus excluded 74 firms (48 of them were public firms) from the total of 543 firms, yielding 469 firms (with 2978 observations on a longitudinal basis). Tables 17 and 18 report the results of this set of robustness tests.

The results in Table 17 and 18 are highly consistent with those in Table 9, 10, and 11. More specifically, in terms of the control variables, VC-backed ventures and those with prior history with the established firm are more likely to commit to the partnership; the institutional variables have an inverted-U effect on the venture's decision to commit; ventures with higher legitimacy are more likely to form partnerships with the established firm; there are interactions between institutional density and the venture's legitimacy, such that more legitimate ventures are more likely to follow the institution. The results again suggest that the findings are quite robust.

The only one relationship that does not come out significant in the sample of private independent ventures is the negative main effect of the venture's technology resources. Although the sign is negative, consistent with the finding in the full sample, it is not statistically significant. One explanation is that in my sample, the public ventures have significantly more technology resources (in this case, more patents) than the privately-held ventures, such that there is not enough variation among the private ventures for this variable to be statistically significant. In fact, a t-test confirms that the public ventures have significantly more patents than the privately-held ones ( $t=-4.966$ ,  $p<.001$ ).

Overall, the above three sets of the robustness checks show that the relationships found for stage 1 of the phenomenon as reported in Tables 9, 10, and 11 hold strong. Next, I discuss the results for stage 2.

## **5.2. Stage 2: Value Creation from the Partnership**

### **5.2.1. Descriptives and Correlations**

Table 19 reports the descriptive statistics for all the hypothesized variables and a few key control variables. Table 20 shows the zero-order correlations between these variables. Again, the two institutional density variables (industry density and geographical cluster density) are positively correlated ( $r=.428$ ,  $p<.001$ ), as they have certain overlap in the measurement. Out of the three legitimacy variables, media visibility is positively correlated to the other two legitimacy variables (with industry award,  $r=.225$ ,  $p<.01$ ; with partner prominence,  $r=.416$ ,  $p<.001$ ). However, industry award and partner prominence are positively but not significantly correlated ( $r=.144$ , ns). The two resource variables are negatively but insignificantly correlated ( $r=-.123$ , ns). But patent

(technology resources) is positively and significantly correlated with two legitimacy variables (with media visibility,  $r=.563$ ,  $p<.001$ ; with partner prominence,  $r=.198$ ,  $p<.05$ ). These patterns are quite consistent with those in the stage 1 (the pre-commitment stage). As to the two collaborative scope variables, technology scope and market scope are not significantly correlated ( $r=.068$ , ns), suggesting that these are two distinct dimensions of collaborative scope. Not surprisingly, all three proactiveness measures (benefit usage, lead generation, and customer response generation) are positively and significantly correlated with one another.

As to the key control variables, being public is positively and significantly related to two legitimacy measures (with media visibility,  $r=.579$ ,  $p<.001$ ; with partner prominence,  $r=.546$ ,  $p<.001$ ). Yet surprisingly, being VC-backed is not significantly related to most of the legitimacy and resource variables. In fact, it is negatively correlated with marketing workforce (percentage of the workforce that is in the downstream functions such as marketing). This may be because this sample includes all technology ventures, so that the ventures that are backed by VCs are strong in technology resources, and possess, say, more scientists and engineers than marketing and sales people. Being VC-backed is positively related to venture's benefit usage, one of the proactiveness measures ( $r=.196$ ,  $p<.05$ ). This is consistent with the common observation that VCs can have an influence on ventures in urging them to be proactive and create value from the partnership.

From the correlation table, the size of the venture as measured by the logarithm of its number of employees is positively related to all three legitimacy variables, suggesting that bigger firms have more legitimacy. Venture size is correlated with venture age

( $r=.392$ ,  $p<.001$ ), confirming the argument in the prior literature that the liability of smallness is often confounded by the liability of newness (Baum, 1996; Stinchcombe, 1965). Also, both venture age and size are positively and significantly related to being public.

While J2EE is not correlated with the technology collaborative scope ( $r=.093$ , ns), .NET is negatively correlated with it ( $r=-.306$ ,  $p<.001$ ). This is intuitive, as ventures that formerly adopted the .NET standard are less likely to have a large range of technology collaboration with Alpha Corporation, which uses the J2EE standard. Also, .NET is negatively related to the venture's prior history with Alpha Corporation ( $r=-.271$ ,  $p<.01$ ). Conceivably, ventures that had prior interactions with Alpha Corporation tend not to adopt the technology standards that are not compatible with it.

As expected, being at the Tier-3 is positively correlated with all three proactiveness measures. This can be easily explained: those ventures that are more proactive get more value from the partnership, and thus are more likely to further upgrade to the Tier-3 in order to further get the established partner's attention and create value from the partnership. Also, the variable "time since Tier-2" is positively correlated with all three proactiveness measures. The explanation is that these ventures with longer tenure at the Tier-2 have more opportunities to exhibit proactiveness in the partnership. This is why in the regression analysis I controlled for "Tier-3" and "time since Tier-2."

The dependent variable—value creation from the partnership—is correlated with a number of control variables. It is significantly correlated with relational capital ( $r=.437$ ,  $p<.001$ ), which is consistent with the prior literature that individual-level mutual trust,

respect, and friendship are important factors that make the partnership effective (Kale et al., 2000). Surprisingly, it is negatively correlated with J2EE ( $r=.192$ ,  $p<.05$ ).

With regard to the variables in the hypotheses, value creation is not correlated with either of the institutional factors as H4 predicted (with industry density,  $r=.115$ , ns; with geographical cluster density,  $r=.074$ , ns). Consistent with H5, it is correlated with media visibility, one of the three legitimacy variables ( $r=.199$ ,  $p<.001$ ), but not the other two legitimacy variables, industry award and partner prominence. H6 is also not supported from this correlation table. Value creation is not significantly correlated with patent (technology resource) or marketing workforce (complementary resource), though the signs are positive as predicted. The bivariate correlations provide evidence for H7a-b that value creation is positively related to collaborative scope (with technology scope,  $r=.184$ ,  $p<.1$ ; with market scope,  $r=.318$ ,  $p<.001$ ). However, from the correlation table, value creation is not correlated with any of the proactiveness variables as predicted by H8, though the signs are in the predicted direction.

### **5.2.2. OLS Regressions**

The results of the OLS regressions are reported in Table 21 (main effect) and Table 22 (interaction effect). As noted in the Methods section, the analyses involve a Heckman two-stage procedure. I first performed a probit analysis on the independent variables that are considered effective in the selection model. According to the theorizing in the first stage of the phenomenon, these independent variables include public, VC-backed, division, location (with North America as the omitted category), prior history, industry density, geographical cluster density, industry award, media visibility, partner prominence, and patent. I then calculated the inverse Mills ratio from this analysis. This



inverse Mills ratio will then be put into the second stage equation as another regressor. In all the models in Table 21 and 22, the inverse Mills ratio does not come out significant, indicating that the selection bias is negligible in this sample.

In Table 21, Model 1 is the regression on the control variables. Unlike the results from stage 1 that examines a venture's decision to commit, funding status (being public or VC-backed) does not predict the value creation from the partnership. It also does not matter whether or not the venture is a division of a parent firm. The physical location of the ventures continues to be insignificant in predicting value creation from the partnership. Although prior history with Alpha Corporation significantly predicts the venture's likelihood to commit to it, it becomes irrelevant in the stage of value creation from the partnership. This is because Alpha Corporation's earlier partnership programs mainly focused on resellers, which are very different from its current ISV-oriented program in terms of the nature of the collaboration. So even when the venture had prior interaction with Alpha Corporation as resellers, this prior experience may not be readily carried over to the current collaboration. The venture's age and size do not predict its value creation from the partnership. Its pre-entry technology standards, J2EE or .NET, show significance in Model 2, and continue to show prediction power in all the models in Table 22. Surprisingly, J2EE is negatively related to the value creation, whereas .NET is positive. One explanation can be that ventures that used the .NET standard receive more attention from Alpha Corporation, because the latter wants to help them switch to the J2EE standard. In other words, the partnership value for Alpha Corporation is greater if the ISV switches from the .NET standard. "Tier-3" and "time since Tier-2" do not seem to be relevant in the value creation. Relational capital between individuals from the

partners exhibits a strong effect on the partnership effectiveness, which is consistent with the prior literature (Kale et al., 2000).

Models 2 test the hypotheses on the effect of a series of variables concerning a venture's attractiveness and proactiveness. None of the two institutional density variables, three legitimacy variables, and two resource variables are predictive. Thus, H4-6 are not supported. With regard to the two collaborative scope variables, technology scope is positively and significantly related to the value creation ( $b=.0833$ ,  $p<.05$ ). But market scope does not, although the sign is in the predicted direction. So there is some evidence for H7. Overall, the results seem to suggest that the main effect of the venture's attractiveness is not very strong. Out of all the factors that are hypothesized to increase the venture's attractiveness to the established partner, collaborative scope is the most effective factor.

As far as the proactiveness variables are concerned, one of the three variables, customer response generation, is statistically significant and in the predicted direction ( $b=.0020$ ,  $p<.05$ ). This gives some evidence for H8 that being proactive enables the venture to create more value from the partnership by getting more attention from the partner.

Table 22 reports the interaction effect between the venture's attractiveness and proactiveness, and seven interactions turn out to be significant. Figure 8 plots all the significant interactions. The results strongly support H9a-b that being proactive can overcome the venture's disadvantage concerning its exogenous attractiveness as determined by environmental factors. Industry density and geographical cluster density each have significant interactions with the venture's benefit usage and lead generation for

the partnership (Models 1 to 4 in Table 22). The plots in Figure 8 show that when the industry or the geographical region is already crowded with many committed ventures, which makes the newly committed venture more difficult to attract attention from the established partner, the newly committed venture's proactiveness (i.e., more frequently using benefit package provided by the partner and generating more leads for the partnership) can significantly help it gain attention in the crowded institutional structure. In other words, being proactive has a stronger positive effect for ventures entering a crowded space than for the ventures pioneering in a particular industry or geographical cluster. As predicted, proactiveness can substitute for the exogenous attractiveness.

Model 5 in Table 22 shows the interaction between a venture's legitimacy (industry award) and its proactiveness (lead generation) ( $b = -.1635$ ,  $p < .1$ ). The plot in Figure 8 shows that the interaction is opposite to the prediction in H10. I hypothesized that being proactive can magnify the positive effect of legitimacy on the venture's value creation from the partnership. However, the result actually reveals a substitution effect between them. This means that being proactive (i.e., generating more leads for the partnership) helps more when the venture is of low legitimacy (i.e., no industry award) rather than of high legitimacy (i.e., with industry award).

Model 6 in Table 22 shows that there is a marginally significant interaction between venture's technology resources (patent) and its proactiveness (lead generation) ( $r = .0583$ ,  $p < .1$ ). As shown by the corresponding plot in Figure 8, this is consistent with H11 that being proactive can enhance the venture's resource advantage in creating value from the partnership, as the proactive behaviors can make the resource advantage more visible to the established partner, such that the partner will deliver more attention to it.

Model 7 in Table 22 reports the interaction between a venture's technology collaborative scope with the partner and its proactiveness in terms of lead generation ( $r = -.0205, p < .1$ ). This interaction is opposite to the predicted direction (see Figure 8). While I propose in H12 that the positive effect of collaborative scope will be strengthened by the venture's proactive behaviors, the result turns out that proactiveness matters more when the venture has a narrower technology collaborative scope with the partner, and thus is considered as less attractive.

One explanation that H10 and H12 come out in the opposite direction is that although a venture's attractiveness to its partner as determined by legitimacy and collaborative scope is endogenous to the venture, they are more visible to the outsider and thus to the partner, such that there turns out to be no need to promote visibility in these regards by taking on proactive behaviors. In contrast, for resources such as patents, they are much less visible to the partner, and therefore proactive behaviors are complementary in publicizing this advantage to the partner so as to gain more of its attention. In general, the interaction results seem to give more evidence on the substitutive effect between a venture's attractiveness and proactiveness. This should be an encouraging message to the entrepreneurial ventures that score low on the attractiveness measures. While ecological attractiveness is not easily changeable, they can overcome this disadvantage by taking more proactive actions, which are under their own control to a greater extent.

### **5.2.3. Post-Hoc Analyses**

In addition to testing the hypothesized relationships, I performed some additional analyses on the interaction between the venture's exogenous and endogenous

attractiveness. The logic is that these two different types of attractiveness might be substitutive. In other words, the venture with higher endogenous attractiveness might generate more pay-off when it is exogenously less attractive.

### **Interactions between Exogenous and Endogenous Attractiveness**

Table 23 reports the results of this set of post-hoc analyses. Five interactions are found between variables of exogenous and endogenous attractiveness. They are mainly between institutional factors (industry and geographical density/crowding) and venture's legitimacy and resource factors (industry award, media visibility, and patent). Figure 9 plots these interactions. Unanimously these interactions report a substitutive effect between the institutional factors and the venture's *ex ante* legitimacy and resources. That is, a higher level of legitimacy and resources enhances the venture's ability to get attention in a crowded space than in an uncrowded space within the established firm's alliance portfolio. Or the other way round, institutional crowding hurts the ventures with lower legitimacy and resources more than those with higher legitimacy and resources.

#### **5.2.4. Robustness Check**

##### **Using a More Conservative Definition of Entrepreneurial Ventures**

For similar reasons that I outlined in the robustness check section for stage 1, I performed a set of robustness tests on private independent ventures only at this stage as well. Thus, out of the 112 ventures, I dropped those that are public or corporate divisions (there are no spun-off ventures in the stage 2 sample). I dropped 13 firms in total, 12 of which were public, yielding 99 firms in the sample. Table 24 reports the results of the main effects, and Tables 25 and 26 report the interaction effects. Comparing Table 24 with Table 21, Table 25 with Table 22, and Table 26 with Table 23 respectively, one can

tell that the results are highly consistent. As to the control variables, the venture's prior technology standard (J2EE or .NET) and its relational capital with the established firm significantly predict its value creation from the partnership. Out of the hypothesized variables, only collaborative scope (technology scope) and proactiveness (customer response generation) have statistically positive effect on the venture's value creation from the partnership. With regard to the five interactions between the venture's attractiveness and proactiveness as well as the seven interactions between the venture's endogenous attractiveness and exogenous attractiveness, most remain significant, with only three exceptions. The high level of consistency in the results shows that the relationships found in the full sample are quite robust.

### **5.3. Summary of Findings**

Figure 10 summarizes the findings for both stages of the phenomenon.

#### **5.3.1. Stage 1: Decision to Commit**

The first stage concerns an entrepreneurial venture's decision to commit to the partnership with an established firm. As theorized, the fundamental motivation for an entrepreneurial venture to seek a partnership with an established firm is to gain legitimacy and resources. While I have hypothesized that the degree of *need* for legitimacy and resources determines the eagerness of its decision to commit to the partnership, the results also show another side of the story that in making such a decision, the venture also takes into consideration its future *ability* to create value from the partnership. As such, during its decision process, it is torn between mixed forces of the current need and the expected future ability.

First of all, the results reveal that institutional density of such partnerships, both within the industry and within the geographical cluster, has an inverted-U relationship with the focal venture's decision to commit. The institutional density first creates a conformity pressure for the not-yet-committed ventures. Those ventures feel the need to follow in pursuit of legitimacy. However, when the industry or the geographical cluster becomes more and more crowded with such partnerships, the focal venture's likelihood to commit levels off and eventually decreases. This is because at this point, the venture does not anticipate that it will be able to gain enough attention from the established partner in the crowded space. The decreased anticipated value creation from the partnership thus starts to discourage subsequent commitments from more ventures.

Second, results show that a venture with higher legitimacy is more likely to make a commitment to the partnership with an established firm. While this is contrary to my hypothesis in the stage 1, it is actually consistent with my line of reasoning in the stage 2: A venture of higher legitimacy can anticipate more attention from the established firm once it makes the commitment, and such anticipation of the future gain enhances its present motivation to commit to the partnership.

Third, results show that a venture with fewer resources, especially technology resources, is more likely to commit to the established firm as a partner. This is consistent with my assumption in the stage 1 that the lack of resources prompts the venture to seek such a partnership with an attempt to access resources from the established partner. One reason that accounts for why technology resources appear more predictive than complementary resources (marketing, sales, and services) concerning a venture's decision to commit to the partnership is that in this empirical context, getting technology

resources from Alpha Corporation is less dependent on the attention from Alpha Corporation than getting complementary resources. As described in the section on the field setting, while quite a number of technology resources can be obtained on a self-serve basis, the way Alpha Corporation provides complementary resources is to a large extent embedded in its client representatives who work with the ISVs, where the ventures' competition for attention is the most obvious. As such, with regard to the technology resources, the venture is more driven by its need rather than its future ability to acquire these resources. Relatively speaking, as far as complementary resources are concerned, the venture is also concerned about its future ability to gain these resources. Therefore, lack of complementary resources does not appear to be a strong motivational factor for the venture to commit to the partnership.

As shown in the results, the venture's legitimacy and resources (especially technology resources) predict its partnership decision in different directions. The explanation is not surprising, and is in fact echoed by the evidence in the stage 2. Legitimacy, by definition, involves the perception of the public (Meyer & Rowan, 1977; Scott, 1987). A venture's level of legitimacy is highly evident to its potential established partner, and thus is a more immediate factor that determines the venture's attractiveness to that established partner. Hence, a venture with very low legitimacy would expect that it would not appear attractive to the established firm from the very beginning. So even though it is in greater need of legitimacy, the fear of being locked in the partnership without getting corresponding value, therefore, deters its decision to enter such a partnership. However, resources that a venture possesses are often less visible. Oftentimes, resources are embedded in a certain history or social context that can only be



ambiguously evaluated by outsiders (Barney, 1991). As such, the resource endowment of the venture may not be clearly and immediately observed by the public, including the potential established partner. The venture may still have the chance to get a certain degree of attention from the partner, and successfully accessing the latter's resources to create value. Thus, the consideration of need is stronger than the consideration of ability as long as resources are concerned. This observation is also reflected in the results in stage 2, where the venture's proactive behaviors have opposite interactions with its level of legitimacy and resources. The explanation for that difference is along the same line.

Fourth, in this sample, the effect of institutional density of forming a partnership with an established firm is stronger on ventures with higher legitimacy than on those of lower legitimacy. While an increase in the institutional density signals that ventures' post-commitment competition for attention will become intense, those with higher legitimacy are less affected by this concern.

### **5.3.2. Stage 2: Value Creation from the Partnership**

The dependent variable of interest in the second stage is the entrepreneurial venture's value creation from the partnership once it has committed to it. The underlying logic is that ventures in the same alliance portfolio are competing for the attention of their common established partner, such that those who get more attention receive more resources and support, and thus create more value from the partnership. I argue that two sets of factors account for the venture's ability to gain attention. One is the venture's attractiveness to the established firm. The other is the venture's proactive behaviors with regard to the partnership. Attractiveness can be determined exogenously by

environmental/institutional factors, and endogenously by its legitimacy, resources, and collaborative scope.

The results show that for the attractiveness indicators, only technology collaborative scope is predictive. That is, a venture that has a wider technology collaborative scope with its established partner creates more value from the partnership. There is no evidence of main effect from the other hypothesized variables concerning attractiveness. Also, according to the results, proactive behaviors matter. Making initiatives to approach and engage the established partner can significantly increase the venture's attention-getting ability and in turn the value creation from the partnership.

While evidence shows that both attractiveness and proactiveness matter for the venture to create value from the partnership, they also interact with each other. Importantly, the results suggest that the direction of the interaction depends on the nature of the attractiveness. For the highly visible aspects of the attractiveness, proactive behaviors can substitute for them. For instance, results show that in a crowded institutional structure where there are already many committed ventures in the same industry or in the same geographical cluster, a newly committed venture can gain significantly more attention from the established firm by being proactive. Besides, a venture of lower legitimacy or of a narrower scope of collaboration with the established firm can significantly overcome these inherent disadvantages by taking proactive actions. However, for the less visible aspects of the attractiveness, proactiveness magnifies their positive effect. For instance, I find that proactiveness enhances the value creation from the partnership to a greater extent for ventures with better technology resources. For the

less observable aspects of attractiveness, proactive behaviors will make these advantages more visible to the established partner, and thus attract more of its attention.

The results in the stage 2 bring into attention the role of proactive behaviors by the venture with regard to the partnership. Not only does proactiveness have a positive main effect on the venture's ability to gain attention and create value from the partnership, but proactiveness is especially important for ventures whose disadvantages are quite visible to the established partner. In these cases, proactive behaviors can significantly help the venture draw attention from its established partner.

Furthermore, I find that exogenous and endogenous attractiveness themselves can be substitutable in gaining attention from the established partner and create value. In a crowded institutional space, a venture with a higher level of legitimacy or a higher level of resources will be more likely to stand out. But such legitimacy and resource advantages are not as prominent when the venture is already in a favorable institutional structure, that is, entering an uncrowded space in the alliance portfolio.

**Table 7: Descriptives (Stage 1)**

Variables	Mean	s.d.	Min	Max	Obs
1. Decision to Commit	.10	.30	0	1	3407
2. Industry density	117.08	93.02	0	280	3407
3. Geo cluster density	9.84	14.63	0	66	3407
4. Industry award	.19	.39	0	1	3054
5. Media visibility	9.95	32.88	0	391	3054
6. Partner prominence	.94	1.38	0	8	3054
7. Patent	.57	2.66	0	25	3407
8. Marketing executives	.19	.18	0	.75	1223
9. Public	.08	.27	0	1	3407
10. VC-backed	.14	.35	0	1	3407
11. Prior history	3.87	2.74	0	8	3407

**Table 8: Zero-order Correlations (Stage 1)**

Variables	1	2	3	4	5	6	7	8	9	10
1. Decision to Commit										
2. Industry density	-.078***									
3. Geo cluster density	-.003	.480***								
4. Industry award	.100***	-.117***	-.004							
5. Media visibility	.084***	-.131***	-.020	.362***						
6. Partner prominence	.041*	-.063***	-.036*	.213***	.269***					
7. Patent	-.007	-.043*	.062***	.198***	.484***	.168***				
8. Marketing executives	.077**	-.100***	.012	.217***	.115***	.127***	.210***			
9. Public	.033 <sup>†</sup>	-.073***	-.035*	.252***	.524***	.381***	.331***	.051 <sup>†</sup>		
10. VC-backed	.097***	-.157***	-.003	.141***	.091***	.048**	.148***	.353***	-.123***	
11. Prior history	.046**	-.089***	.067***	.088***	.087***	.072***	.036*	.110***	.129***	-.106***

<sup>†</sup>p<.1, \*p<.05, \*\*p<.01, \*\*\*p<.001

**Table 9: Discrete-Time Event History Analysis with Logit Regression on a Venture’s Decision to Commit to the Partnership**

	1	2	3 <sup>3</sup>
<b>Control Variables</b>			
Public <sup>1</sup>	.43(.22) <sup>†</sup>	-.01(.26)	-.18(.36)
VC-backed <sup>1</sup>	.95(.17)***	.68(.15)***	.63(.26)*
Spun-off	.56(.49)	.24(.45)	.93(.64)
Division	.14(.35)	.06(.30)	.23(.48)
Europe <sup>2</sup>	-.17(.14)	-.10(.13)	-.09(.24)
Asia Pacific <sup>2</sup>	-.30(.33)	-.05(.31)	.84(.97)
Latin America <sup>2</sup>	-.27(.60)	-.05(.75)	
Middle East <sup>2</sup>	.64(.70)	.79(.58)	
Prior history	.08(.03)**	.05(.02)*	.06(.04)
<b>Institutional Density</b>			
Industry density		-.0018(.0008)*	.0017(.0016)
Geo cluster density		.0059(.0049)	.0143(.0073)*
<b>Legitimacy</b>			
Industry award		.4440(.1504)**	.4737(.2320)*
Media visibility		.0042(.0017)*	.0056(.0023)*
Partner prominence		.0409(.0440)	.0766(.0665)
<b>Resources</b>			
Patent		-.0840(.0298)**	-.1284(.0413)**
Marketing executives			.8826(.6406)
Constant	-2.63(.16)***	-2.45(.17)***	-3.02(.34)***
Observations	3407	3054	1219
$\chi^2$	42.38***	79.26***	35.98**

<sup>1</sup> The omitted category for “Public” and “VC-backed” is “Non-VC-backed”.

<sup>2</sup> The omitted category for “Europe”, “Asia Pacific”, “Latin America”, and “Middle East” is “North America”.

<sup>3</sup> Due to the missing data for the variable “Marketing executives”, this test is done in a reduced sample (obs=1219). The control variables “Latin America” and “Middle East” are not relevant in this reduced sample.

Values in parentheses are standard errors

Two-tail test: <sup>†</sup>p<.1, \*p<.05, \*\*p<.01, \*\*\*p<.001

**Table 10: Post-hoc Analysis for Stage 1 (I): The Effect of Institutional Density on a Venture’s Decision to Commit to the Partnership (Discrete-Time Event History Analysis with Logit Regression)**

	1	2	3	4	5	6	7
<b>Control Variables</b>							
Public <sup>1</sup>	-.01(.26)	-.08(.32)	-.01(.29)	-.03(.30)	-.01(.28)	-.05(.29)	-.09(.32)
VC-backed <sup>1</sup>	.70(.15)***	.88(.21)***	.81(.17)***	.80(.18)***	.80(.17)***	.80(.18)***	.87(.21)***
Spun-off	.23(.45)	.23(.56)	.25(.50)	.22(.51)	.24(.49)	.23(.51)	.24(.56)
Division	.05(.30)	-.04(.38)	.08(.34)	.11(.35)	.07(.33)	.12(.34)	-.03(.38)
Europe <sup>2</sup>	-.09(.13)	-.32(.17) <sup>†</sup>	-.15(.15)	-.24(.16)	-.13(.15)	-.20(.16)	-.33(.17) <sup>†</sup>
Asia Pacific <sup>2</sup>	-.09(.31)	-.35(.38)	-.10(.34)	-.05(.35)	-.12(.33)	-.05(.35)	-.31(.39)
Latin America <sup>2</sup>	-.07(.75)	.01(.92)	-.04(.82)	.06(.85)	-.06(.81)	.06(.83)	.03(.93)
Middle East <sup>2</sup>	.76(.58)	.70(.78)	.78(.67)	.84(.70)	.76(.65)	.79(.83)	.73(.78)
Prior history	.05(.02)*	.06(.03) <sup>†</sup>	.06(.03)*	.07(.03)*	.06(.03)*	.07(.03)**	.06(.03) <sup>†</sup>
<b>Institutional Density</b>							
Industry density	-.0012(.0007) <sup>†</sup>	.0347(.0044)***					.0002(.0001)
Geo cluster density			.0036(.0049)	.0445(.0146)**			.0057(.0106)
<i>Ind-geo density</i> <sup>3</sup>					.0008(.0008)	.0707(.0153)***	
<b>Legitimacy</b>							
Industry award	.4564(.1500)**	.5305(.1914)**	.4864(.1680)**	.4833(.1747)**	.4866(.1651)**	.4880(.1724)**	.5222(.1930)**
Media visibility	.0042(.0017)*	.0046(.0023)*	.0048(.0020)*	.0050(.0021)*	.0047(.0019)*	.0048(.0020)*	.0047(.0024)*
Partner prominence	.0389(.0440)	.0483(.0552)	.0383(.0490)	.0436(.0501)	.0373(.0482)	.0466(.0502)	.0499(.0556)
<b>Resources<sup>4</sup></b>							
Patent	-.0817(.0297)**	-.0948(.0359)**	-.0916(.0327)**	-.0930(.0339)**	-.0891(.0323)**	-.0906(.0329)**	-.0964(.0362)**
<b>Institutional Density-Square</b>							
Industry density-square		-.0001(.0000)***					-.0001(.0000)***
Geo cluster density-square				-.0008(.0003)**			-.0001(.0003)
<i>Ind-geo density-square</i>						-.0021(.0006)***	
Constant	-2.47(.17)***	-1.83(.23)***	-2.67(.17)***	-2.73(.18)***	-2.64(.16)***	-2.81(.18)***	-1.84(.24)***
Observations	3054	3054	3054	3054	3054	3054	3054
$\chi^2$	78.18***	118.26***	60.89***	63.64***	62.32***	66.64***	117.85***

<sup>1</sup> The omitted category for “Public” and “VC-backed” is “Non-VC-backed”.

<sup>2</sup> The omitted category for “Europe”, “Asia Pacific”, “Latin America”, and “Middle East” is “North America”.

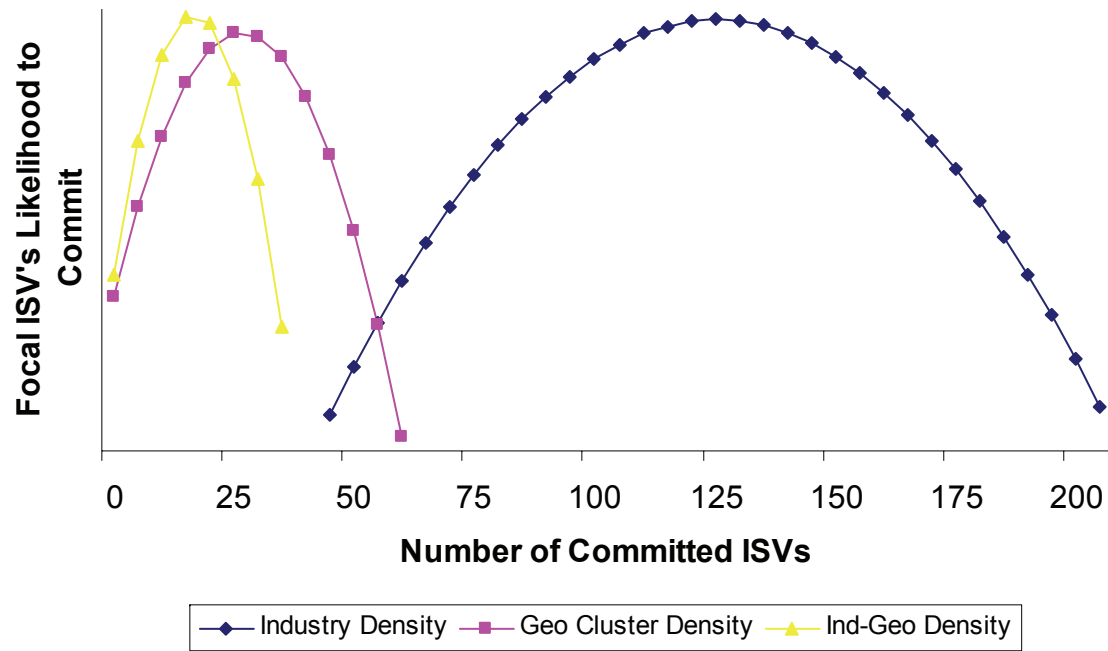
<sup>3</sup> The variable “Ind-geo density” is nested in “Industry density” and “Geo cluster density”: it measures the number of ISVs in the focal industry vertical *and* in the same geographical region that had already made technology commitments to Alpha Corporation by the beginning of each month. Therefore, it is not entered in the equation simultaneously with either “Industry density” or “Geo cluster density”.

<sup>4</sup> The variable “Marketing executives” is not included in this set of post-hoc analysis. On one hand, there are too many missing data for this variable. On the other hand, the variable does not significantly predict the dependent variable according to the earlier analysis.

Values in parentheses are standard errors

Two-tail test: <sup>†</sup>p<.1, \*p<.05, \*\*p<.01, \*\*\*p<.001

Figure 6: The Effect of Institutional Density on a Venture's Decision to Commit to the Partnership



**Table 11: Post-hoc Analysis for Stage 1 (II): Interactions between Institutional Density and a Venture’s Legitimacy on Its Decision to Commit to the Partnership (Discrete-Time Event History Analysis with Logit Regression)**

	1	2	3	4	5
<b>Control Variables</b>					
Public <sup>1</sup>	-.01(.26)	.02(.28)	.03(.28)	-.04(.28)	-.04(.26)
VC-backed <sup>1</sup>	.68(.15)***	.78(.18)***	.70(.18)***	.76(.18)***	.70(.15)***
Spun-off	.24(.45)	.37(.48)	.25(.48)	.29(.48)	.23(.45)
Division	.06(.30)	.10(.33)	.11(.32)	.07(.32)	.07(.30)
Europe <sup>2</sup>	-.10(.13)	-.12(.14)	-.07(.14)	-.11(.14)	-.08(.13)
Asia Pacific <sup>2</sup>	-.05(.31)	-.13(.33)	-.00(.33)	-.05(.33)	-.06(.31)
Latin America <sup>2</sup>	-.05(.75)	-.12(.79)	-.12(.79)	-.11(.79)	-.09(.75)
Middle East <sup>2</sup>	.79(.58)	.75(.64)	.73(.64)	.75(.63)	.83(.58)
Prior history	.05(.02)*	.06(.03)*	.05(.03)*	.06(.03)*	.05(.02)*
<b>Institutional Density</b>					
Industry density	-.0018(.0008)*	-.0030(.0010)**	-.0030(.0010)**	-.0012(.0010)	-.0016(.0008)*
Geo cluster density	.0059(.0049)	.0066(.0052)	.0066(.0052)	-.0007(.0062)	.0006(.0053)
<b>Legitimacy</b>					
Industry award	.4440(.1504)**	-.1677(.2276)	.3977(.1640)*	.2408(.1873)*	.4381(.1516)**
Media visibility	.0042(.0017)*	.0049(.0019)*	-.0051(.0029) <sup>†</sup>	.0048(.0019)	.0022(.0020)
Partner prominence	.0409(.0440)	.0275(.0475)	-.0006(.0486)	.0360(.0470)	.0320(.0444)
<b>Resources<sup>3</sup></b>					
Patent	-.0840(.0298)**	-.0920(.0320)**	-.1494(.0377)***	-.0913(.0321)**	-.1085(.0323)***
<b>Interactions<sup>4</sup></b>					
Ind density*Award		.0068(.0016)***			
Ind density*Media			.0002(.0000)***		
Geo density*Award				.0221(.0094)*	
Geo density*Media					.0003(.0001)**
Constant	-2.45(.17)***	-2.37(.19)	-2.32(.19)***	-2.50(.19)***	-2.42(.17)***
Observations	3054	3054	3054	3054	3054
$\chi^2$	79.26***	78.48***	87.29***	71.52***	84.63***

<sup>1</sup> The omitted category for “Public” and “VC-backed” is “Non-VC-backed”.

<sup>2</sup> The omitted category for “Europe”, “Asia Pacific”, “Latin America”, and “Middle East” is “North America”.

<sup>3</sup> The variable “Marketing executives” is not included in this set of post-hoc analysis. On one hand, there are too many missing data for this variable. On the other hand, the variable does not significantly predict the dependent variable according to the earlier analysis.

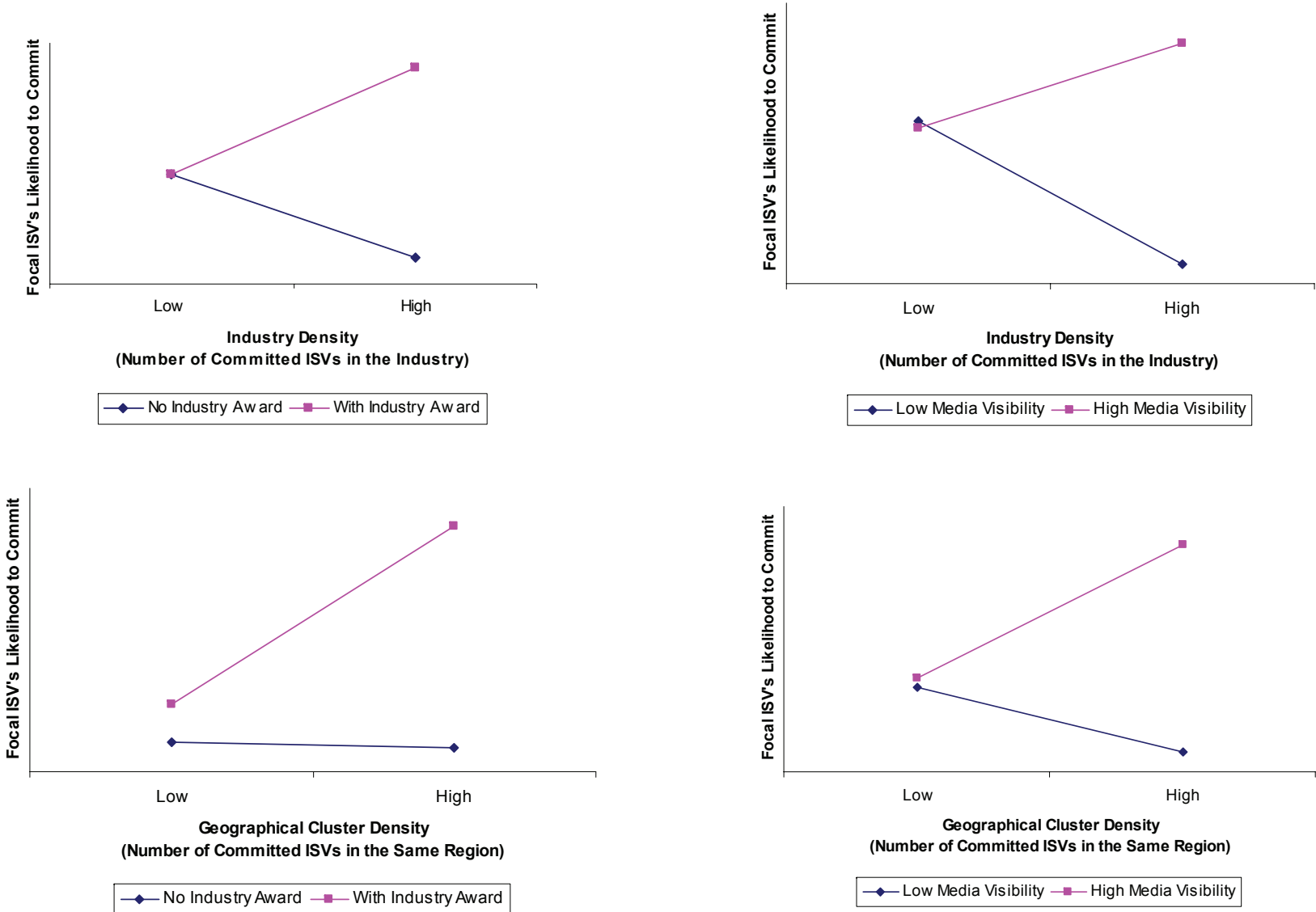
<sup>4</sup> I only report the significant interactions between “Institutional density” and “Legitimacy”.

Values in parentheses are standard errors

Two-tail test: <sup>†</sup>p<.1, \*p<.05, \*\*p<.01, \*\*\*p<.001



**Figure 7: Interactions between Institutional Density and a Venture’s Legitimacy on Its Decision to Commit to the Partnership**



**Table 12: Alternative Models on a Venture's Decision to Commit to the Partnership (I): Main Effects**

	ORIGINAL: Discrete-Time Logit (Random Effect)	Logit (using <i>Cluster</i> command)	Continuous-Time Harzard: Semi- parametric (Cox)	Continuous-Time Hazard: Parametric (Exponential) <sup>4</sup>	Continuous-Time Hazard: Parametric (Weibull)	Continuous-Time Hazard: Parametric (Gompertz)	Cross-sectional Logit <sup>5</sup>
<b>Control Variables</b>							
Public <sup>1</sup>	-.01(.26)	-.01(.24)	.03(.24)	.01(.24)	-.04(.25)	-.01(.24)	-.12(.51)
VC-backed <sup>1</sup>	.68(.15)***	.68(.16)***	.62(.14)***	.58(.14)***	.54(.14)***	.56(.14)***	1.63(.39)***
Spun-off	.24(.45)	.24(.38)	.21(.42)	.21(.42)	.23(.42)	.22(.42)	.56(.79)
Division	.06(.30)	.06(.29)	.02(.28)	.05(.28)	.00(.28)	.03(.28)	.64(.59)
Europe <sup>2</sup>	-.10(.13)	-.10(.14)	-.18(.13)	-.09(.12)	.00(.13)	-.04(.13)	-.32(.22)
Asia Pacific <sup>2</sup>	-.05(.31)	-.05(.30)	-.07(.29)	-.04(.29)	-.00(.29)	-.02(.29)	-.16(.51)
Latin America <sup>2</sup>	-.05(.75)	-.05(.58)	-.05(.72)	-.05(.72)	-.16(.72)	-.09(.72)	.27(.24)
Middle East <sup>2</sup>	.79(.58)	.79(.40)*	.63(.52)	.69(.52)	.84(.52)	.75(.52)	
Prior history	.05(.02)*	.05(.02)*	.05(.02)*	.05(.02)*	.04(.02)*	.04(.02)*	.11(.04)**
<b>Institutional Density</b>							
Industry density	-.0018(.0008)*	-.0018(.0008)*	-.0004(.0009)	-.0016(.0008)*	-.0043(.0009)***	-.0029(.0010)**	-.0063(.0020)***
Geo cluster density	.0059(.0049)	.0059(.0053)	.0063(.0047)	.0053(.0045)	.0039(.0046)	.0047(.0045)	.0229(.0132) <sup>†</sup>
<b>Legitimacy</b>							
Industry award	.4440(.1504)**	.4440(.1519)**	.3432(.1381)*	.3786(.1384)**	.4173(.1396)**	.4020(.1393)**	.9367(.3300)**
Media visibility	.0042(.0017)*	.0042(.0016)**	.0029(.0014)*	.0032(.0014)*	.0034(.0014)*	.0033(.0014)*	.0321(.0119)**
Partner prominence	.0409(.0440)	.0409(.0415)	.0377(.0403)	.0373(.0402)	.0446(.0402)	.0401(.0402)	-.0197(.0892)
<b>Resources<sup>3</sup></b>							
Patent	-.0840(.0298)**	-.0841(.0291)**	-.0670(.0275)*	-.0711(.0278)*	-.0793(.02818)**	-.0747(.0280)**	-.2480(.0724)***
Constant	-2.45(.17)***	-2.45(.17)***		-2.53(.16)***	-3.13(.19)***	-2.63(.16)***	.15(.25)
Observations	3054	3054	3054	3054	3054	3054	491
$\chi^2$	79.26***	81.34***	56.85***	65.99***	96.16***	70.54***	96.25***

<sup>1</sup> The omitted category for “Public” and “VC-backed” is “Non-VC-backed”.

<sup>2</sup> The omitted category for “Europe”, “Asia Pacific”, “Latin America”, and “Middle East” is “North America”.

<sup>3</sup> The variable “Marketing executives” is not included in this set of analyses. On one hand, there are too many missing data for this variable. On the other hand, in results not reported here, this variable does not significantly predict the dependent variable across *all* these statistics models in the reduced sample where the data for “Marketing executives” are available.

<sup>4</sup> For continuous-time parametric hazard models, I only report the three Proportional Hazard (PH) models (exponential, Weibull, and Gompertz). I have performed the tests using the other five Accelerated Failure Time (AFT) models (exponential, Weibull, lognormal, loglogistic, and generalized log gamma). The results and the significance levels are very close. However, the coefficients for AFT models are not very intuitive to interpret, I thus do not report them here.

<sup>5</sup> This analysis is based on the cross-sectional data, thereby only with 491 observations. All the variables are observed when the ISVs just signed up in the PNP. The exact timing of their upgrading to the Tier-2 is not considered in this model, so long as they had upgraded by July 1, 2005. The variable “Middle East” is dropped because there are only 4 ISVs from Middle East and all these firms had upgraded. It thus predicts perfectly.

Values in parentheses are standard errors

Two-tail test: <sup>†</sup>p<.1, \*p<.05, \*\*p<.01, \*\*\*p<.001

**Table 13: Alternative Models on a Venture’s Decision to Commit to the Partnership (II): Curvilinear Effects**

	ORIGINAL: Discrete-Time Logit (Random Effect)		Logit (using <i>Cluster</i> command)		Continuous-Time Hazard: Semi-parametric (Cox)		Continuous-Time Hazard: Parametric (Weibull) <sup>4</sup>	
	1	2	1	2	1	2	1	2
<b>Control Variables</b>								
Public <sup>1</sup>	-08(.32)	-.03(.30)	-.06(.25)	-.01(.25)	-.01(.24)	.03(.24)	-.09(.25)	.00(.24)
VC-backed <sup>1</sup>	.88(.21)***	.80(.18)***	.72(.16)***	.72(.16)***	.61(.14)***	.62(.14)***	.55(.14)***	.66(.14)***
Spun-off	.23(.56)	.22(.51)	.23(.45)	.26(.39)	.18(.42)	.21(.42)	.22(.42)	.25(.42)
Division	-.04(.38)	.11(.35)	-.05(.30)	.09(.29)	-.06(.28)	.04(.28)	-.08(.28)	.05(.28)
Europe <sup>2</sup>	-.32(.17) <sup>†</sup>	-.24(.16)	-.22(.14)	-.19(.14)	-.24(.13) <sup>†</sup>	-.23(.13) <sup>†</sup>	-.08(.13)	-.11(.13)
Asia Pacific <sup>2</sup>	-.35(.38)	-.05(.35)	-.25(.30)	-.06(.32)	-.23(.29)	-.05(.29)	-.16(.29)	-.10(.29)
Latin America <sup>2</sup>	.01(.92)	.06(.85)	-.02(.76)	.08(.63)	-.03(.72)	.01(.72)	-.13(.72)	.00(.72)
Middle East <sup>2</sup>	.70(.78)	.84(.70)	.63(.47)	.78(.43) <sup>†</sup>	.47(.52)	.63(.52)	.65(.52)	.71(.52)
Prior history	.06(.03) <sup>†</sup>	.07(.03)*	.04(.03) <sup>†</sup>	.06(.02)*	.03(.02)	.05(.02)*	.03(.02)	.06(.02)**
<b>Institutional Density</b>								
Industry density	.0347(.0044)***		.0296(.0032)***		.0237(.0030)***		.0216(.0030)***	
Geo cluster density		.0445(.0146)**		.0340(.0113)**		.0257(.0119)*		.0190(.0117)
<b>Legitimacy</b>								
Industry award	.5305(.1914)**	.4833(.1747)**	.4761(.1548)**	.4617(.1549)**	.3637(.1376)**	.3328(.1383)*	.4281(.1385)**	.4490(.1399)***
Media visibility	.0046(.0023)*	.0050(.0021)*	.0037(.0017)*	.0044(.0017)**	.0024(.0015)	.0029(.0014)*	.0028(.0015) <sup>†</sup>	.0036(.0014)*
Partner prominence	.0483(.0552)	.0436(.0501)	.0488(.0438)	.0461(.0431)	.0404(.0403)	.0394(.0405)	.0482(.0403)	.0466(.0407)
<b>Resources<sup>3</sup></b>								
Patent	-.0948(.0359)**	-.0930(.0339)**	-.0776(.0259)**	-.0829(.0289)**	-.0577(.0265)*	-.0653(.0275)*	-.0700(.0270)**	-.0749(.0277)**
<b>Instit. Density-Square</b>								
Industry density-square	-.0001(.0000)***		-.0001(.0000)***		-.0001(.0000)***		-.0001(.0000)***	
Geo cluster density-square		-.0008(.0003)**		-.0007(.0002)**		-.0004(.0002) <sup>†</sup>		-.0005(.0002)*
Constant	-1.83(.23)***	-2.73(.18)***	-3.38(.22)***	-2.72(.17)***			-3.76(.21)***	-3.25(.19)***
Observations	3054	3054	3054	3054	3054	3054	3054	3054
$\chi^2$	118.26***	63.64***	164.18***	76.24***	126.57***	60.00***	180.48***	76.99***

<sup>1</sup> The omitted category for “Public” and “VC-backed” is “Non-VC-backed”.

<sup>2</sup> The omitted category for “Europe”, “Asia Pacific”, “Latin America”, and “Middle East” is “North America”.

<sup>3</sup> The variable “Marketing executives” is not included in this set of analyses. On one hand, there are too many missing data for this variable. On the other hand, in results not reported here, this variable does not significantly predict the dependent variable across *all* these statistics models in the reduced sample where the data for “Marketing executives” are available.

<sup>4</sup> For continuous-time parametric hazard models, I only report the results of the Weibull Proportional Hazard model here. The results from the other continuous-time parametric hazard models (including all Proportional Hazard and Accelerated Failure Time models) are very close. The reason that I report the results from the Weibull PH model is that across all the continuous-time parametric hazard models, the Weibull PH has the smallest AIC index, which statistically proves to be the best-fitting model among them (Akaike, 1974).  $AIC = -2(\log \text{likelihood}) + 2(c+p)$ , where *c* is the number of model covariates and *p* is the number of model-specific distributional parameters. For the models estimated by Stata, the values of *p* are: Exponential (PH, AFT), *p*=1; Weibull (PH, AFT), *p*=2; Gompertz (PH), *p*=2; Log-normal (AFT), *p*=2; Log-logistic (AFT), *p*=2; Generalized Log Gamma (AFT), *p*=3.

Values in parentheses are standard errors

Two-tail test: <sup>†</sup>*p*<.1, \**p*<.05, \*\**p*<.01, \*\*\**p*<.001

**Table 14: Alternative Models on a Venture’s Decision to Commit to the Partnership (III): Interaction Effects**

	ORIGINAL: Discrete-Time Logit (Random Effect)		Logit (using <i>Cluster</i> command)		Continuous-Time Hazard: Semi-parametric (Cox)		Continuous-Time Hazard: Parametric (Weibull) <sup>5</sup>	
	1	2	1	2	1	2	1	2
<b>Control Variables</b>								
Public <sup>1</sup>	.02(.28)	-.04(.26)	.02(.25)	-.04(.25)	.07(.24)	.01(.24)	-.02(.24)	-.05(.25)
VC-backed <sup>1</sup>	.78(.18)***	.70(.15)***	.72(.17)***	.70(.16)***	.65(.14)***	.63(.14)***	.57(.14)***	.55(.14)***
Spun-off	.37(.48)	.23(.45)	.36(.38)	.23(.38)	.33(.42)	.19(.42)	.34(.42)	.21(.42)
Division	.10(.33)	.07(.30)	.09(.28)	.07(.29)	.05(.28)	.03(.28)	.03(.28)	.01(.28)
Europe <sup>2</sup>	-.12(.14)	-.08(.13)	-.10(.14)	-.08(.14)	-.16(.13)	-.17(.13)	.01(.12)	.01(.13)
Asia Pacific <sup>2</sup>	-.13(.33)	-.06(.31)	-.12(.32)	-.06(.31)	-.14(.29)	-.08(.29)	-.07(.29)	-.02(.29)
Latin America <sup>2</sup>	-.12(.79)	-.09(.75)	-.10(.54)	-.09(.58)	-.11(.72)	-.09(.72)	-.22(.72)	-.20(.72)
Middle East <sup>2</sup>	.75(.64)	.83(.58)	.75(.39) <sup>†</sup>	.83(.41)*	.60(.52)	.67(.52)	.81(.52)	.88(.52) <sup>†</sup>
Prior history	.06(.03)*	.05(.02)*	.05(.02)*	.05(.02)*	.05(.02)*	.05(.02)*	.04(.02)*	.04(.02)*
<b>Institutional Density</b>								
Industry density	-.0030(.0010)**	-.0016(.0008)*	-.0033(.0009)***	-.0016(.0008)*	-.0021(.0010)*	-.0003(.0009)	-.0060(.0010)***	-.0043(.0009)***
Geo cluster density	.0066(.0052)	.0006(.0053)	.0058(.0056)	.0006(.0057)	.0072(.0047)	.0025(.0051)	.0033(.0045)	.0004(.0049)
<b>Legitimacy</b>								
Industry award	-.1677(.2276)	.4381(.1516)**	-.1450(.1688)	.4381(.1518)**	-.1675(.1996)	.3453(.1384)*	-.1503(.1986)	.4208(.1404)**
Media visibility	.0049(.0019)*	.0022(.0020)	.0046(.0016)**	.0022(.0022)	.0031(.0015)*	.0009(.0018)	.0038(.0015)**	.0012(.0018)
Partner prominence	.0275(.0475)	.0320(.0444)	.0305(.0425)	.0320(.0439)	.0248(.0406)	.0399(.0405)	.0389(.0402)	.0453(.0405)
<b>Resources<sup>3</sup></b>								
Patent	-.0920(.0320)**	-.1085(.0323)***	-.0871(.0314)**	-.1085(.0339)***	-.0679(.0277)*	-.0740(.0271)**	-.0824(.0279)**	-.0876(.0282)**
<b>Interactions<sup>4</sup></b>								
Ind density*Award	.0068(.0016)***		.0063(.0015)***		.0055(.0015)***		.0062(.0014)***	
Geo density*Media		.0003(.0001)**		.0003(.0001)**		.0002(.0001)*		.0002(.0001)*
Constant	-2.37(.19)	-2.42(.17)***	-2.30(.17)***	-2.42(.17)***			-3.00(.19)***	-3.1(.19)***
Observations	3054	3054	3054	3054	3054	3054	3054	3054
$\chi^2$	78.48***	84.63***	89.38***	82.18***	70.90***	61.75***	114.47***	102.17***

<sup>1</sup> The omitted category for “Public” and “VC-backed” is “Non-VC-backed”.

<sup>2</sup> The omitted category for “Europe”, “Asia Pacific”, “Latin America”, and “Middle East” is “North America”.

<sup>3</sup> The variable “Marketing executives” is not included in this set of analyses. On one hand, there are too many missing data for this variable. On the other hand, in results not reported here, this variable does not significantly predict the dependent variable across *all* these statistics models in the reduced sample where the data for “Marketing executives” are available.

<sup>4</sup> While there are four significant interactions (see Table 11), here I only report two across all alternative models as a representation. Again, the other two interactions all come out in all the alternative statistics models.

<sup>5</sup> For continuous-time parametric hazard models, I only report the results of the Weibull Proportional Hazard model here. The results from the other continuous-time parametric hazard models (including all Proportional Hazard and Accelerated Failure Time models) are very close. The reason that I report the results from the Weibull PH model is that across all the continuous-time parametric hazard models, the Weibull PH has the smallest AIC index, which statistically proves to be the best-fitting model among them (Akaike, 1974). See notes for Table 13 for details.

Values in parentheses are standard errors

Two-tail test: <sup>†</sup>p<.1, \*p<.05, \*\*p<.01, \*\*\*p<.001

**Table 15: Analysis on the Surveyed Sample: Discrete-Time Event History Analysis with Logit Regression on a Venture's Decision to Commit to the Partnership**

	1	2	3 <sup>4</sup>
<b>Control Variables<sup>1</sup></b>			
Public <sup>2</sup>	.26(.41)	-.90(.53) <sup>†</sup>	-1.07(.80)
VC-backed <sup>2</sup>	.77(.32)*	.45(.32)	-.11(.46)
Division	-.53(.78)	-.51(.77)	-.76(1.34)
Europe <sup>3</sup>	.20(.27)	.31(.28)	2.03(.59)***
Asia Pacific <sup>3</sup>	.57(.56)	1.18(.58)*	
Middle East <sup>3</sup>	.58(.99)	1.11(.97)	2.03(1.36)
Prior history	.04(.05)	.01(.05)	-.08(.09)
Age	.02(.02)	.03(.02)	.03(.03)
Size	.32(.11)**	.18(.12)	.37(.22) <sup>†</sup>
J2EE	.74(.24)**	.85(.24)***	.57(.36)
.NET	-1.07(.38)**	-.99(.39)*	-1.37(.60)*
<b>Institutional Density</b>			
Industry density		-.0005(.0016)	.0019(.0024)
Geo cluster density		.0185(.0080)*	.0286(.0111)**
<b>Legitimacy</b>			
Industry award		.4237(.2886)	.7756(.4192) <sup>†</sup>
Media visibility		.0076(.0040) <sup>†</sup>	.0117(.0062) <sup>†</sup>
Partner prominence		.1235(.0995)	.1298(.1569)
<b>Resources</b>			
Patent		-.0688(.0374) <sup>†</sup>	-.1210(.0523)*
Marketing executives			1.0869(1.2342)
Constant	-3.63(.43)***	-3.52(.49)***	-4.45(.79)***
Observations	848	795	360
$\chi^2$	37.23***	53.51***	46.53***

<sup>1</sup> This set of analysis is done on the surveyed sample. I dropped two control variables, “Spun-off” and “Latin America”, since no ISVs in the surveyed sample were spun-off or from Latin America. I added four control variables that were collected from the survey. They are “Age”, “Size”, “J2EE”, and “.NET”.

<sup>2</sup> The omitted category for “Public” and “VC-backed” is “Non-VC-backed”.

<sup>3</sup> The omitted category for “Europe”, “Asia Pacific”, and “Middle East” is “North America”. As noted, “Latin America” is not relevant in this surveyed sample.

<sup>4</sup> Due to the missing data for the variable “Marketing executives”, this test is done in a even reduced sample (obs=360). The control variable “Asia Pacific” is not relevant in this even reduced sample.

Values in parentheses are standard errors

Two-tail test: <sup>†</sup>p<.1, \*p<.05, \*\*p<.01, \*\*\*p<.001

**Table 16: Analysis on the Surveyed Sample: Curvilinear Effects and Interaction Effects on a Venture's Decision to Commit to the Partnership (Discrete-Time Event History Analysis with Logit Regression)**

	1	2	3	4	5	6
<b>Control Variables<sup>1</sup></b>						
Public <sup>2</sup>	-.99(.63)	-1.03(.57) †	-.85(.54)	-1.13(.58) †	-1.05(.53)*	-1.16(.57)*
VC-backed <sup>2</sup>	.74(.38) †	.34(.34)	.38(.32)	.20(.33)	.38(.33)	.42(.32)
Division	-.32(.89)	-.50(.82)	-.57(.78)	-.53(.81)	-.55(.77)	-.52(.76)
Europe <sup>3</sup>	.26(.34)	.29(.31)	.29(.29)	.34(.29)	.34(.29)	.35(.28)
Asia Pacific <sup>3</sup>	.51(.67)	1.29(.61)*	1.22(.59)*	1.15(.59)*	1.27(.58)*	1.19(.58)*
Middle East <sup>3</sup>	.57(1.14)	1.24(1.04)	.92(.97)	1.04(1.04)	1.14(.98)	1.38(.98)
Prior history	-.00(.06)	.01(.05)	-.00(.05)	-.02(.05)	.04(.05)	.03(.05)
Age	.02(.02)	.02(.02)	.03(.02)	.03(.02)	.02(.02)	.02(.02)
Size	.21(.15)	.23(.14) †	.24(.13) †	.20(.13)	.22(.12) †	.21(.13) †
J2EE	.90(.31)**	.87(.26)***	.85(.25)***	.78(.25)**	.84(.24)***	.77(.24)**
.NET	-1.23(.47)**	-1.05(.42)*	-1.16(.40)**	-.91(.39)*	.90(.39)*	-.86(.39)*
<b>Institutional Density</b>						
Industry density	.0380(.0079)***		-.0039(.0019)*	-.0045(.0019)*	-.0003(.0016)	-.0006(.0016)
Geo cluster density		.0718(.0253)**	.0229(.0086)**	.0205(.0087)*	.0069(.0094)	.0082(.0090)
<b>Legitimacy</b>						
Industry award	.5148(.3451)	.4498(.3053)	-.5738(.3952)	.3684(.2959)	-.0554(.3376)	.3334(.2984)
Media visibility	.0062(.0049)	.0079(.0044) †	.0063(.0041)	-.0136(.0077) †	.0079(.0041) †	.0040(.0047)
Partner prominence	.0821(.1204)	.0881(.1082)	.0854(.1026)	.1107(.1038)	.0979(.1010)	.0776(.1041)
<b>Resources<sup>4</sup></b>						
Patent	-.0595(.0428)	-.0799(.0409)*	-.0544(.0378)	-1.007(.0461)*	-.0821(.0395)*	-1.224(.0488)*
<b>Instit. Density-Square</b>						
Industry density-square	-.0001(.0000)***					
Geo density-square		-.0010(.0005)*				
<b>Interactions<sup>5</sup></b>						
Ind density*Award			.0124(.0032)***			
Ind density*Media				.0003(.0001)***		
Geo density*Award					.0519(.0180)**	
Geo density*Media						.0008(.0003)**
Constant	-4.63(.74)***	-3.79(.51)***	-3.07(.49)***	-3.08(.49)***	-3.56(.50)***	-3.47(.49)***
Observations	795	795	795	795	795	795
$\chi^2$	48.24***	45.89***	63.03***	67.85***	58.75***	59.10***

<sup>1</sup> This set of analysis is done on the surveyed sample. I dropped two control variables, “Spun-off” and “Latin America”, since no ISVs in the surveyed sample were spun-off or from Latin America. I added four control variables that were collected from the survey. They are “Age”, “Size”, “J2EE”, and “.NET”.

<sup>2</sup> The omitted category for “Public” and “VC-backed” is “Non-VC-backed”.

<sup>3</sup> The omitted category for “Europe”, “Asia Pacific”, and “Middle East” is “North America”. As noted, “Latin America” is not relevant in this surveyed sample.

<sup>4</sup> The variable “Marketing executives” is not included in this set of analyses. On one hand, there are too many missing data for this variable. On the other hand, in results not reported here, this variable does not significantly predict the dependent variable across *all* these statistics models in the reduced sample where the data for “Marketing executives” are available.

<sup>5</sup> Consistent with the results reported earlier for all the firms, I only report the four interactions between “Institutional density” and “Legitimacy” that turned out to be significant.

Values in parentheses are standard errors

Two-tail test: †p<.1, \*p<.05, \*\*p<.01, \*\*\*p<.001

**Table 17: Analysis on a Reduced Sample of Ventures<sup>1</sup>: Discrete-Time Event History Analysis with Logit Regression on a Venture's Decision to Commit to the Partnership**

	1	2	3 <sup>3</sup>
<b>Control Variables</b>			
VC-backed	1.01(.19)***	.67(.19)***	.71(.29)*
Europe <sup>2</sup>	-.21(.16)	-.07(.15)	.05(.29)
Asia Pacific <sup>2</sup>	-.42(.40)	-.13(.38)	.42(1.41)
Latin America <sup>2</sup>	-.29(.63)	-.05(.78)	
Middle East <sup>2</sup>	.94(.87)	1.05(.72)	1.53(1.51)
Prior history	.09(.03)**	.05(.03)*	.08(.05)
<b>Institutional Density</b>			
Industry density		-.0020(.0010)†	.0013(.0018)
Geo cluster density		.0036(.0056)	.0137(.0085)
<b>Legitimacy</b>			
Industry award		.4827(.1776)**	.6165(.2821)*
Media visibility		.0072(.0038)†	.0068(.0051)
Partner prominence		.0576(.0590)	.1333(.0937)
<b>Resources</b>			
Patent		-.0695(.0451)	-.1019(.0721)
Marketing executives			.4137(.7379)
Constant	-2.67(.17)***	-2.49(.21)***	-3.16(.39)***
Observations	2978	2631	946
$\chi^2$	38.56***	61.95***	28.13**

<sup>1</sup> This reduced sample is based on a more conservative definition of entrepreneurial ventures—private independent ventures only. Therefore, this sample does not include public ventures, spin-off ventures, and ventures that are divisions of parent companies.

<sup>2</sup> The omitted category for “Europe”, “Asia Pacific”, “Latin America”, and “Middle East” is “North America”.

<sup>3</sup> Due to the missing data for the variable “Marketing executives”, this test is done in a even reduced sample (obs=946). The control variable “Latin America” is not relevant in this even reduced sample.

Values in parentheses are standard errors

Two-tail test: †p<.1, \*p<.05, \*\*p<.01, \*\*\*p<.001

**Table 18: Analysis on a Reduced Sample of Ventures<sup>1</sup>: Curvilinear Effects and Interaction Effects on a Venture's Decision to Commit to the Partnership (Discrete-Time Event History Analysis with Logit Regression)**

	1	2	3	4	5	6
<b>Control Variables</b>						
VC-backed	.82(.22)***	.79(.20)***	.72(.19)***	.62(.19)***	.70(.19)***	.59(.17)***
Europe <sup>2</sup>	-.31(.19) <sup>†</sup>	-.20(.17)	-.08(.16)	-.02(.16)	-.07(.16)	-.02(.14)
Asia Pacific <sup>2</sup>	-.47(.45)	-.18(.42)	-.24(.39)	-.06(.39)	-.12(.39)	-.13(.37)
Latin America <sup>2</sup>	-.00(.91)	.04(.87)	-.11(.79)	-.09(.79)	-.10(.79)	-.09(.75)
Middle East <sup>2</sup>	1.14(.90)	1.12(.84)	1.06(.74)	1.18(.73)	1.02(.73)	1.05(.67)
Prior history	.06(.03) <sup>†</sup>	.07(.03)*	.06(.03)*	.06(.03)*	.06(.03)*	.06(.02)*
<b>Institutional Density</b>						
Industry density	.0320(.0046)***		-.0032(.0011)**	-.0037(.0011)***	-.0002(.0011)	-.0021(.0009)*
Geo cluster density		.0376(.0162)*	.0040(.0057)	.0060(.0058)	-.0022(.0067)	-.0047(.0062)
<b>Legitimacy</b>						
Industry award	.5413(.2108)**	.5198(.1992)**	-.0531(.2516)	.4373(.1823)*	.2836(.2107)	.4509(.1696)**
Media visibility	.0060(.0046)	.0077(.0043) <sup>†</sup>	.0067(.0039) <sup>†</sup>	-.0082(.0059)	.0075(.0039) <sup>†</sup>	.0009(.0043)
Partner prominence	.0976(.0687)	.0613(.0658)	.0461(.0605)	.0456(.0607)	.0550(.0600)	.0571(.0571)
<b>Resources<sup>3</sup></b>						
Patent	-.0753(.0498)	-.0806(.0496)	-.0686(.0453)	-.0824(.0471) <sup>†</sup>	-.0716(.0453)	-.0710(.0440)
<b>Instit. Density-Square</b>						
Industry density-square	-.0001(.0000)***					
Geo density-square		-.0008(.0003)*				
<b>Interactions<sup>5</sup></b>						
Ind density*Award			.0059(.0019)***			
Ind density*Media				.0002(.0001)***		
Geo density*Award					.0202(.0106) <sup>†</sup>	
Geo density*Media						.0010(.0003)**
Constant	-3.61(.31)***	-2.83(.20)***	-2.39(.21)***	-2.37(.21)***	-2.49(.21)***	-2.42(.1799)***
Observations	2631	2631	2631	2631	2631	2631
$\chi^2$	100.01***	53.13***	66.35***	69.09***	62.84***	76.31***

<sup>1</sup> This reduced sample is based on a more conservative definition of entrepreneurial ventures—private independent ventures only. Therefore, this sample does not include public ventures, spin-off ventures, and ventures that are divisions of parent companies.

<sup>2</sup> The omitted category for “Europe”, “Asia Pacific”, “Latin America” and “Middle East” is “North America”.

<sup>3</sup> The variable “Marketing executives” is not included in this set of analyses. On one hand, there are too many missing data for this variable. On the other hand, in results not reported here, this variable does not significantly predict the dependent variable across *all* these statistics models in the even reduced sample where the data for “Marketing executives” are available.

<sup>5</sup> Consistent with the results reported earlier for all the firms, I only report the four interactions between “Institutional density” and “Legitimacy” that turned out to be significant.

Values in parentheses are standard errors

Two-tail test: <sup>†</sup>p<.1, \*p<.05, \*\*p<.01, \*\*\*p<.001



**Table 19: Descriptives (Stage 2)**

<b>Variables</b>	<b>Mean</b>	<b>s.d.</b>	<b>Min</b>	<b>Max</b>	<b>Obs</b>
1. Value creation	3.18	1.26	1.2	6.8	112
2. Industry density	109.04	67.76	1	250	112
3. Geo cluster density	14.22	18.41	0	74	112
4. Industry award	0.34	0.48	0	1	111
5. Media visibility	21.91	40.45	0	236	112
6. Partner prominence	1.14	1.58	0	6	110
7. Patent	0.96	3.52	0	24	112
8. Marketing workforce	0.47	0.21	0	1	112
9. Technology scope	7.50	3.78	2	19	112
10. Market scope	3.29	1.62	1	12	112
11. Benefit usage	1.72	3.58	0	25	111
12. Lead generation	1.27	3.62	0	24	111
13. Customer response generation	36.23	162.76	0	1450	111
14. Public	0.11	0.31	0	1	112
15. VC-backed	0.26	0.44	0	1	112
16. Prior history	4.43	2.90	0	8	112
17. Age	11.24	7.05	2	30	112
18. Number of employees	79.76	107.45	1	500	111
19. J2EE	0.44	0.50	0	1	112
20. .NET	0.11	0.31	0	1	112
21. Tier-3	0.17	0.38	0	1	112
22. Time since Tier-2	4.15	0.78	1.89	6.21	112
23. Relational capital	4.46	1.49	1	7	110

**Table 20: Zero-order Correlations (Stage 2)**

Variables	1	2	3	4	5	6	7	8	9	10	11	12	13
1. Value creation													
2. Industry density	.115												
3. Geo cluster density	.074	.428***											
4. Industry award	.125	.073	.144										
5. Media visibility	.199*	.135	.245**	.225*									
6. Partner prominence	.044	.081	.128	.144	.416***								
7. Patent	.080	.053	.157 <sup>†</sup>	.156	.563***	.198*							
8. Marketing workforce	.117	-.078	-.146	.082	-.126	.054	-.123						
9. Technology scope	.184 <sup>†</sup>	-.131	-.122	.092	-.120	.093	-.135	.232*					
10. Market scope	.318***	.127	.039	-.007	.121	.160 <sup>†</sup>	-.019	.022	.068				
11. Benefit usage	.068	-.094	-.021	.209*	.127	.044	.183 <sup>†</sup>	-.144	.030	.075			
12. Lead generation	.055	-.097	-.004	.176 <sup>†</sup>	.108	.074	.219*	-.139	.074	.013	.526***		
13. Customer response	.046	-.237*	-.085	.199*	-.027	.145	-.054	-.067	.096	-.073	.396***	.519***	
14. Public	.140	.138	.207*	.116	.579***	.546***	.119	.023	.046	.189*	.044	.030	-.041
15. VC-backed	.004	.060	.362***	.176	.110	.056	.134	-.291**	-.160 <sup>†</sup>	.085	.196*	.171	.074
16. Prior history	.137	.032	-.096	-.036	.029	.126	-.035	.245*	.222*	.146	-.112	-.050	.021
17. Age	.030	.027	-.168 <sup>†</sup>	-.029	.094	.105	-.074	.196 <sup>†</sup>	.040	.032	-.170 <sup>†</sup>	-.136	-.061
18. Size (log of # employees)	.134	-.001	-.082	.209*	.285**	.473***	.067	.091	.035	.073	.074	.045	.144
19. J2EE	-.192*	-.167 <sup>†</sup>	-.002	.047	-.041	.155	-.063	.075	.093	-.101	.074	.046	.173 <sup>†</sup>
20. .NET	.099	-.070	-.018	.015	.027	-.048	.160 <sup>†</sup>	-.013	-.306***	-.044	.198*	.143	-.073
21. Tier-3	-.006	-.168 <sup>†</sup>	.032	.227*	.120	.040	.228*	-.174	.155	-.272**	.412***	.424***	.403***
22. Time since Tier-2	-.092	-.919***	-.447	-.091	-.103	-.037	-.013	.102	.193*	-.123	.182 <sup>†</sup>	.167 <sup>†</sup>	.308***
23. Relational capital	.437***	.040	.081	.138	.179 <sup>†</sup>	-.026	.215*	-.081	.041	.177 <sup>†</sup>	.193*	.123	.016

Variables	14	15	16	17	18	19	20	21	22
15. VC-backed	-.205*								
16. Prior history	.079	-.349***							
17. Age	.198*	-.328***	.531***						
18. Size	.201*	.095	.249**	.392***					
19. J2EE	.044	.013	-.081	-.220*	-.143				
20. .NET	-.027	.191*	-.271**	-.094	.100	-.073			
21. Tier-3	.074	.004	-.042	-.138	-.030	.081	-.003		
22. Time since Tier-2	-.084	-.134	.061	.030	.065	.177 <sup>†</sup>	.050	.275**	
23. Relational capital	-.17	.105	.093	-.003	.079	-.123	-.007	.191*	-.003

<sup>†</sup>p<.1, \*p<.05, \*\*p<.01, \*\*\*p<.001

**Table 21: OLS Regression on a Venture’s Value Creation from the Partnership: Main Effects**

	1	2
<b>Control Variables</b>		
Public <sup>1</sup>	.33(.46)	.12(.70)
VC-backed <sup>1</sup>	-.50(.46)	-.93(.85)
Division	-.98(.77)	-1.03(.85)
Europe <sup>2</sup>	.05(.30)	.12(.38)
Asia Pacific <sup>2</sup>	.13(.50)	-.44(.65)
Middle East <sup>2</sup>	1.15(.91)	1.09(.97)
Prior History	.02(.06)	-.07(.09)
Age	-.02(.02)	.01(.03)
Size	.03(.10)	-.04(.16)
J2EE	-.31(.24)	-.53(.29) <sup>†</sup>
.NET	.54(.39)	1.04(.45)*
Tier-3	-.17(.32)	-.42(.47)
Time since Tier-2	-.08(.16)	.01(.50)
Relational capital	.33(.08)***	.32(.09)***
<i>Inverse Mills ratio</i>	.89(.69)	1.63(1.86)
<b>Institutional Density</b>		
Industry density		.0005(.0058)
Geo cluster density		.0032(.0106)
<b>Legitimacy</b>		
Industry award		-.0320(.4983)
Media visibility		.0017(.0081)
Partner prominence		-.0381(.1271)
<b>Resources</b>		
Patent		-.0125(.0888)
Marketing workforce		.4121(.8550)
<b>Collaborative Scope</b>		
Technology scope		.0833(.0383)*
Market scope		.0756(.1118)
<b>Proactiveness</b>		
Benefit usage		-.1806(.1133)
Lead generation		.1133(.1019)
Customer response generation		.0020(.0010)*
Constant	2.55(1.00)*	1.99(2.80)
ΔR <sup>2</sup>	.282*	.059
F (R <sup>2</sup> )	2.41*	1.642 <sup>†</sup>

<sup>1</sup> The omitted category for “Public” and “VC-backed” is “Non-VC-backed”.

<sup>2</sup> The omitted category for “Europe”, “Asia Pacific”, and “Middle East” is “North America”. No surveyed ISVs are from Latin America.

Values in parentheses are standard errors  
 Two-tail test: <sup>†</sup>p<.1, \*p<.05, \*\*p<.01, \*\*\*p<.001

**Table 22: OLS Regression on a Venture's Value Creation from the Partnership: Interaction Effects**

	1	2	3	4	5	6	7
<b>Control Variables<sup>1</sup></b>							
J2EE	-.75(.28)**	-.69(.29)*	-.89(.29)**	-.86(.29)**	-.63(.29)*	-.69(.29)*	-.65(.29)*
.NET	.98(.43)*	1.09(.44)*	1.14(.42)**	1.05(.43)*	.98(.45)*	1.05(.45)*	1.20(.45)**
Relational capital	.32(.08)***	.32(.09)***	.31(.08)***	.29(.09)***	.31(.09)***	.33(.09)***	.30(.09)**
<i>Inverse Mills ratio</i>	1.37(1.74)	.83(1.83)	.87(1.74)	.61(1.77)	.96(1.84)	1.05(1.83)	.73(1.85)
<b>Institutional Density</b>							
Industry density	.00004(.0053)	.00003(.0055)	-.0002(.0053)	-.0006(.0054)	-.0011(.0056)	-.0021(.0057)	.0010(.0056)
Geo cluster density	.0020(.0099)	.0017(.0102)	-.0084(.0105)	-.0045(.0103)	.0029(.0103)	.0070(.0104)	.0065(.0103)
<b>Legitimacy</b>							
Industry award	-.0506(.4750)	.1400(.4933)	.2733(.4743)	.3318(.4838)	.2907(.5093)	.2402(.5033)	.3892(.5172)
Media visibility	.0050(.0077)	.0059(.0081)	.0056(.0077)	.0059(.0079)	.0054(.0082)	.0025(.0082)	.0074(.0083)
Partner prominence	.1087(.1195)	.0553(.1222)	.1388(.1221)	.1070(.1212)	-.0140(.1209)	.0270(.1213)	-.0228(.1206)
<b>Resources</b>							
Patent	-.0301(.0855)	-.0589(.0898)	-.0573(.0855)	-.0828(.0878)	-.0472(.0903)	-.1513(.1099)	-.0821(.0926)
Marketing workforce	.5692(.7710)	.4130(.8019)	.4080(.7662)	.3542(.7758)	.3873(.8099)	.1524(.8163)	-.1185(.8416)
<b>Collaborative Scope</b>							
Technology scope	.0835(.0355)*	.0852(.0371)*	.0786(.0355)*	.0800(.0359)*	.0839(.0375)*	.0822(.0375)*	.1226(.0417)**
Market scope	.0380(.1049)	.0901(.1105)	.0662(.1045)	.1020(.1070)	.0633(.1105)	.0506(.1104)	.0774(.1104)
<b>Proactiveness</b>							
Benefit usage	-.3942(.1233)	-.2057(.1077)	-.2844(.1074)	-.2263(.1048)	-.2179(.1102)	-.1258(.1122)	-.2449(.1126)
Lead generation	.1355(.0925)	-.0901(.1105)	.0899(.0920)	.0224(.0976)	.2590(.1294)*	.0600(.1006)	.3522(.1592)*
Customer response generation	.0041(.0011)***	.0036(.0012)**	.0027(.0009)**	.0027(.0009)**	.0028(.0010)**	.0019(.0010) <sup>†</sup>	.0016(.0010)
<b>Interaction Terms<sup>2</sup></b>							
Ind density*Benefit usage	.0021(.0007)**						
Ind density*Lead generation		.0016(.0008)*					
Geo density*Benefit usage			.0081(.0026)**				
Geo density*Lead generation				.0088(.0030)**			
Award*Lead generation					-.1635(.928) <sup>†</sup>		
Patent*Lead generation						.0583(.0324) <sup>†</sup>	
Tech scope*Lead generation							-.0205(.0106) <sup>†</sup>
Constant	1.32(2.62)	1.18(2.75)	1.68(2.61)	1.50(2.64)	2.40(2.76)	2.36(2.76)	.72(2.82)
$\Delta R^2$ <sup>3</sup>	.083**	.040*	.085**	.073**	.030 <sup>†</sup>	.031 <sup>†</sup>	.035 <sup>†</sup>
F (R <sup>2</sup> )	2.172**	1.830*	2.193**	2.087**	1.753*	1.761*	1.792*

<sup>1</sup> Given the limited space, I only report the control variables that have significant coefficients. However, a full set of control variables were entered in the equations. The ones that are not reported in this table are Public, VC-backed, Division, Europe, Asia Pacific, Middle East, Prior history, Age, Size, Tier-3, and Time since Tier-2.

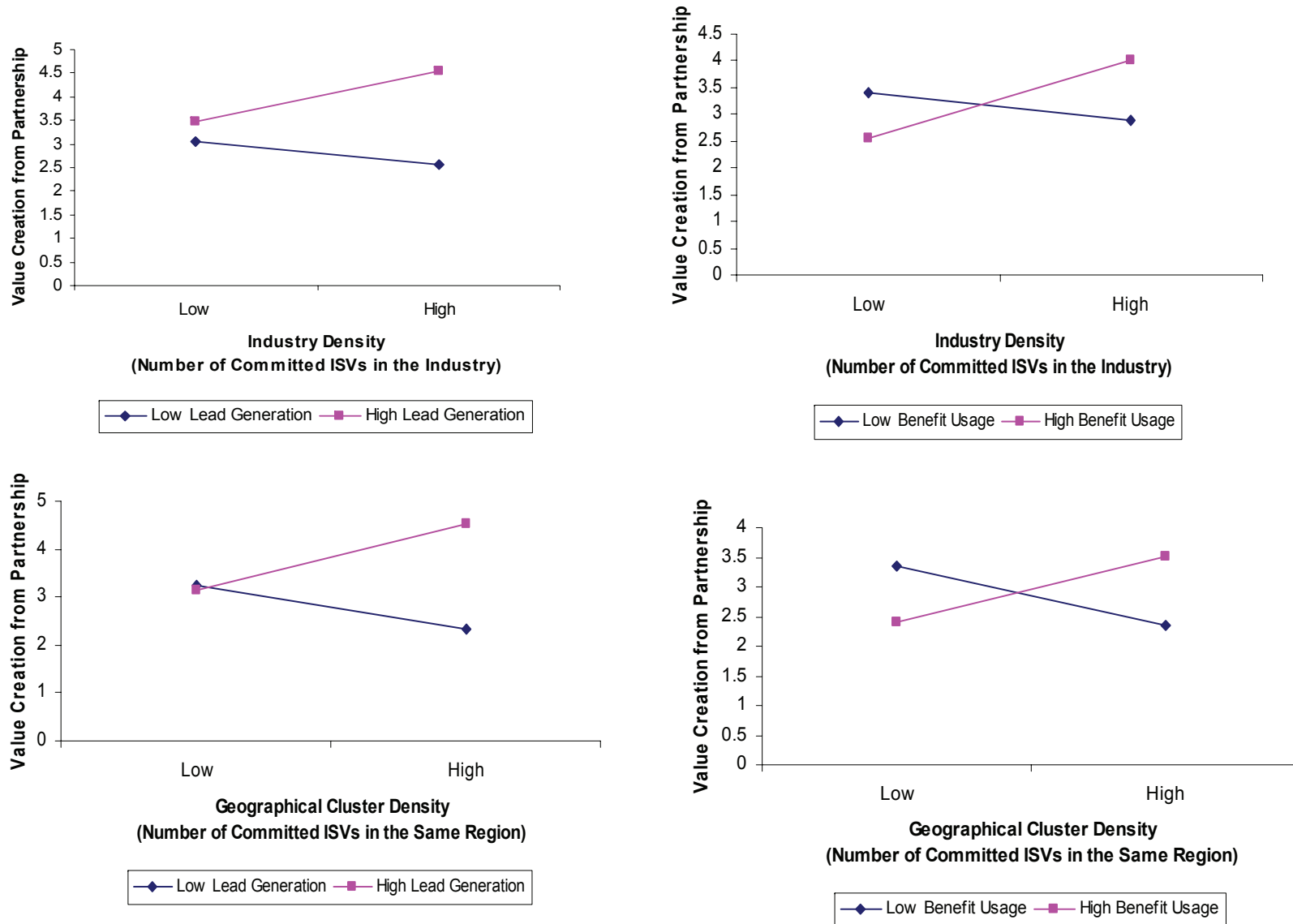
<sup>2</sup> Among all the interactions between a venture's proactiveness and attractiveness (as determined by institutional density, legitimacy, resources, and collaborative scope), I only report the interactions that are significant.

<sup>3</sup> All the R-square changes reported in this table are relative to the R-square of Model 2 in Table 21, where all the main effect variables are entered in the equation.

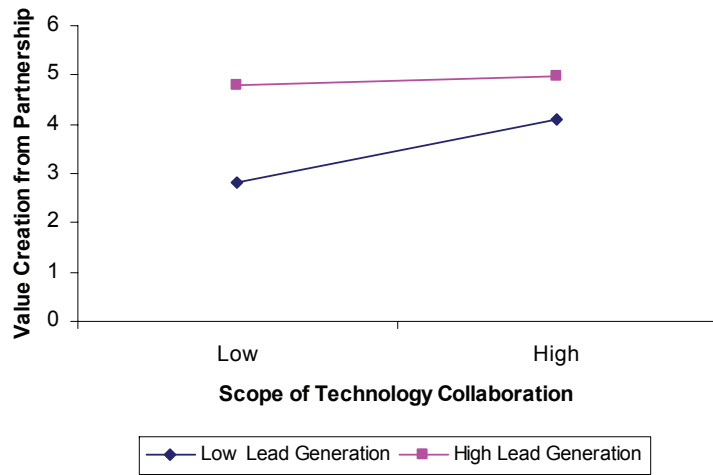
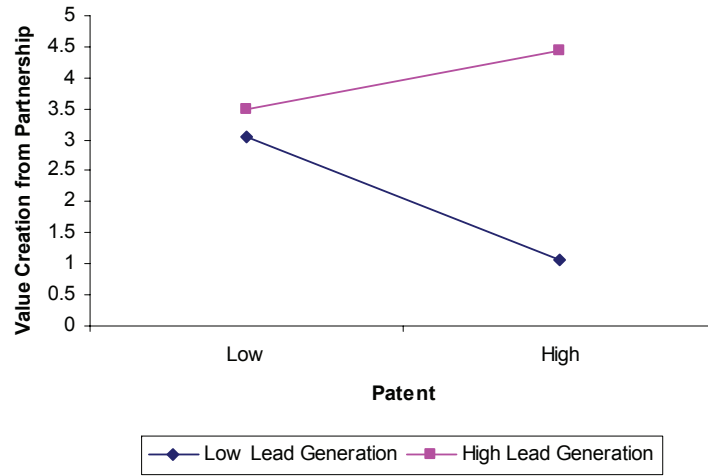
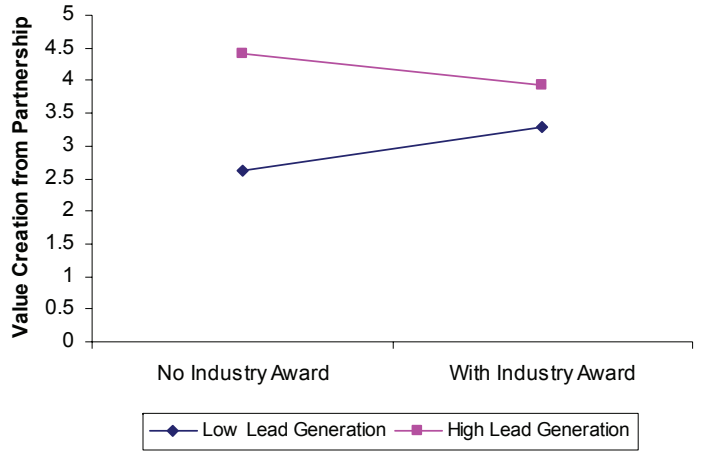
Values in parentheses are standard errors

Two-tail test: <sup>†</sup>p<.1, \*p<.05, \*\*p<.01, \*\*\*p<.001

**Figure 8: Interactions between a Venture’s Proactiveness and Attractiveness on Its Value Creation from the Partnership**



**Figure 8: Interactions between a Venture’s Proactiveness and Attractiveness on Its Value Creation from the Partnership (Cont.)**



**Table 23: Post Hoc Analysis for Stage 2: Interactions between Institutional Density (a Venture's Exogenous Attractiveness) and a Venture's Legitimacy and Resources (Its Endogenous Attractiveness) on Its Value Creation from the Partnership (OLS Regression)**

	1	2	3	4	5
<b>Control Variables<sup>1</sup></b>					
J2EE	-.64(.29)*	-.78(.30)*	-.69(.29)*	-.81(.30)**	-.76(.49)*
.NET	1.20(.45)**	1.13(.44)*	1.16(.48)*	1.00(.44)*	1.11(.44)*
Relational capital	.32(.09)***	.339(.09)***	.33(.09)***	.35(.09)***	.36(.09)***
<i>Inverse Mills ratio</i>	1.68(1.80)	.65(1.84)	2.02(1.88)	.83(1.81)	1.23(1.82)
<b>Institutional Density</b>					
Industry density	.0002(.0060)	-.0006(.0060)	.0001(.0060)	-.0002(.0060)	-.0002(.0060)
Geo cluster density	-.0001(.0130)	.0005(.0100)	-.0006(.0120)	.0005(.0101)	.0003(.0100)
<b>Legitimacy</b>					
Industry award	-.3190(.5500)	.3650(.5090)	.0020(.5010)	.3870(.5030)	.2480(.5000)
Media visibility	.0002(.0080)	-.0016(.0120)	-.0005(.0101)	.0003(.0080)	.0004(.0080)
Partner prominence	.0032(.1220)	.1040(.1290)	.0052(.1240)	.0038(.1190)	.0038(.1210)
<b>Resources</b>					
Patent	-.0043(.0900)	-.1300(.1000)	-.0076(.0930)	-.4560(.1990)*	-.3220(.1680) <sup>†</sup>
Marketing workforce	.1240(.8180)	-.0083(.8280)	.1450(.8180)	-.0052(.8120)	.0036(.8190)
<b>Collaborative Scope</b>					
Technology scope	.0089(.0370)*	.0084(.0370)*	.0082(.0380)*	.0081(.0370)*	.0086(.0370)*
Market scope	.0075(.1110)	.0033(.1100)	.0049(.1110)	.0046(.1080)	.0047(.1100)
<b>Proactiveness</b>					
Benefit usage	-.1830(.1080) <sup>†</sup>	-.1040(.1130)	-.1510(.1090)	-.1220(.1090)	-.1390(.1090)
Lead generation	.1090(.0970)	.0048(.1000)	.0084(.0980)	.0061(.0970)	.0075(.0980)
Customer response generation	.0023(.0010)*	.0002(.0010) <sup>†</sup>	.0002(.0010)*	.0002(.0010)	.0018(.0010) <sup>†</sup>
<b>Interaction Terms<sup>2</sup></b>					
Geo density*Award	.0026(.0140) <sup>†</sup>				
Ind density*Media visibility		.0002(.0000)*			
Geo density*Media visibility			.00003(.0000) <sup>†</sup>		
Ind density*Patent				.0002(.0010)*	
Geo density*Patent					.0006(.0030) <sup>†</sup>
Constant	2.03(2.75)	2.76(2.75)	2.32(2.76)	1.67(2.70)	2.10(2.73)
$\Delta R^2$ <sup>3</sup>	.031 <sup>†</sup>	.041*	.029 <sup>†</sup>	.050*	.037 <sup>†</sup>
F (R <sup>2</sup> )	1.763*	1.832*	1.751*	1.904*	1.807*

<sup>1</sup> Given the limited space, I only report the control variables that have significant coefficients. However, a full set of control variables were entered in the equations. The ones that are not reported in this table are Public, VC-backed, Division, Europe, Asia Pacific, Middle East, Prior history, Age, Size, Tier-3, and Time since Tier-2.

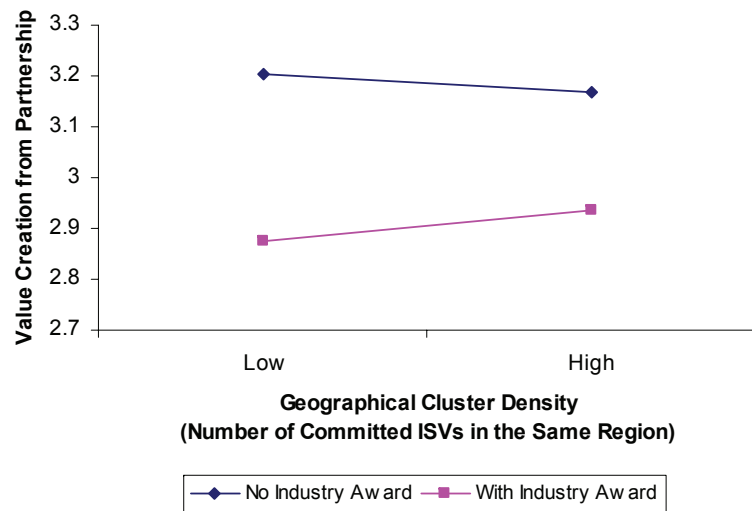
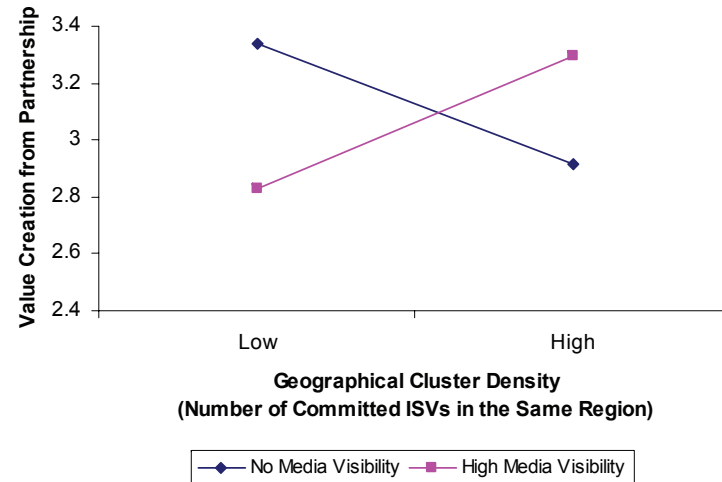
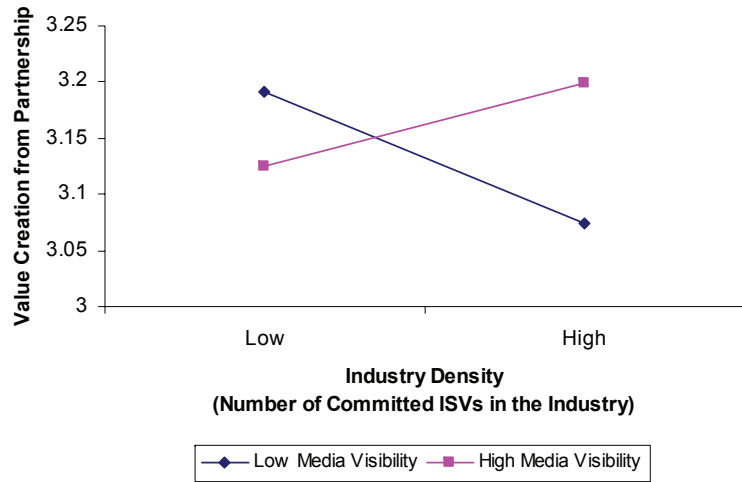
<sup>2</sup> Among all the interactions between a venture's exogenous attractiveness (as determined by institutional density) and endogenous attractiveness (as determined by the venture's legitimacy, resources, and collaborative scope), I only report the interactions that are significant.

<sup>3</sup> All the R-square changes reported in this table are relative to the R-square of Model 2 in Table 21, where all the main effect variables are entered in the equation.

Values in parentheses are standard errors

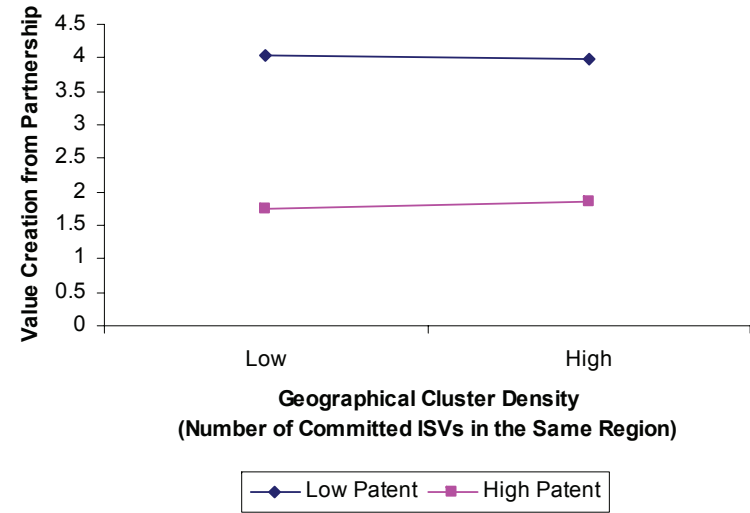
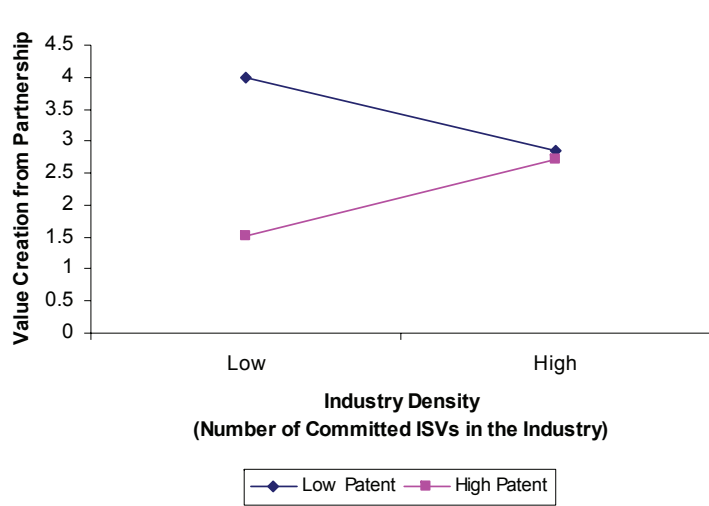
Two-tail test: <sup>†</sup>p<.1, \*p<.05, \*\*p<.01, \*\*\*p<.001

**Figure 9: Interactions between Institutional Density (a Venture’s Exogenous Attractiveness) and a Venture’s Legitimacy and Resources (Its Endogenous Attractiveness) on Its Value Creation from the Partnership**





**Figure 9: Interactions between Institutional Density (a Venture's Exogenous Attractiveness) and a Venture's Legitimacy and Resources (Its Endogenous Attractiveness) on Its Value Creation from the Partnership (Cont.)**



**Table 24: Analysis on Private Independent Ventures Only <sup>1</sup>: OLS Regression on a Venture's Value Creation from the Partnership**

	1	2
<b>Control Variables</b>		
VC-backed	-.51(.48)	-.82(.86)
Europe <sup>2</sup>	.24(.31)	.20(.41)
Asia Pacific <sup>2</sup>	.17(.50)	-.43(.63)
Middle East <sup>2</sup>	1.47(1.19)	1.82(1.20)
Prior History	.01(.06)	-.06(.10)
Age	-.02(.03)	.01(.03)
Size	.08(.10)	-.14(.14)
J2EE	-.31(.25)	-.88(.32)**
.NET	.59(.41)	1.35(.47)**
Tier-3	-.12(.35)	-.68(.55)
Time since Tier-2	-.06(.16)	.01(.50)
Relational capital	.33(.08)***	.33(.09)***
<i>Inverse Mills ratio</i>	.76(.73)	1.13(1.93)
<b>Institutional Density</b>		
Industry density		-.0018(.0063)
Geo cluster density		.0047(.0117)
<b>Legitimacy</b>		
Industry award		.3315(.5188)
Media visibility		.0034(.0086)
Partner prominence		.1388(.1416)
<b>Resources</b>		
Patent		-.1777(.1171)
Marketing workforce		.2475(.8360)
<b>Collaborative Scope</b>		
Technology scope		.0919(.0411)*
Market scope		.0622(.1153)
<b>Proactiveness</b>		
Benefit usage		-.1785(.1101)
Lead generation		.0930(.0993)
Customer response generation		.0018(.0010) <sup>†</sup>
Constant	2.28(1.01)*	2.07(2.85)
$\Delta R^2$	.276*	.154
F (R <sup>2</sup> )	2.32*	2.03*

<sup>1</sup> This reduced sample is based on a more conservative definition of entrepreneurial ventures—private independent ventures only. Therefore, this sample does not include public ventures, spin-off ventures, and ventures that are divisions of parent companies.

<sup>2</sup> The omitted category for “Europe”, “Asia Pacific”, and “Middle East” is “North America”. No surveyed ISVs are from Latin America.

Values in parentheses are standard errors

Two-tail test: <sup>†</sup>p<.1, \*p<.05, \*\*p<.01, \*\*\*p<.001

**Table 25: Analysis on Private Independent Ventures Only: OLS Regression on a Venture's Value Creation from the Partnership (Interaction Effects)**

	1	2	3	4	5	6	7
<b>Control Variables<sup>2</sup></b>							
J2EE	-.89(.31)**	-.88(.32)**	-1.02(.31)**	-.98(.31)**	-.99(.31)**	-.89(.33)**	-.99(.32)**
.NET	1.17(.46)*	1.31(.47)**	1.26(.44)**	1.24(.46)**	1.15(.46)*	1.36(.48)**	1.39(.46)**
Relational capital	.33(.09)**	.33(.09)**	.33(.09)**	.31(.09)**	.33(.09)**	.33(.09)**	.30(.09)**
<i>Inverse Mills ratio</i>	1.37(1.74)	.70(1.95)	.14(1.84)	.19(1.90)	.60(1.87)	1.06(1.96)	.71(1.88)
<b>Institutional Density</b>							
Industry density	-.0020(.0062)	-.0022(.0063)	-.0029(.0060)	-.0028(.0061)	-.0036(.0062)	-.0017(.0065)	-.0008(.0062)
Geo cluster density	.0015(.0114)	.0042(.0117)	-.0018(.0112)	.0015(.0114)	.0037(.0112)	.0048(.0119)	.0049(.0113)
<b>Legitimacy</b>							
Industry award	.2158(.5059)	.3743(.5171)	.6183(.4961)	.5868(.5109)	.6254(.5130)	.3890(.5415)	.6087(.5169)
Media visibility	.0052(.0084)	.0049(.0087)	.0083(.0083)	.0069(.0085)	.0059(.0084)	.0038(.0089)	.0060(.0084)
Partner prominence	.1087(.1195)	.1445(.1411)	.1447(.1328)	.1451(.1363)	-.1402(.1360)	.1388(.1430)	.1399(.1370)
<b>Resources</b>							
Patent	-.1563(.1136)	-.1858(.1168)	-.2213(.1109)	-.2188(.1143)	-.2057(.1131)	-.1817(.1192)	-.2053(.1140)
Marketing workforce	.0349(.8194)	-.1568(.8362)	-.1255(.7854)	-.2004(.8052)	-.2070(.8032)	-.2993(.8670)	-.6369(.8304)
<b>Collaborative Scope</b>							
Technology scope	.0903(.0398)*	.0911(.0410)*	.0973(.0386)*	.0939(.0396)*	.0878(.0395)*	.0950(.0432)*	.1248(.0429)**
Market scope	.0380(.1049)	.0829(.1162)	.0502(.1083)	.0909(.1118)	.0600(.1108)	.0680(.1185)	.0997(.1131)
<b>Proactiveness</b>							
Benefit usage	-.3342(.1300)	-.1905(.1102)	-.2677(.1083)	-.2070(.1068)	-.2290(.1082)	-.1902(.1199)	-.2508(.1121)
Lead generation	.1163(.0966)	.0230(.1154)	.0573(.0940)	.0140(.1022)	.2822(.1274)*	.1037(.1083)	.3608(.1612)*
Customer response generation	.0034(.0012)**	.0027(.0013)**	.0028(.0010)**	.0026(.0010)*	.0025(.0010)*	.0018(.0010) <sup>†</sup>	.0010(.0010)
<b>Interaction Terms<sup>3</sup></b>							
Ind density*Benefit usage	.0016(.0007)*						
Ind density*Lead generation		.0010(.0008)					
Geo density*Benefit usage			.0095(.0035)**				
Geo density*Lead generation				.0079(.0036)*			
Award*Lead generation					-.2001(.0893)*		
Patent*Lead generation						-.0345(.1313)	
Tech scope*Lead generation							-.0223(.0108)*
Constant	1.48(2.77)	1.18(2.75)	1.27(2.69)	1.37(2.77)	2.51(2.75)	1.92(2.94)	.93(2.82)
$\Delta R^2$ <sup>4</sup>	.049*	.020	.047*	.043*	.023*	.008	.016*
F (R <sup>2</sup> )	2.34**	2.08**	2.32**	2.71***	2.10**	1.98*	2.05**

<sup>1</sup> This reduced sample is based on a more conservative definition of entrepreneurial ventures—private independent ventures only. Therefore, this sample does not include public ventures, spin-off ventures, and ventures that are divisions of parent companies.

<sup>2</sup> Given the limited space, I only report the control variables that have significant coefficients. However, a full set of control variables were entered in the equations. The ones that are not reported in this table are VC-backed, Europe, Asia Pacific, Middle East, Prior history, Age, Size, Tier-3, and Time since Tier-2.

<sup>3</sup> The interactions that I report here are consistent with the interactions reported in Table 22.

<sup>4</sup> All the R-square changes reported in this table are relative to the R-square of Model 2 in Table 24, where all the main effect variables are entered in the equation.

Values in parentheses are standard errors

Two-tail test: <sup>†</sup>p<.1, \*p<.05, \*\*p<.01, \*\*\*p<.001

**Table 26: Analysis on Private Independent Ventures Only<sup>1</sup>: Interactions between Institutional Density and a Venture's Legitimacy and Resources on Its Value Creation from the Partnership (OLS Regression)**

	1	2	3	4	5
<b>Control Variables<sup>2</sup></b>					
J2EE	-.89(.31)**	-1.00(.31)**	-.39(.24)**	-1.07(.32)**	-1.01(.32)**
.NET	1.41(.46)**	1.34(.45)**	1.19(.42)**	1.24(.46)**	1.39(.46)**
Relational capital	.35(.09)***	.35(.09)***	.38(.08)***	.36(.09)***	.37(.09)***
<i>Inverse Mills ratio</i>	1.37(1.86)	.59(1.87)	.21(1.326)	1.17(1.87)	1.65(1.91)
<b>Institutional Density</b>					
Industry density	-.0010(.0062)	-.0059(.0064)	.0024(.0045)	-.0018(.0062)	-.0019(.0063)
Geo cluster density	-.0080(.0127)	.0034(.0113)	-.0055(.0098)	.0007(.0115)	-.0019(.0121)
<b>Legitimacy</b>					
Industry award	-.1168(.5452)	.5341(.5066)	.1885(.3843)	.4565(.5047)	.3081(.5092)
Media visibility	-.0025(.0083)	-.0265(.0160)	.0047(.0066)	.0031(.0084)	.0045(.0085)
Partner prominence	.1169(.1368)	.2317(.1429)	-.0102(.0937)	.1725(.1380)	.1707(.1400)
<b>Resources</b>					
Patent	-.2184(.1144)	-.1993(.1132)	-.1010(.0780)	-.6009(.2349)	-.4311(.1865)
Marketing workforce	-.5714(.8195)	-.8189(.8468)	-.6679(.6124)	-.4342(.8143)	-.3788(.8229)
<b>Collaborative Scope</b>					
Technology scope	.1074(.0403)*	.0803(.0400)*	.0913(.0327)**	.0828(.0401)*	.0932(.0403)*
Market scope	.0746(.1113)	-.0075(.1156)	.0400(.0940)	.0441(.1120)	.0424(.1136)
<b>Proactiveness</b>					
Benefit usage	-.1642(.1064)	-.0821(.1149)	-.2126(.1011)	-.1467(.1077)	-.1637(.1083)
Lead generation	.0816(.0958)	.0263(.1004)	.1315(.0905)	.0661(.0970)	.0789(.0977)
Customer response generation	.0022(.0010)*	.0016(.0010)	.0021(.0009)*	.0014(.0010)	.0016(.0010) <sup>†</sup>
<b>Interaction Terms<sup>2</sup></b>					
Geo density* Award	.0342(.0158)*				
Ind density* Media visibility		.0003(.0001)*			
Geo density* Media visibility			.0002(.0002)		
Ind density* Patent				.0036(.0017)*	
Geo density* Patent					.0082(.0047) <sup>†</sup>
Constant	2.00(2.75)	2.17(2.75)	.15(2.35)	1.52(2.77)	2.24(2.80)
$\Delta R^2$ <sup>4</sup>	.022*	.010*	.005	.014*	.016 <sup>†</sup>
F (R <sup>2</sup> )	2.10**	2.00*	1.96*	2.03*	2.04**

<sup>1</sup> This reduced sample is based on a more conservative definition of entrepreneurial ventures—private independent ventures only. Therefore, this sample does not include public ventures, spin-off ventures, and ventures that are divisions of parent companies.

<sup>2</sup> Given the limited space, I only report the control variables that have significant coefficients. However, a full set of control variables were entered in the equations. The ones that are not reported in this table are VC-backed, Europe, Asia Pacific, Middle East, Prior history, Age, Size, Tier-3, and Time since Tier-2.

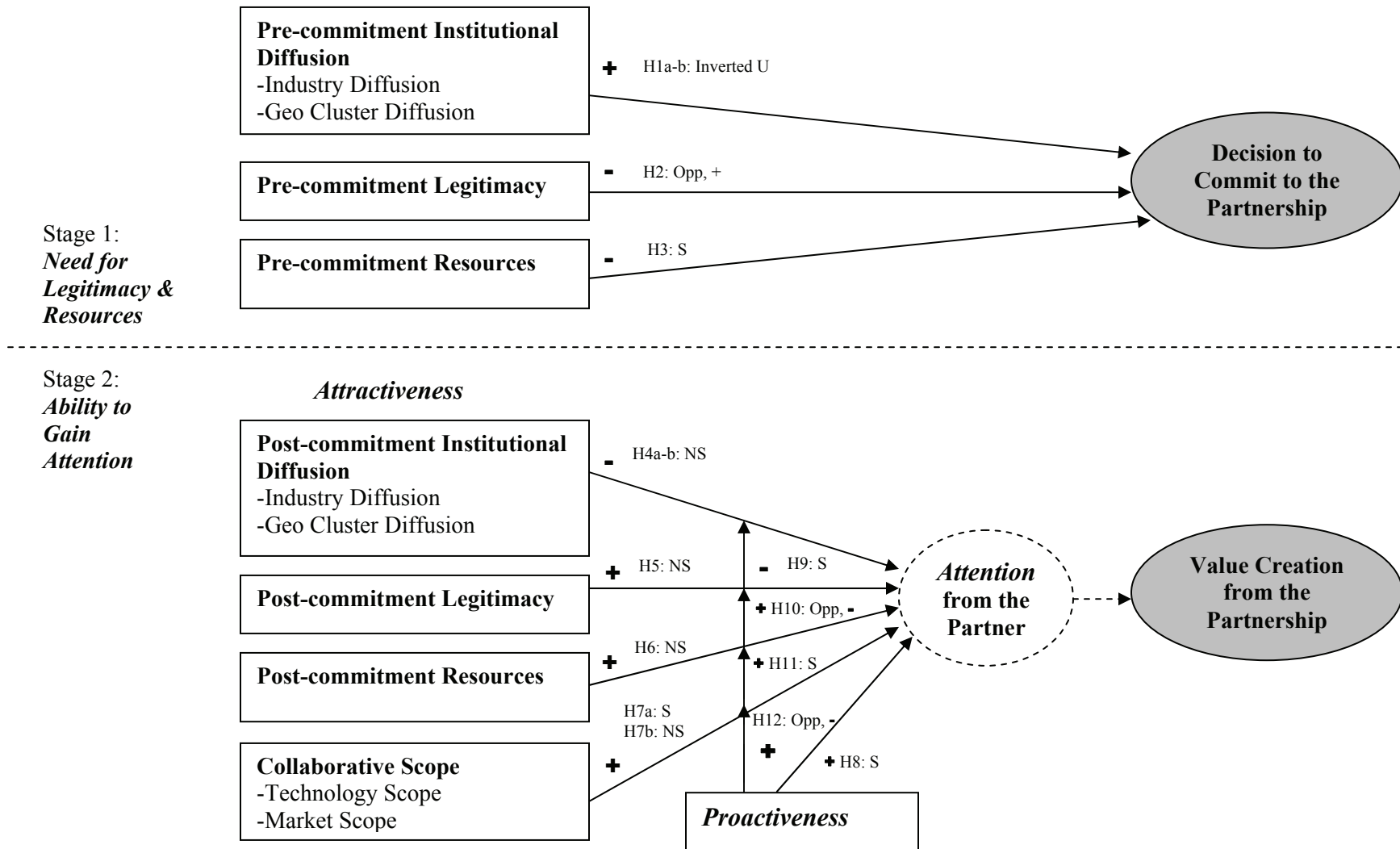
<sup>3</sup> The interactions that I report here are consistent with the interactions reported in Table 23.

<sup>4</sup> All the R-square changes reported in this table are relative to the R-square of Model 2 in Table 24, where all the main effect variables are entered in the equation.

Values in parentheses are standard errors

Two-tail test: <sup>†</sup>p<.1, \*p<.05, \*\*p<.01, \*\*\*p<.001

**Figure 10: Results of the Two-Stage Model of an Entrepreneurial Venture's Partnership with an Established Firm**



## **CHAPTER 6: DISCUSSION**

### **6.1. Theoretical Contributions**

My dissertation bridges the alliance literature and the entrepreneurship literature. In doing so, this study contributes to both literatures. In addition, there are also significant theoretical implications for the broader strategic management literature. Below I discuss them respectively.

#### **6.1.1. Contributions to the Alliance Literature**

This research is among the few studies in the alliance literature that specifically focuses on partnerships between highly asymmetric firms. In general, the alliance literature seems to conclude that partnerships between highly dissimilar firms are less likely and less effective (Chung et al., 2000; Lane & Lubatkin, 1998; Mowery et al., 1998; Saxton, 1997). This is obviously not sufficient to account for the current real world environment where partnerships between asymmetric firms (i.e., between young/small entrepreneurial ventures and large/established industry leaders) have become increasingly common (Leland & Hoang, 2005). The few existing studies that address this phenomenon all take the perspective of large firms and examine how they can benefit from partnering with entrepreneurial ventures (Rothaermel, 2001; Singh & Mitchell, 2005; Zhang et al., 2005). To my awareness, no prior study has looked at such partnerships from the perspective of entrepreneurial ventures. As entrepreneurial ventures are typically weak and dependent in the partnerships with much more powerful firms, they are considered less capable of appropriating value from such partnerships (Khanna et al., 1998; Lavie, 2004). Therefore, it is important to pursue this line of inquiry and examine why entrepreneurial ventures, contrary to the common predictions in the alliance literature, go

for such costly and risky partnerships, and how they go about getting value from such partnerships. This dissertation is among the first to tackle this important gap in this literature.

With the focus on partnerships between highly asymmetric firms, this study points out an important mechanism underlying such partnerships. Extreme asymmetry necessarily leads to a one-to-many relationship in the partnership—that is, the established firm is partnering simultaneously with a large number of ventures. As such, the ventures are engaged in competition for the attention of the established firm. My study shows that this mechanism not only determines the venture's degree of value creation at the post-commitment stage, but also influences the venture's decision at the pre-commitment stage. The expectation of post-commitment competition would, to a certain extent, factor into their pre-commitment decisions.

This study is also among the first in the alliance literature to point out the role of firm behaviors with regard to these partnerships. Prior studies on the effectiveness and value creation of the alliances mainly focus on characteristics of individual partner firms or the dyad, such as firm resources (Mowery et al., 1998), firm structures (Kale et al., 2002; Lane & Lubatkin, 1998), prior history (Gulati, 1995a, 1995b; Kogut, 1989), and partnership governance (Reuer et al., 2002; Saxton, 1997). These factors are more or less *preset* prior to the execution of the partnership. Yet little has been looked at concerning factors that take place *during* the execution of the partnership. One such important factor of such is the behaviors of the partner firms. Thus, one implication that this study brings to the alliance research is to highlight the role of firm actions in determining the

effectiveness of the partnership. As the results of this study show, firm behaviors can make a significant difference in the partnership outcomes.

In addition, this dissertation advances an important notion in the alliance study—contextualization of the partnerships. In particular, the discussion of one dyadic relationship should be contextualized in the entire alliance portfolio. Prior research on dyadic relationships heavily focuses on studying the effects of the partner firm-related factors or the dyad-related factors (e.g., Gulati, 1995a, 1995b; Lane & Lubatkin, 1998; Mowery et al., 1998). However, as revealed in this study, it is not just the characteristics of the partner firms and the dyad that matter, but the existence and characteristics of other firms in the same alliance portfolio also exert non-negligible influences on the outcomes of the focal dyad. Therefore, the formation and the effectiveness of the dyad should be examined in the broader context of the alliance portfolio.

Furthermore, this study enriches our knowledge of how a firm, especially a large firm, can effectively manage a portfolio of alliances. Nowadays many prominent firms, such as GE, Motorola, IBM, and HP, have built their own ecosystems by entering hundreds or thousands of alliances, which “opens up numerous questions about the cooperative capabilities of firms” (Gulati, 1998: 308). What the literature responds with respect to this call mainly centers around examining the role of prior alliance experience in achieving subsequent alliance success (e.g., Hoang & Rothaermel, 2005; Reuer et al., 2002; Rothaermel & Deeds, 2005). However, so far it has said little about how the firm *simultaneously* manages a large portfolio of alliances and how it addresses the similar demands from a large number of partners. This study, although taking the perspective of young and small ventures, also sheds light on the management of large alliance portfolios



by large firms. Importantly, this study implies a limit for the growth of an alliance portfolio, due to the competition effect between partners in the same portfolio. Resolving this effect of intra-portfolio competition for attention is thus the key to effectively managing a large alliance portfolio.

### **6.1.2. Contributions to the Entrepreneurship Literature**

This dissertation also adds to the entrepreneurship literature, which focuses on the growth of young and small ventures. While this literature in general highlights the benefits of having prominent partners for entrepreneurial ventures (Stuart et al., 1999), two questions are still not clear—one is why not every venture goes for such partnership, and the other is why not every venture benefits in the same way from such partnerships, particularly under the condition that they are the much weaker and more vulnerable partners in these dyadic relationships (Khanna et al., 1998; Lavie, 2004). This study is among the first to address these unanswered questions, trying to explain the variation in ventures' choices regarding such partnerships as well as the degree of benefit that they obtain from these partnerships. This line of inquiry enriches our knowledge about how entrepreneurial ventures can effectively manage partnerships with established firms so as to leverage benefits.

In addition, this study underlies the role of an entrepreneurial venture's proactiveness in its partnership with an established firms. The emphasis on proactive behaviors has significant implications for the entrepreneurship research. A broader construct that captures a firm's proactive posture is entrepreneurial orientation. Proactiveness, or in general entrepreneurial orientation, is at the heart of a venture's potential to discover and exploit opportunities. The construct of entrepreneurial

orientation was initially identified by scholars in the 1980s (Miller, 1983, 1987; Covin & Slevin, 1989), but had not received much attention until Lumpkin & Dess's (1996) theoretical piece that clarifies the five dimensions of entrepreneurial orientation (proactiveness is identified as one of them), and links it to firm performance. Subsequent empirical studies have found evidence for the positive effect of entrepreneurial orientation on the performance of entrepreneurial firms (Dess, Lumpkin, & Covin, 1997; Lumpkin & Dess, 2001; Sapienza, Clercq, & Sandberg, 2005). Entrepreneurial orientation is also found to enhance the positive relationship between resources and performance in entrepreneurial ventures (Wiklund & Shepherd, 2003). Though growing attention has been paid to the role of a venture's entrepreneurial posture, this construct has so far remained at a very general level. A deeper understanding of this construct, thus requires examining it in the contexts of specific activities of entrepreneurial ventures and linking it to intermediate strategic outcomes other than performance in general. This study shows that such entrepreneurial posture, as reflected in proactive behaviors, matters in the context of partnerships with established firms. Hence, an important implication of this study is to call for a contextualized understanding of entrepreneurial orientation, which will significantly add to the meaningfulness of this construct.

Moreover, as identified in the entrepreneurship literature, opportunity discovery and opportunity exploitation are the two most important themes for entrepreneurs and entrepreneurial ventures (Acs & Audretsch, 1989; Busenitz & Barney, 1997; Klevorick, Levin, Nelson, & Winter, 1995; Sarasvathy, Simon, & Lave, 1998; Shane, 2000, 2002; Shane & Venkataraman, 2000; Zucker, Darby, & Brewer, 1998). Though set in a specific context, this study provides some general insights into how entrepreneurial ventures

identify and seize opportunities. In this research, all the entrepreneurial ventures essentially face the same opportunity, i.e., making a commitment to the established firm, yet some recognize and properly appropriate it while others do not. Results suggest that opportunity recognition and appropriation is a combinative function of exogenous factors and endogenous factors, and more importantly, a combinative function of the venture's ecological position and behavioral navigation. This has implications for future research on opportunity discovery and exploitation by entrepreneurs and entrepreneurial ventures.

### **6.1.3. Contributions to the Broader Strategic Management Literature**

In examining the second stage of the phenomenon, I differentiate the venture's attractiveness and proactiveness. The former refers to a firm's largely "given" position and characteristics, whereas the latter refers to its behaviors. For attractiveness, I also differentiate exogenous attractiveness as determined by environmental factors, and endogenous attractiveness as determined by a firm's internal quality. In some degree, these distinctions can be related to the different perspectives in the broader literature on strategic management. The findings of this study highlight the need to integrate these perspectives and the interactive forces between these perspectives.

The effect of a venture's exogenous attractiveness reflects the industrial organization perspective (Bain, 1959). In this view, firm performance is explained by the characteristics of the industry (e.g., industry density, concentration, and structure). A favorable industry structure is characterized by low rivalry, low threat of entrants and substitutes, and low bargaining power from buyers and suppliers. A firm positioned in a more favorable industry structure is more able to reap profits (Porter, 1980). Applying this argument to the context of this study, entrepreneurial ventures that enter a less

crowded industry or geographical cluster are in a more advantageous position than those that enter a more crowded space.

The argument for a venture's endogenous attractiveness in this study is consistent with the resource-based perspective (Penrose, 1959; Wernerfelt, 1984), with resources broadly defined as "all assets, capabilities, organizational processes, firm attributes, information, knowledge, etc. controlled by a firm" (Barney, 1991: 101). In this perspective, firms with resources that are valuable, rare, costly-to-imitate, and non-substitutable are able to sustain competitive advantages (Barney, 1991). In this study, the internal characteristics of the entrepreneurial venture include its legitimacy, technology and complementary resources, and its collaborative scope with the partner. These internal characteristics (which may be broadly categorized as "resources") affect their value-creation ability.

The venture's proactiveness corresponds to the action perspective in the strategic management literature (Ferrier, Smith, & Grimm, 1999; Grimm & Smith, 1997). Unlike the previous two perspectives that are mostly based on ecological characteristics that are not under the immediate control of the firm, this perspective focuses on firm behaviors, which are largely at the discretion of the firm. The assumption underlying this perspective is that firms are directed by goals to improve their performance, and they think, learn, and act purposefully (Cyert & March, 1963; Weick, 1995). It is through actions that a firm achieves strategic competitiveness. In my empirical setting, with the intention of catching attention and creating value, some ventures act purposefully to approach and engage the established partner. And such proactive behaviors prove to make a difference.

As such, there appear to be parallels between the constructs in this dissertation (in the stage 2) and the three meta-perspectives in the strategic management literature. What this study implies to the broader literature is that the different perspectives need to be integrated, and it is important to recognize the interactive forces between them. So far, the majority of the research in the field regards these three perspectives as distinct, and uses them to explain distinct amount of variance in various strategic outcomes. There is only little knowledge about how these perspectives may interact.

First of all, the impact of a firm's structural position in the industry or a firm's resource endowment on its various strategic outcomes can be contingent on the degree and characteristics of the actions it takes. In this study, I have found that by taking proactive actions, a venture is able to make itself visible and thus potentially change the mechanism through which its institutional structure and internal characteristics take effect on its value creation from the partnership. Yet to my knowledge, how firm actions or behaviors may moderate the relationships asserted in the industry organization and resource-based views has not been well studied in the literature.

In addition, industry/institutional factors and a firm's internal resource factors can be interactive. In different environments, a firm's internal factors can have different degrees of influence on its strategic outcomes. For instance, Miller and Shamsie (1996) show how the relative importance of different types of resources varies among predictable and uncertain environments. In this study, there is evidence that a venture of greater internal quality can benefit more in a "hostile" environment (crowded institutional structure) than in a "friendly" environment (uncrowded institutional structure). However, I am not aware of many other studies that investigate how the industry organization and

resource-based lenses might interact. Overall, one important implication of this study is that much needs to be explored in the strategic management field about the interactive relationships between the constructs implied by different perspectives.

## **6.2. Managerial Implications**

This study also has implications for managers of both entrepreneurial ventures and established firms. For managers of entrepreneurial ventures, as partnering with an established firm becomes increasingly common in technology-intensive industries, this study sheds light on how a powerless, dependent, and vulnerable venture can effectively manage the partnership with an established firm and derive value from it. Managers should realize that while there are a lot of expected benefits from such partnerships, the venture may not be able to obtain them because it is competing with many other ventures in the same alliance portfolios. Essentially, a venture needs to attract attention of its established partner in order to access the latter's resources and leverage value. This study has identified factors that determine a venture's attention-capturing ability. These include some difficult-to-be-changed factors (such as institutional density, the venture's ex-ante legitimacy and resources), and factors that are, to a large extent, under the control of the venture (such as proactive behaviors). Knowing how the difficult-to-be-changed factors influence its attention-capturing ability can help the venture managers properly evaluate ahead of time their attractiveness and in turn their value-creation potential. If these factors do not suggest a favorable potential, the venture should be cautious about forming this partnership as the benefits may not cover the costs of having resources locked in. However, the study also shows that even though the venture is unattractive *ex ante*, it can still take control of its stake in the partnership by taking proactive actions. Importantly,

proactiveness can help the venture overcome *ex ante* disadvantages, such as being in a crowded space and having poor legitimacy. The results of this study very much recommend that entrepreneurial ventures be proactive in their partnerships with established firms.

In addition, this study provides important insights for managers in large established firms who aim to build a giant alliance portfolio. Despite the ambition to partner with a large number of ventures for the purpose of innovation and market performance, the findings imply that the growth of an alliance portfolio is likely to reach a limit at a certain point of time. The firm can be constrained by its attentional capacity. So as the size of the alliance portfolio grows, the firm may not be able to attend to each of its venture partners well or equally well. As a result, the potential venture partners may be discouraged and hesitant to join the alliance portfolio subsequently, as they become less optimistic about the prospects of getting enough attention and creating enough value to cover their costs and risks involved in such partnerships. Therefore, it is important for managers of the portfolio-building firm to acknowledge this reality and properly evaluate how much attention it is able to distribute among all the partners before strategically setting up the scale of the partnership program. On the other hand, being aware of the competition for attention effect within its alliance portfolio can urge the managers to design the program structure properly so as to reduce the competition effect. For instance, the firm can increase its overall attentional capacity by adding corresponding resources and creating multiple channels of interactions with partners; the firm can make the interaction process more standardized rather than subjective and varied across different

partners. Only with measures to overcome or reduce the competition for attention effect can the firm push the size boundary of its alliance portfolio.

### **6.3. Limitations and Future Research**

Despite all the contributions to the theory and the managerial practice, this study is not without limitations. Also, there are several promising avenues for future research.

First of all, the empirical setting has its superior advantage, but at the same time has its limitations. The advantage is that by sampling entrepreneurial ventures that are in the same alliance portfolio partnering with the same established firm, I was able to control for the unobserved factors on the side of the established firm. This is particularly useful in examining the effect of competition for attention. As there is only one firm that delivers attention, the partnership outcomes across all the sampled ventures can be readily compared. While this empirical setting is ideal for the research question at the second stage (a venture's value creation from the partnership), it is somewhat limited for the research question at the first stage (a venture's decision to commit to the partnership). Since this research is set in the alliance portfolio of one established firm, I am only able to study why an entrepreneurial venture partners with this specific established firm, rather than why an entrepreneurial venture partners with any established firm at all. The latter question is the prerequisite for the former, and deserves studying in the first place. But the empirical setting of this dissertation is not appropriate to test the latter question. These two research questions look similar but are essentially different. The latter implies a venture's first partnership with an established firm, whereas the former is not necessarily the case. In fact, one variable in the empirical test is "partner prominence," i.e., the number of prominent partners that the venture has already had. So it may well be



that Alpha Corporation is their second, or their fifth, established partner. Therefore, the theorizing as well as the research design should be different for the latter research question. This can be a very good topic for future research. The possible set of questions include: What factors prompt an entrepreneurial venture to seek its first partnership with an established firm? How soon is the venture's first partnership with an established firm after its founding? Which established firm is the venture's first partner of choice? Which established firms are the venture's partners of choice when the venture builds up its own alliance portfolio? There is a long line of unanswered questions that are interesting and important.

Second, in the stage 2 study on "value creation from the partnership", I took a cross-sectional perspective. However, an inter-organizational relationship is a dynamic setting (Gulati, 1998). It is particularly so in the case of partnerships between entrepreneurial ventures and established firms. Because an entrepreneurial venture is typically at the growth stage, partnerships with an established firm may change its legitimacy and resources fairly quickly, and in turn change its growth, and further in turn, change its attractiveness to its established partner. Thus, the value creation from the partnership will change over time. Future research can look at a venture's value creation from such a partnership on a longitudinal basis.

Third, as this study is set in a specific partnership program of a specific established firm, the findings may be regarded as specific to this setting. Although many established firms have also set up similar partnership programs with similar commitments to teaming up with entrepreneurial ventures, the different structures and nature of the partnership programs may have different implications on the motivations and behaviors

of the venture partners or the potential venture partners. Thus, some relationships hypothesized in this study may need modification. For instance, Alpha Corporation has exited the application software market, and in turn partners with ISVs for application software as part of the solution package to end customers. Thus, Alpha Corporation and ISVs are complementary to, rather than competitive with, each other in the collaboration. However, some incumbent firms also compete in the application software market, and thus their ISV partners will also view them as potential competitors. Also, in general, Alpha Corporation has no intention of acquiring its ISV partners as it has no intention of competing in the application software market. However, other firms may be actively acquiring entrepreneurial ventures, and their partnership programs often serve as a way for them to identify potential acquisition targets. All these will add to the complexity of the dyadic relationship between an entrepreneurial venture and an established firm. Additional or alternative factors may be needed to account for a venture's decision to commit and value creation from the partnership. Therefore, future research can further look at partnerships between asymmetric firms in a variety of contexts, where the partnerships between an entrepreneurial venture and an established firm is complicated by other relationships, such as competition and potential acquisition.

#### **6.4. Conclusions**

This dissertation examines partnerships between entrepreneurial ventures and established firms, from the perspective of the weaker and more vulnerable ventures. While partnering with established firms can potentially benefit the ventures as suggested in the entrepreneurship literature (Stuart et al., 1999), alliance research seems to conclude that such partnerships are less likely in the first place and that for an entrepreneurial

ventures, the potential benefits are difficult to reap when its partner is dissimilar and much more powerful (Chang et al., 2000; Hamel, 1991; Lane & Lubatkin, 1998; Lavie, 2004; Mowery et al., 1998; Saxton, 1997). Thus this dissertation examines two specific questions in tackling this apparent paradox: 1) Why do some entrepreneurial ventures decide to make a technology commitment to the established firm while others do not? 2) Given the decision to commit, why do some ventures create more value from the partnership than others? Set in the Alpha Corporation's PNP, a partnership program with many young and small ISVs, I find that not only the entrepreneurial ventures' need for legitimacy and need for resources drive their decisions to commit to the established firm, but the expectation of their post-commitment ability to gain attention from the established partner also influences their choice of commitment. At the post-commitment stage, the ventures are competing for the attention of the established firm. I find that the ventures' proactive behaviors not only have a direct positive effect on their ability to gain attention and thus to create value from the partnership, but such proactiveness can also help them overcome certain *ex ante* disadvantages in their competition for attention. Overall, this dissertation enriches our understanding of partnerships between highly asymmetric firms, and makes contributions to the literatures on alliances, entrepreneurship, and strategic management in general.

## APPENDIX 1: Questions for Phase 1 Interviews with ISV Partners

### Nature of partnership:

1. What does it mean when you say that you have an “alliance” or “business partner” relationship with Alpha Corporation? Can you describe a concrete example (on a particular product or customer) of how such partnership works? Do you make decisions jointly in the partnership? Has there been any conflict?
2. What are the means of communication between you and Alpha Corporation as business partners? How often and how open is the communication? What is the proportion between web-based and face-to-face communication?
3. How is your technology interrelated with that of Alpha Corporation? Do you perceive them as complementary or competitive? What is the scope of your business in partnership with Alpha Corporation relative to your other business?

### Choice of partnership:

4. Why did you sign on with Alpha Corporation? What are your logics (economic, technological, social, etc.) behind such a choice?
5. How did your partnering with other companies prior to Alpha Corporation influence your choice of Alpha Corporation? Vice versa, how has your partnering with Alpha Corporation affected your later alliance formation?
6. Why do you (or do you not) partner with other “middleware platform” companies? How does your partnering experience with Alpha Corporation compare with your experience with other “middleware platform” companies?

### Effect of partnership:

7. Does the alliance with Alpha Corporation require you to customize your technologies, products, processes, marketing and sales, or any other aspect of business model to the Alpha Corporation’s platform? How costly is this customization effort? Can you put a dollar or man-hour figure to this effort?
8. What are the benefits to your company associated with a partnership with Alpha Corporation? What are the risks? (e.g., financial performance, technological innovation, capital funding, future development) What is your perception of the extent to which the benefits and risks are distributed fairly between your company and Alpha Corporation?
9. How do (would) you measure the effectiveness of the partnership with Alpha Corporation? On this measure, what is your assessment of the partnership with Alpha Corporation? How do (would) you measure the value creation of this partnership? What is your assessment on this measure?

### Evolution of partnership:

10. What have been the “critical” events in the evolution of your alliance relationship with Alpha Corporation, starting from the very beginning? Can you please describe each of these critical events? What triggered each of them and how did you and Alpha Corporation handle each event? (A “critical” event is one which forces one or both sides to reassess the fundamentals of the relationship and make

choices about whether to (a) continue the relationship, (b) scale it up, or (c) scale it down.)

11. Over time, has the alliance relationship with Alpha Corporation (a) stay flat, or (b) started to become strong but fizzled out, or (c) become steadily stronger over time? How would you explain the evolutionary path?
12. What are the major challenges, if any, for you to further develop partnership with Alpha Corporation in the future?

## **APPENDIX 2: Questions for Phase 1 Interviews with Alpha Corporation**

1. How many ISVs do you work with? What are their statuses in the PNP? Do you know them equally well? Which ISV(s) do you know better? Why?
2. Given the multiple ISVs that you work with at the same time, how do you distribute time and effort among them? What are the criteria for the distribution?
3. What are the metrics that you use to measure the success/failure or performance of partnerships with ISVs? What factors do you think account for the variation in value creation from partnership with different ISVs?
4. What factors do you think influence ISVs' motivation and speed to upgrade in the PNP?
5. How do you deal with rival ISVs that are in the PNP at the same time?
6. If an ISV also partners with Alpha Corporation's competitors, such as Microsoft, to what extent does it influence its partnership with Alpha Corporation?

*The following questions are only for client executives in the Sales & Distribution group, who are identified to work with one ISV that I interviewed.*

7. Please describe the typical way the partnership between Alpha Corporation and this ISV works. Currently how many people from Alpha Corporation are involved in the partnership with this ISV?
8. How long have you been working with this ISV? How much percent of time do you spend with this ISV only?
9. On a 1-7 scale, how would you rate the effectiveness of the partnership with this ISV so far? How does this ISV rank in terms of partnership value creation among all the ISVs that you work with?

## APPENDIX 3: Sample Case Write-up: BuyMate

### I. COMPANY PROFILE <sup>1</sup>

<b>Company</b>	BuyMate	<b>Partner Status</b>	Retail—Tier-2
<b>Public/Pvt?</b>	Private	<b>Website</b>	www.
<b>Headquarter Address</b>	San Francisco, CA	<b>Contact</b>	John Smith, VP in alliance and sales Joined BuyMate in Sept, 2003
<b>Founding Year</b>	2002	<b>Major Competitors</b>	BioPay [inferred from archival source]
<b>Company Size</b>	~200 (one half is in the acquired company) [from interview]	<b>Functional Composition</b>	Out of ~100 people of BuyMate, a dozen sales people, 3 or 4 presales engineers, a few in marketing, a few in project management, and the bulk of the organization is development
<b>Business</b>	<p>BuyMate is the pioneer of a patented consumer biometric authentication payment system that allows shoppers to pay for purchases with a simple finger scan linked to their financial accounts and loyalty programs. The BuyMate service makes the checkout process faster, more convenient, and more secure than other payment methods by eliminating the need to present checks, credit, debit, membership or loyalty cards at the point of sale. BuyMate is revolutionizing the way consumers execute electronic transactions while allowing merchants to significantly lower transaction processing costs and build customer loyalty.</p> <p>In addition to biometric payment authentication, BuyMate offers ACH (Express Checking), check-cashing, enhanced loyalty programs, and age verification services for merchants and consumers at the point of sale.</p> <p>BuyMate's patent portfolio includes 24 issued and 12 pending U.S. patents. These patents give the company exclusive coverage over "tokenless" biometric authentication of financial and loyalty transactions, irrespective of the type of biometric used (e.g., fingerprint, voice scanning, iris and retinal imaging, etc.).</p>		
<b>Corporate Development History</b>			
<b>Current Partners</b>			
<b>Senior Management</b>	<p>Founder, Chairman, CEO</p> <p>Chief Financial Officer, Director</p> <p>Executive Vice President, Strategic Alliances, Director</p> <p>President</p> <p>President, BuyMate, Retail</p> <p>Chief Technology Officer/Chief Information Officer</p> <p>Chief Operating Officer</p> <p>Chief Marketing Officer</p> <p>Chief Security Officer</p> <p>General Counsel</p>		

	<p>Executive Vice President, Corporate Development</p> <p>Executive Vice President, Global Distribution and Alliances</p> <p>Executive Vice President, Franchise Services</p> <p>Senior Vice President, Retail Sales</p> <p>Senior Vice President, Financial Institution Sales</p>
VC	<p>June 3, 2004: announced a \$25 million soft closing in its ongoing second investment round, bringing total invested capital in the biometric authentication and payment solutions company to \$37 million. The Series B financing, led by <b>AAA Venture Capital</b>, also includes the <b>BBB Family Trust</b> and private investors.</p>

## II. PARTNERSHIP WITH ALPHA CORPORATION<sup>2</sup>

### Evolution of the Partnership with Alpha Corporation

- BuyMate has multiple lines of connections with Alpha Corporation: 1) e-hosting customer, 2) partner of deployment, 3) marketing and selling partner in the retailing industry. However, there seems no development connection between BuyMate and Alpha Corporation.
- BuyMate signed teaming agreement with Alpha Corporation in January of 2004, to promote the use of Alpha Corporation's point-of-sale (POS) system in BuyMate's solution. But BuyMate has not been committed to run its applications on other Alpha Corporation's middleware.
- BuyMate has hired a former sales executive from Alpha Corporation to work with Alpha Corporation on the partnership. This has tremendously helped BuyMate in navigating the relationship with Alpha Corporation.
- The e-hosting and the deployment aspects of cooperation have been working out well, as these are very pure transaction relationships.
- In the joint selling, BuyMate expects to take advantage of Alpha Corporation's customer base and reputation, and therefore expects Alpha Corporation to approach the customers first and gain their initial interest. As such, BuyMate can follow up with more details and do the real selling. With this goal, BuyMate has been working hard on educating the Alpha Corporation team about BuyMate's products/solutions, attracting their attention with active communication, and making BuyMate very easy to work with. However, in reality, it is often BuyMate itself who brings the leads. People from Alpha Corporation often do not start talking to the customer until they find that the customer is interested, and then there is some potential clash between BuyMate and Alpha Corporation about who actually controls the deal.
- The co-selling side of return from partnering with Alpha Corporation seems not up to BuyMate's expectation so far. If the return still does not look good by the end of this year, BuyMate is open to not doing partnership exclusively with Alpha Corporation. (However, it is also hard to deal with a lot of partnerships at the same time.)



*If let's say at the end of this year, we feel like we are really spending all of our time partnering with Alpha Corporation, and we really are not getting a return for that, we can at that point consider doing a second partnership or our partnership then with Alpha Corporation will no longer be exclusive. It will be our primary partnership but we try to do another one as well.*

### **Choice of Alpha Corporation as Partner**

- BuyMate is, in the first place, the client of Alpha Corporation's e-hosting services, i.e., BuyMate stores its data with customers on Alpha Corporation's servers. BuyMate chose Alpha Corporation to e-host its data because its reputation can ensure BuyMate's customers that their data are securely stored. As such, it is more efficient for BuyMate to buy this service from Alpha Corporation than to build its own.

*We are a customer of Alpha Corporation, and we do that for practical reasons. Rather than have retailers wonder whether we can securely host the data and whether it will perform, you know, if Alpha Corporation can do that, we can. This is the way we pay Alpha Corporation a transaction charge as opposed to spending all of our money trying to build our own security data centers.*

- BuyMate relies on Alpha Corporation on the deployment side. BuyMate itself does not have service people, and Alpha Corporation is its exclusive partner in terms of installation, implementation, and training the customers on BuyMate's solution. BuyMate's not having service people actually avoids potential conflict with Alpha Corporation in the cooperation.

*We don't have service people ourselves, so we tell customer if you want to roll out our solution, you have to do with Alpha Corporation's services. When I was at Retech...we wanted to do some of the services ourselves and we wanted to get the high margin stuff, and Alpha Corporation wanted some of that, too... and then all rolled out to put a lot of time to services, 2 or 3 times of what the actual software cost is. Here at BuyMate we don't have that conflict.*

- BuyMate co-markets with Alpha Corporation in the retail industry.
- BuyMate and Alpha Corporation sell solutions jointly. BuyMate deliberately keeps only limited sales force, and would like to take advantage of Alpha Corporation's large customer base and professionalism by coordinating well with Alpha Corporation's sales teams.

*We consciously decided to only have hired 5 sales people across North America and one in Europe and then what we do is to try to coordinate with the team of Alpha Corporation, educate them, give them introductory presentation they can give an client.*

*And I do think that takes a lot of companies to make partners. You need Alpha Corporation in a very professional way.*

- Currently BuyMate's applications are stand-alone. Alpha Corporation pushes BuyMate to run its applications on its infrastructure called *Store Integration Framework*, a platform that Alpha Corporation wants retailers to implement in the stores. However, so far BuyMate is hesitant to support that environment, as it

is very costly to do so, for instance, paying Alpha Corporation for teaching how to do the code migration.

*It has been money just to fortune Alpha Corporation's environment, and be consistent with their strategy.*

- In general, BuyMate means to be very pragmatic in the choice of partner. In other words, BuyMate means the partnership to be very sales-oriented, or revenue-oriented. BuyMate is willing to cooperate with any potential partners (such as Microsoft), if they bring customers. BuyMate is, however, not prepared to do anything programmatic, such as joint development of integrating their products to the partners' platforms.

*We have been approached by NCR, and Microsoft, and Accenture, wanting to partner with us, and we have told them we will do it on opportunity-only basis. If they bring us the client that they want us to meet with, we will undergo and meet with him, but we are not going to do anything programmatic with them. We are not going to become a revenue sharing. We are not going to do any joint development of integrating our products or anything like that. We are saying that for now, because we are a small company, we need to be successful.*

#### **Operation of the Partnership with Alpha Corporation**

- As the client of Alpha Corporation's e-hosting, BuyMate pays Alpha Corporation a hosting fee every month.
- Alpha Corporation gets service revenue from deploying BuyMate's solutions at the customers.
- Alpha Corporation's local sales team gets a percentage of BuyMate's revenue for selling jointly. (revenue sharing cooperation)
- Regarding the joint selling, BuyMate does not expect Alpha Corporation to really sell BuyMate's solution. Instead, it expects Alpha Corporation to know enough about BuyMate's solution, so that it can set up the initial meeting with the customers and engage their initial levels of interest. After Alpha Corporation finds out how immediate the customer interest is, BuyMate can then do the follow-up. However, in reality, it is not often the ideal case. Alpha Corporation would like to wait until they think the customer is interested, so BuyMate often ends up making the introductory calls to the customers.

*I don't expect them to sell. Just greet the customer and find out how immediate their interest is and let me know that. Then I can go in my time selling. So I don't expect Alpha Corporation to sell a solution but what I would like to do is have them know enough about it, so they could set up the initial meeting or engage the customer initial level of interest... There is no way where they know enough to sell all the solutions of all other partnerships.*

*But we want Alpha Corporation to try to move the field and maybe get as far as mid field and then call us. We then use them to get the initial introduction. If the initial introduction comes from Alpha Corporation then I get the credibility of partnership with it. I then get my small team involved once there is somewhat called "opportunity" when customers want to know more.*

*That's the ideal scenario. You know, it is not going great or like that, because in more cases, Alpha Corporation does not want to go and have initial conversation with the customer, and they want to until they think the customer is already interested in this. So we end up making the introductory calls ourselves.*

- The connection between Alpha Corporation and BuyMate is mainly through John Smith, VP-alliance and sales, not through multiple channels. This is probably because the small size of BuyMate.

*Because of the (small) size (of BuyMate), the partnership is mainly channeled through me. When I was with Winet, in the Retech, we had many relationships across the company. We had development relationship, i.e., people who develop products try to be consistent with Alpha Corporation in next level of technology; we had sales relationships; we had a lot of people that worked with people from Alpha Corporation.*

- By the interview date (Feb 7, 2005), BuyMate had two primary focal points within Alpha Corporation. One is *Mary White*, alliance manager of BuyMate, in the alliance organization within retail industry. The other is *Tom Brown*, in the sales of the retail industry. BuyMate's VP alliances and sales, John Smith, has teleconference with them every other Monday morning. (John thinks that they have such bi-weekly conference call with other ISV partners as well.) However, by May 20, 2005, *Mary White* has left Alpha Corporation, so is no longer BuyMate's contact. *Tom Brown* becomes sort of the main contact for BuyMate.

### **Benefits from the Partnership with Alpha Corporation**

- In general, BuyMate sees the return potential from partnering with Alpha Corporation, although it also acknowledges the various difficulties in running the partnership.

*I believe if you can do the partnership live and you can do the end-to-end partnership with Alpha Corporation and you do it right, it could be a very powerful thing. I don't think very few companies have really achieved that, that full benefit.*

- Partnering with Alpha Corporation on multiple fronts (co-marketing, co-selling, and e-hosting) has given BuyMate a lot of market visibility and credibility.  
*Just go to market via Alpha Corporation who gives much more credibility. Have sales people calling on their retail accounts. And then look, Alpha Corporation hosts our data. That will help us in whatever and so we went.*

- Partnering with Alpha Corporation can also give BuyMate market power, which will give pressure to its competitors.

*About a month and half later, I gave pressure to my main competitor by announcing the partnership with Alpha Corporation. I felt that the founder of that company and the owner was going to find me. He was so tensed about how come I become a partner of Alpha Corporation.*

### **Risks and Challenges for the Partnership with Alpha Corporation**

- Alpha Corporation has thousands of ISV partners; each of its salesman works with a number of ISVs, selling a number of products. Therefore, it is very important to catch Alpha Corporation's attention on the products of the focal company. In the case of BuyMate, the risk is not so much that Alpha Corporation sells the products of BuyMate's competitors as that they may just not focus on selling BuyMate's products.

*They are trying to sell point-of-sales terminal; they are trying to sell software; they are trying to sell servers; they are selling consulting engagements; they are trying to commit customer to CRM; they have got so many things to sell...you know, there are a lot of stuff on the ground, and they decide where they are going to spend their time on, and I am trying to get them spend time on myself.*

- BuyMate has, in fact, quite successfully attracted the attention of one of the Alpha Corporation representatives, Mary White, who asked her management to cut the ISV list that she represented, so that she can spend more time with BuyMate. BuyMate is also making efforts to get more attention from the other Alpha Corporation representative, Tom Brown.

*Now Tom has handful of these partnerships. So we are trying to get him. We want to be the one that either is the best to work with or the easiest in response, as a way to get his obviously like us more and thus be more responsive and work harder on our staff.*

*Mary used to have whole bunch and because she was very excited about our solutions, she went to her management and said I want to cut the list so that I can spend more time on BuyMate. As you would think, a lot of their other partnerships are more mature companies. There are a lot of competitors.*

- Alpha Corporation also partners with its main competitor. Although that partnership is with a different group of Alpha Corporation, it confuses investors and customers. BuyMate partnered with Alpha Corporation on the selling side, which gave pressure to its main competitor, who later announced "strategic alliance" with Alpha Corporation, which in fact partners with Alpha Corporation's software group.

*The people who are investors and customer will show confusion. Hey I got a partner with Alpha Corporation and here is your competitor, and they also announce the partnership with Alpha Corporation.*

- Alpha Corporation is very confusing to partner with, due to its complex organization and multiple independent groups within it.

*I would recommend any company who wanted to partner with Alpha Corporation, you had to hire a person who previously worked in Alpha Corporation to run through the partnership, because for people who have never been with Alpha Corporation, the company is so confusing, and it frustrates to figure out how to work with it.*

*If you never worked with Alpha Corporation, you don't understand that environment. It is incredibly frustrating.*

*I said having somebody who was with Alpha Corporation can help explain within the company. Relationship within Alpha Corporation is very*

*complicated. There are all kinds of different pieces. They are all different groups that at times are seen independent. That's why you need to have something that can calm everybody down, and when they see competitors doing announces with Alpha Corporation as well, can really state if it is a different relationship, who is going to market with Alpha Corporation, where its people were standing for, and making recommendations.*

- In terms of the joint selling, despite BuyMate's expectation that Alpha Corporation brings the leads, often times BuyMate has to take the first initiative by itself. But after Alpha Corporation knows the customer is interested, it tends to want control.

*We have several situations where teams have gone in together, and the Alpha Corporation team has taken time to understand the BuyMate solutions. We have gone in together. We sold our solutions. We have got customers that are deploying and are very happy.*

*The low point would be, we have situations where BuyMate has called the Alpha Corporation client team that we are going to call on this retailer. They seem not understand that their company has a relationship with mine, and a strategic relationship, and by selling you get a part of revenue from that. So they are basically doing something else. They just say, you know, good luck to you and go ahead. We go in. We get the customer excited. We start on the path, and then the Alpha Corporation team shows up, because they hear the customer is excited and then they want to control what we do. We feel like we should be off.*

- The partnership incurs a lot of time cost and energy cost to BuyMate, yet the return from the co-selling does not look good enough to BuyMate so far. Acknowledging that the return of the partnership may take longer in new and emerging technologies, BuyMate is going to reassess the value of partnering with Alpha Corporation by the end of this year.

*It is going to depend on how many deals we get done together. You know, the bottom line is that everybody does see things we want to accomplish and we have a successful next 6 months together. A lot of problems of me wanting a more attention from Alpha Corporation go away, and a lot of problems of me feeling like my company is stressed that Alpha Corporation is not doing enough for us, go away, if we get some deals done together. That's looking very hard to do. If we don't, it takes longer to sell the solutions. The challenge is going to be to keep everybody focused and on task, going forward and everybody would like to have a short-term memory and attention, then we will just go in focus on something, get a hold to results, and go to the next finger, hold that results and go to next finger. Sometimes it takes longer, especially in new and emerging technologies. So I think the biggest issue is going to be how much success we have together in the next 6 months. If we have a lot, I think a lot of other challenges are going to be reduced, and if we don't, I think they are going to be magnified.*

### **Advantages and Strategies in Partnering with Alpha Corporation**



- BuyMate’s products/solutions are protected by patents. Therefore, no worry about competitors, as well as Alpha Corporation, stepping into this field.

*See we have a surround biometrics, and that really prohibits anybody else from doing what we do. It is meant no ID card, no key fob, no card, no drivers license, no credit card, just bio-measure that we can token with to do a financial loyalty or age verification transaction. My company has process paths and is on doing that for another 15 years. So if Alpha Corporation wants to do something like this, it has to date up a partner with me, or take a sub optimize route which would be have somebody carrying ID card along with using biometrics.*

- BuyMate’s product/solution involves new and emerging technology. BuyMate tries to be very clear on its value to Alpha Corporation, so that the latter’s representative has the motivation to sell your product/solution. If the value proposition is not very clear to them, they can be easily distracted by other things that they sell.

*One thing that has really a critical aspect in partnering with Alpha Corporation is that you have to be very clear in the value propositions, so its client seems to understand how they make their objectives and how they make money selling the solution. And if it is not really clear to them, there are so many things that they sell. They will say that I will be selling something else, I want to get something else, I am selling a competitive product—I mean some other list of things that Alpha Corporation gets to serve her customers.*

- BuyMate tries to make itself very easy to work with. For instance, BuyMate’s alliance manager, John Smith, actively educates the Alpha Corporation team about BuyMate’s solutions, so that it appears easy to understand and sell. He has also prepared short presentation that the Alpha Corporation team can use to engage customers’ interest.

*That solution is very easy to understand could be an ideal thing. The clients in Alpha Corporation don’t go very deep into any of the solutions, because of so many things they deal with.*

*I spent a couple of hours trying to help them understand what my solution is and how to sell it and where it is, and all that. Some are getting it pretty quickly and some have been down. I tried to help and explain exactly how they could pay and where their customer care is. My solution is quickly understood by customer because they looked into retail business to understand their challenges. It is not always so easy to help the Alpha Corporation team understand it.*

*I also put together short presentation that I give to Alpha Corporation and then I hand to them for them to give it to customers in case the customer would have ask about biometrics and this kind of technology.*

- BuyMate actively approaches and communicates with Alpha Corporation’s sales teams to evangelize BuyMate’s prouducts. For instance, BuyMate’s alliance manager, John Smith, asked for an every other week teleconference with Alpha Corporation’s retail team, so as to review the opportunity, progress, and problems timely. Besides, John goes to Alpha Corporation’s various meetings and travels around the country to call local Alpha Corporation teams.

*Being a former Alpha Corporation employer, I went to Alpha Corporation to put in a teaming agreement. We broadcast email to all the Alpha Corporation teams that cover retail. I wanted to have an every other week conference call between myself and Alpha Corporation retail industry alliance manager with a focus on BuyMate, and they were on. We just had a one-hour call. We have it every other Monday morning. That call was just ended when you called me. And it is to talk about the opportunities and where things are looking well, and where things are not looking well. So I can ask for help...I also required that we could do conference calls with each of the sales teams and have the sales meetings. I can be on the phone explaining. I put all those things in the teaming agreement knowing that one of our biggest issues is evangelizing what this thing is, and making it easy for them to understand.*

*So that way, as I travel the country, I call local Alpha Corporation teams and go to their offices and talk with the retail officer, kind of explain what we were doing in house. So those were things that I know about to do, because I used to do with Alpha Corporation.*

- BuyMate's VP-alliance and sales, John Smith, was once an Alpha Corporation executive in sales, and worked in a couple of different companies that had experiences in partnering with Alpha Corporation. Besides, BuyMate's former CEO and current chairman also has experience with Alpha Corporation (see Nov 2004 press release). This gives BuyMate some creditability in working with the Alpha Corporation team. Besides, being familiar with the way Alpha Corporation is doing enables BuyMate to work more effectively with it.

*We try to tell Alpha Corporation what kind of the easiest company we are to partner with, because we know you guys. We know how it works and we know a lot of the people. And so they know me and I am hopeful that gives a lot of credibility, but they can call and show at me challenges and frustration and the things that are happening, and I understand what they are saying. I am offering suggestions of how to partner with them knowing that I am trying to fit into their world. That's why I said if you don't have a former Alpha Corporation employee or do the partnership and it is the key partnership for you, you know, it could be as frustrating as anything you do.*

*It is because I knew about this issue before I came here, so when I said things like, you know, I wanted to be first of all to broadcast some emails. Then I want to go to all of these kick-off meetings and I want to present. I want to create a very high level 4 or 5 chart overview for Alpha Corporation that I felt was enough for them just to kind of understand what this was.*

<sup>1</sup> For the purpose of confidentiality, all names (companies and individuals) are pseudo names; some details about the company profile are deliberately left out. Data in this section are mostly from the company website.

<sup>2</sup> Data in this section are from the interview with one VP of BuyMate on Feb 7, 2005.

**APPENDIX 4: Questionnaire to Selected ISVs for Phase 2 Study**  
**INFORMED CONSENT FORM**<sup>1</sup>

<b>Identification of Project/ Title</b>	<b>Structure and Dynamics of Innovation Ecosystem</b>		
<b>Statement of Age of Subject (Please note: Parental consent always needed for minors.)</b>	<i>You are over 18 years of age and wish to participate in a program of research being conducted by Anil Gupta, Ph.D., and Qing Cao, Ph.D. candidate in the Department of Management and Organization at The University of Maryland, College Park.</i>		
<b>Purpose</b>	<i>The purpose of this research is to understand the unique opportunities and the challenges that relatively younger, smaller companies face when they engage in an innovation partnership with a much larger, more established “platform” company.</i>		
<b>Procedures</b>	<i>You will be asked to fill out an online survey, which takes about 20 minutes to complete. You will be asked to do your best to answer all questions, as incomplete answers can create serious problems in data analysis. The following is an example of the kinds of questions in the survey: “Please indicate the degree of value creation for your company from the partnership with Alpha Corporation so far on the following aspects: ...”</i>		
<b>Confidentiality</b>	<i>All information collected in this study is confidential to the extent permitted by law. The data you provide will only be accessed by members of the research team. Your information may be shared with representatives of the University of Maryland, College Park or governmental authorities if we are required to do so by law. Data will be kept on a CD, which will be kept in a locked place when it is not used. Data will be reported only on an aggregated basis. No individual data will be reported. Data will be destroyed 5 years after the last article is published.</i>		
<b>Risks</b>	<i>There is no known risk to the participants.</i>		
<b>Benefits, Freedom to Withdraw, &amp; Ability to Ask Questions</b>	<i>Participation in the survey is voluntary and you can withdraw your participation at any point in time without any penalty. You will be getting a feedback report based on aggregated data across the entire sample - this’ll be a common report sent to all companies in this study.</i>		
<b>Contact Information Of Investigators</b>	<i>Anil Gupta, Ph.D. agupta@rhsmith.umd.edu; Telephone: 301-405-2221 4530 Van Munching Hall, University of Maryland, College Park Qing Cao, Ph.D. candidate qcao@rhsmith.umd.edu; Telephone: 301-405-7036 4545 Van Munching Hall, University of Maryland, College Park</i>		
<b>Contact Information of Institutional Review Board</b>	<i>If you have questions about your rights as a research subject or wish to report a research-related injury, please contact: <b>Institutional Review Board Office, University of Maryland, College Park, Maryland, 20742; (e-mail) irb@deans.umd.edu; (telephone) 301-405-4212</b></i>		
<b>Please print your name, sign, and date.</b>	<b>NAME OF SUBJECT</b>		
	<b>SIGNATURE OF SUBJECT</b>		
	<b>DATE</b>		



**PART 1 OF 5: BACKGROUND INFORMATION**

**1.1. Please enter your CODE NUMBER (see email):** \_\_\_\_\_

**1.2. Your job title:** \_\_\_\_\_

**1.3. Are you one of the company's co-founders?**  Yes  No

**1.4. Do you report directly to the CEO?**

- I am the CEO
- I report directly to the CEO
- I do not report directly to the CEO

**1.5. Have you worked for Alpha Corporation at some point in your career?**  Yes  No

**1.6. When was your company founded?** Year \_\_\_\_\_

**1.7. Has your company received one or more rounds of investment from venture capital (VC) firms?**

- Yes  No

**1.8. If "Yes", when did you receive the first round of investment?** Year \_\_\_\_\_

**1.9. AT PRESENT, how many employees (full-time equivalent) in your company are working in each of the following functions?**

- a. R&D: \_\_\_\_\_
- b. Marketing: \_\_\_\_\_
- c. Sales: \_\_\_\_\_
- d. Service: \_\_\_\_\_
- e. All Other: \_\_\_\_\_

**1.10. AS OF DEC 31, 2002, what was the total number of employees in your company (best estimate)?** \_\_\_\_\_

**1.11. For the calendar year 2004, which of the following ranges most accurately represents the sales revenues of your company?**

- Less than \$500K
- \$500K--\$1M
- \$1M--\$5M
- \$5M--\$10M
- Greater than \$10M

**1.12. What was the growth rate in your company's revenues from 2003 to 2004?** \_\_\_\_\_%

**1.13. Which companies do you regard as your major competitors? Please name the top 3:**

- a. Competitor 1: \_\_\_\_\_
- b. Competitor 2: \_\_\_\_\_
- c. Competitor 3: \_\_\_\_\_

**PART 2 OF 5: YOUR STATUS IN ALPHA CORPORATION'S PNP**

**2.1. Please indicate the extent to which your company collaborates with Alpha Corporation in each of the following areas:**

1 = Almost no collaboration, 4= Some collaboration, 7 = Very high collaboration

	Almost no Collaboration		Some Collaboration			Very high Collaboration	
	1	2	3	4	5	6	7
Product development	1	2	3	4	5	6	7
Marketing	1	2	3	4	5	6	7
Sales	1	2	3	4	5	6	7
Services	1	2	3	4	5	6	7

**2.2. PRIOR TO partnering with Alpha Corporation, your company's products were:**

Please check all that apply

- Enabled to run on J2EE.
- Compatible with J2EE.
- Enabled to run on .NET.
- Compatible with .NET.

**2.3. AT PRESENT, your company's products are:**

Please check all that apply

- Enabled to run on J2EE.
- Compatible with J2EE.
- Enabled to run on .NET.
- Compatible with .NET.

**2.4. At the PLATFORM LEVEL COMMITMENT, besides Alpha Corporation, which of the following companies do you partner with? <sup>2</sup>**

Please check all that apply

- Firm A
- Firm B
- Firm C
- Firm D
- Firm E
- Others (Please specify \_\_\_\_\_)

**2.5. Relative to other PLATFORM LEVEL partners, how important is your company's partnership with Alpha Corporation?**

- The most important
- One of the most important
- Above average importance
- Average importance
- Below average importance
- One of the least important
- The least important

**2.6. To the best of your knowledge/judgment, how many of your competitors are also partnering with Alpha Corporation in the Partner Networks program?**     0    1    2    3    4    5 or more

**2.7. Besides technology enablement and go-to-market partnerships with Alpha Corporation, does your company also have the following relationships with Alpha Corporation?**

Please check all that apply

- Your company is a supplier to Alpha Corporation.
- Your company is a customer of Alpha Corporation.

**PART 3 OF 5: VALUE DERIVED FROM PARTNERSHIP WITH ALPHA CORPORATION**

**3.1. Since the time that your company joined Alpha Corporation’s Partner Networks program:**

\_\_\_\_\_ % What % of your company’s total *revenues* was earned, directly or indirectly, because of the partnership with Alpha Corporation?

\_\_\_\_\_ % What % of the *deals* closed by your company happened, directly or indirectly, because of the partnership with Alpha Corporation?

**3.2. What enticed your company to join Alpha Corporation’s Partner Networks program?**

	Not an important factor	A moderately important factor	A very important factor
<b>Business insights resources</b> (that help me understand dynamic industry trends and create effective strategies to target the best market opportunities and grow my business)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>Product guides</b> (that help direct my development efforts and investments, along with leveraging technical resources and support I need to get educated and certified on Alpha Corporation products and port my solutions)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>Marketing and sales resources</b> (that help me generate new leads and close deals faster)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>Networking opportunities and collaboration tools</b> (that connect with Alpha Corporation teams and other Alpha Corporation Business Partners to leverage their knowledge, skills, and contacts)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>Other</b>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

**3.3. Please indicate the degree of value derived by your company from the partnership with Alpha Corporation so far on the following aspects:**

1 = Little or no benefit, 4 = Moderate benefit, 7 = Extremely high benefit

	Little or no benefit		Moderate benefit			Extremely high benefit	
Technology learning	1	2	3	4	5	6	7
Product development	1	2	3	4	5	6	7
Product sales	1	2	3	4	5	6	7
Customer service	1	2	3	4	5	6	7
Customer acquisition	1	2	3	4	5	6	7
Partner acquisition	1	2	3	4	5	6	7
Market visibility	1	2	3	4	5	6	7
Profitability	1	2	3	4	5	6	7
Raising capital	1	2	3	4	5	6	7
Long term industry leadership	1	2	3	4	5	6	7
<b>OVERALL</b>	1	2	3	4	5	6	7

**PART 4 OF 5: YOUR INTERACTIONS WITH ALPHA CORPORATION**

**4.1. To what extent are the following statements true?**

1 = Not at all true, 4= Neutral, 7 = Very true

	Not at all true	Neutral	Very true
--	-----------------	---------	-----------

We are highly proactive in building connections within Alpha Corporation	1	2	3	4	5	6	7
We try hard to remain visible to executives and partnership program managers in Alpha Corporation	1	2	3	4	5	6	7
We try to maximize interaction with our contact person and other people we know within Alpha Corporation	1	2	3	4	5	6	7
We make deliberate efforts to understand what Alpha Corporation expects from its ISV partners	1	2	3	4	5	6	7
We carefully adjust our practice according to Alpha Corporation's expectations	1	2	3	4	5	6	7
We try to align our way of interacting with Alpha Corporation with that of its operation	1	2	3	4	5	6	7
We go to all activities hosted by Alpha Corporation's Partner Networks Program to which we are invited	1	2	3	4	5	6	7
We actively search for information to understand how Alpha Corporation operates its Partner Networks Program	1	2	3	4	5	6	7
We frequently monitor the Alpha Corporation's website to keep track of various initiatives related to Partner Networks Program	1	2	3	4	5	6	7
We have found Alpha Corporation's Partner Networks website user-friendly and easy to navigate	1	2	3	4	5	6	7
We have a clear understanding of how we can best take advantage of the benefits offered by Alpha Corporation's Partner Networks Program	1	2	3	4	5	6	7
The benefits and services offered by the Alpha Corporation's Partner Networks Program have helped us facilitate working relationships with other Alpha Corporation Business Partners	1	2	3	4	5	6	7
We find it easy to remain up-to-date on the latest benefits and special offers available within Alpha Corporation's Partner Networks Program	1	2	3	4	5	6	7
Our experience of partnering with Alpha Corporation in one industry vertical helps us a lot in our partnering with Alpha Corporation in the other industry verticals	1	2	3	4	5	6	7
Our products need (have needed) a very high level of technological tailoring in order to be enabled to run on Alpha Corporation's platform	1	2	3	4	5	6	7
Gearing up to deal with Alpha Corporation requires (has required) highly specialized processes and technologies	1	2	3	4	5	6	7
We need (have needed) to make significant investments in processes and technologies dedicated to our relationship with Alpha Corporation	1	2	3	4	5	6	7
Exiting from the partnership with Alpha Corporation will result in a significant "waste" of our resources already dedicated to it	1	2	3	4	5	6	7

**4.2. Think about the relationship between the key person(s) in your company who interact with Alpha Corporation (e.g., yourself) and your counterparts in Alpha Corporation. To what extent are the following statements true?**

1 = Not at all true, 4 = Neutral, 7 = Very true

	<b>Not at all true</b>	<b>Neutral</b>	<b>Very true</b>
--	------------------------	----------------	------------------

There is close personal interaction between us	1	2	3	4	5	6	7
Our relationship is characterized by mutual respect	1	2	3	4	5	6	7
Our relationship is characterized by mutual trust	1	2	3	4	5	6	7
Our relationship is characterized by personal friendship	1	2	3	4	5	6	7
Our relationship is characterized by high reciprocity	1	2	3	4	5	6	7

**4.3. Who are the (up to) three people within Alpha Corporation with whom you communicate most frequently? Also, how often do you interact with them?**

Person 1 (name): \_\_\_\_\_

Division: \_\_\_\_\_

	Frequency of Communication					
	Once a week or more often	Twice a month	Once a month	Once a quarter	Twice a year	Once a year or less often
Email	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Phone	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
In-person	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Person 2 (name): \_\_\_\_\_

Division: \_\_\_\_\_

	Frequency of Communication					
	Once a week or more often	Twice a month	Once a month	Once a quarter	Twice a year	Once a year or less often
Email	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Phone	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
In-person	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Person 3 (name): \_\_\_\_\_

Division: \_\_\_\_\_

	Frequency of Communication					
	Once a week or more often	Twice a month	Once a month	Once a quarter	Twice a year	Once a year or less often
Email	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Phone	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
In-person	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

**4.4. In looking back at the history of your company's relationship with Alpha Corporation, how strongly do you and your colleagues agree or disagree with Alpha Corporation's perspective on each of the following issues:**

1 = Strongly disagree with it, 4 = Neutral, 7 = Strongly agree with it

	Strongly disagree with it		Neutral		Strongly agree with it		
	1	2	3	4	5	6	7
How the benefits from our partnership are divided between us	1	2	3	4	5	6	7
How the risks from our partnership are divided between us	1	2	3	4	5	6	7
How the responsibilities for managing the partnership are divided between us	1	2	3	4	5	6	7
How key decisions regarding our partnership are made	1	2	3	4	5	6	7
How we interact with each other regarding our partnership	1	2	3	4	5	6	7

**4.5. Since you entered Alpha Corporation’s Partner Networks Program, how often have there been significant disagreements?**

1=Never, 4=Sometimes, 7=Often

	Never		Sometimes			Often	
Between your company and Alpha Corporation	1	2	3	4	5	6	7
Between you and your counterpart(s) in Alpha Corporation	1	2	3	4	5	6	7

**4.6. To what extent are the following statements true?**

1 = Not at all true, 4= Neutral, 7 = Very true

<b>When I had significant disagreements with my counterpart(s) in Alpha Corporation:</b>	Not at all true		Neutral			Very true	
I tried to keep the disagreement to myself in order to avoid hard feelings	1	2	3	4	5	6	7
I tried to avoid unpleasant exchanges with my counterpart(s) in Alpha Corporation	1	2	3	4	5	6	7
I gave in to the wishes of my counterpart(s) in Alpha Corporation	1	2	3	4	5	6	7
I went along with the suggestions of my counterpart(s) in Alpha Corporation	1	2	3	4	5	6	7
I tried to use my influence to get our ideas accepted	1	2	3	4	5	6	7
I was generally firm in pursuing our side of the issue	1	2	3	4	5	6	7
I collaborated with my counterpart(s) in Alpha Corporation to come up with decisions acceptable to both sides	1	2	3	4	5	6	7
I tried to bring all our concerns out in the open so that the issues could be resolved in the best possible way	1	2	3	4	5	6	7
I proposed a middle ground for breaking deadlocks	1	2	3	4	5	6	7
I tried to find a middle course to resolve an impasse	1	2	3	4	5	6	7

**PART 5 OF 5: YOUR ENVIRONMENT AND STRATEGY**

**5.1. What is your company’s orientation on the following continuum?**

1 = Exactly the description on the left, 4 = In between, 7 = Exactly the description on the right

<i>In general, the top managers of my firm favor...</i>		
A strong emphasis on the marketing of tried and true products or services	1 2 3 4 5 6 7	A strong emphasis on R&D, technological leadership, and innovations
<i>How many new lines of products or services has your firm marketed in the past 5 years or since inception?</i>		
No new lines of products or services	1 2 3 4 5 6 7	Very many new lines of products or services
Changes in product or service lines have been mostly of a minor nature	1 2 3 4 5 6 7	Changes in product or service lines have usually been quite dramatic
<i>In dealing with its competitors, my firm...</i>		
Typically responds to actions which competitors initiate	1 2 3 4 5 6 7	Typically initiates actions which competitors then respond to
Is very seldom the first business to introduce new products/services, administrative techniques, operating technologies, etc.	1 2 3 4 5 6 7	Is very often the first business to introduce new products/services, administrative techniques, operating technologies, etc.
Typically seeks to avoid competitive clashes, preferring a “live-and-let-live” posture	1 2 3 4 5 6 7	Typically adopts a very competitive, “undo-the-competitors” posture
<i>In general, the top managers of my firm have...</i>		

A strong proclivity for low-risk projects (with normal and certain rates of return)	1 2 3 4 5 6 7	A strong proclivity for high-risk projects (with chances of very high returns)
A strong tendency to “follow the leader” in introducing new products or ideas	1 2 3 4 5 6 7	A strong tendency to be ahead of other competitors in introducing novel ideas or products
<i>In general, the top managers of my firm believe that...</i>		
Owing to the nature of the environment, it is best to explore it gradually via timid, incremental behavior	1 2 3 4 5 6 7	Owing to the nature of the environment, bold, wide-ranging acts are necessary to achieve the firm’s objectives
<i>When confronted with decision-making situations involving uncertainty, my firm...</i>		
Typically adopts a cautious, “wait-and-see” posture in order to minimize the probability of making costly decisions	1 2 3 4 5 6 7	Typically adopts a bold, aggressive posture in order to maximize the probability of exploiting potential opportunities
My firm is very aggressive and intensely competitive	1 2 3 4 5 6 7	My firm makes no special effort to take business from the competition

**5.2. Within the HEALTHCARE industry vertical, which solution areas do your software products serve?**

Please answer this question only if you serve the HEALTHCARE industry vertical. Otherwise, please skip to the next question.

	Quite Heavily	To Some Extent	None or Very Little
<b>Healthcare Collaborative Network</b> <i>(provide a foundation for detection and rapid response to adverse healthcare events)</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>Clinical Decision Intelligence</b> <i>(provide in-depth prospective and retrospective data analysis by aggregating data from multiple disparate applications)</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>Healthcare Plan Administration</b> <i>(provide payers with an effective means to leverage information to support decision-making based on health outcomes data)</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>Patient-centric Healthcare Portal</b> <i>(provide accelerated integration of disparate applications to improve the availability of integrated clinical information to clinicians)</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>Payer Services Portal</b> <i>(provide a single point of access to key systems, organization, customer information and collaboration tools)</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

**5.3. Within the LIFE SCIENCES industry vertical, which solution areas do your software products serve?**

Please answer this question only if you serve the LIFE SCIENCES industry vertical. Otherwise, please skip to the next question.

	Quite Heavily	To Some Extent	None or Very Little
<b>Corporate Information Asset Management</b> <i>(deliver secure storage and processing of life sciences documentation and data records)</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>Clinical Genomics Solution</b> <i>(provide an environment for capturing clinical patient data for re-use as the basis for directed drug development)</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

<i>research)</i>			
<b>Investigator Recruitment &amp; Trials Management</b> <i>(provide an integrated, portal-based environment for investigator access)</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>Clinical Trials Management Solution</b> <i>(manage time-critical information, documents, and budgets; manage schedules about investigators, patients, clinical-trial staff; manage all related components of a clinical trial)</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>Annotations &amp; Knowledge Sharing</b> <i>(allow a life sciences organization to use annotations to qualify data entry and interpretation)</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

**5.4. Within the RETAIL industry vertical, which solution areas do your software products serve?**

Please answer this question only if you serve the RETAIL industry vertical. Otherwise, please skip to the end.

	<b>Quite Heavily</b>	<b>To Some Extent</b>	<b>None or Very Little</b>
<b>Store Operations</b> <i>(enable retailers to improve customer experience, streamline operations, and improve in-store execution)</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>Consumer Driven Supply Chain</b> <i>(use buying behaviors of end consumers to drive all forecasts, replenishment orders, and stock movements)</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>On Demand Workplace</b> <i>(enable retail employees to retrieve reliable, real-time information and collaborate effectively with their associates)</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>Enterprise Data Warehouse—Advanced Analytics</b> <i>(enable retailers to aggregate data from thousands of transactions and acquire knowledge for more effective and profitable selling)</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>Merchandising</b> <i>(help retailers manage what to buy, how much to buy, how to price, where to put, how to promote, etc.)</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>Multi-channel Retailing</b> <i>(allow retailers to unify all of their cross-channel initiatives on a single, integrated platform)</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

**THANK YOU VERY MUCH FOR YOUR TIME!**

<sup>1</sup> The original questionnaire uses the real name of the company.

<sup>2</sup> The names of the competitor companies are deliberately not shown here.



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