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# Antecedents and consequences of new venture growth strategy: An empirical study in China

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**Abstract** Although current literature on new venture growth has focused on why new ventures grow, relatively less attention has been paid to how that growth is occurring. This article adopts the resource-based view to investigate the antecedents and consequences of new venture growth strategy in an emerging economy context. We identify three generic growth patterns of Chinese high-tech new ventures—organic growth, partnership growth and acquisition growth, based on 252 completed questionnaires. Consideration has been given to identify respective resources and capabilities associated with different growth strategies. Technological capabilities, strong and weak network ties, marketing capabilities and financial resources are found to have different effects on different new venture growth strategies. In addition, the growth strategies show differentiated effects on performance in terms of survival, competitive advantages and profits. Research and practical implications of new venture growth strategies and performance in China are also discussed in the paper.

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Entrepreneurship research is paying an increasing amount of attention to new venture growth (Gilbert, McDougall, & Audretsch, 2006). Earlier studies on new venture growth follow the industrial organization (IO) literature, suggesting that new venture growth performance is influenced by industry structure and environment (McDougall, Robinson, & DeNisi, 1992). The resource-based perspective has been adopted recently to complement the traditional approach, addressing the importance of valuable resources and capabilities that an entrepreneur possesses and exploits in an effective manner (Arthurs & Busenitz, 2006; Kor, Mahoney, & Michael, 2007; Ostgaard & Birley, 1994, 1996). However, the bulk of the new venture growth literature has concentrated on understanding why some ventures grow more than others, while neglecting the importance of how the growth is occurring. As Gilbert, McDougall and Audretsch (2006: 938) suggest, it is salient to investigate how new ventures grow in order to "enable understanding of the challenges potentially affecting new firm growth" and firm performance. This paper extends previous work by identifying the "how" question of strategic decision on new venture growth and examining how the growth strategies influence new venture performance.

According to the resource-based view (RBV), entrepreneurship is viewed as a process by which entrepreneurs or entrepreneurial teams identify, acquire and accumulate resources to purse perceived opportunities (Ireland, Hitt, Camp, & Sexton, 2001; Jarillo, 1989; Roberts, Stevenson, Sahlman, Marshall, & Hamermesh, 2006). Once new ventures can develop, acquire or exploit certain key resources which are valuable, rare, inimitable and non-substitutable, they are likely to attain sustainable competitive advantage and enjoy better performance in the market (Alvarez & Barney, 2007; Barney, 1996, 2001). Although recent research is anchored in this perspective, the explicit usage of the RBV in the new venture literature has been rather limited in regard to emerging economies (Bruton & Rubanik, 2002). As these economies tend to move toward market-based economies, improved knowledge about entrepreneurship has become important for both theory and practice. Great disparity in culture, society, and political and economic systems between emerging economies and developed ones challenges the existing entrepreneurship literature developed and empirically tested primarily in the West, which presents grounds to refine and test existing theories and to develop new ones (Tan, 1996).

New ventures, regarded as different collections of tangible and intangible resources, choose strategic decisions based on specific sets of resources (Chandler & Hanks, 1994). We further argue that internal growth and external growth use different sets of resources and capabilities and, therefore, may require different platforms to acquire and accumulate these bundles. Ventures pursuing organic growth are likely to place emphasis on technological development which may contribute significantly to growth (Zahra, 1996), whereas ventures pursuing external growth may find marketing and networking capabilities more strongly influence growth (Shepherd, 1991). The demands on financial resources can be differentiated by the types of strategic initiative a venture undertakes (Abernathy & Clark, 1985; Winborg & Landstrom, 2001). All of these considerations build on the premise that

specific resources and capabilities are associated with different growth strategies and that the venture performance is influenced by differential growth strategies built on the resource-based perspective (Barney, 1991).

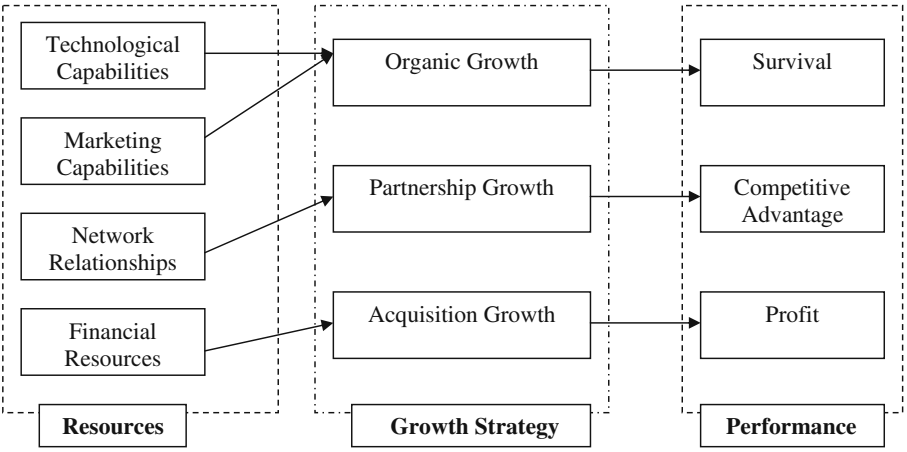
This paper focuses on high-technology new ventures in China for two main reasons. First, responding to Bruton and Rubanik's (2002) call that there has been rather limited investigation of the RBV in emerging economies in entrepreneurship research, we provide empirical evidence to demonstrate whether the existing research has any bearing on new venture growth strategy and performance in China, the largest emerging economy. Second, the growth of high-tech new ventures in China has increased dramatically in the past decade, and has become an important but under-explored topic for both practitioners and academia. We argue that in the context of small and new firms which are embedded with the liability of newness and smallness, together with the uncertainties and risks in emerging economies, selected growth strategies act as the generative mechanism through which resources are pursued and performances are influenced.

## Hypotheses

Scholars in the field of strategy view firms as composites of various resources. Resources are heterogeneously distributed across firms, and typically include all assets, capabilities, processes and knowledge controlled by a firm (Barney, 1991; Newbert, 2007; Penrose, 1959). Although the differences between resources and capabilities are clearly conceptualized, it is difficult to divorce the concepts of resource and capability absolutely especially in methodological terms (Chandler & Hanks, 1994; Newbert, 2007). In this study, we use resource-based capabilities as a mix of resources and capabilities that are critical to new venture growth strategy and performance.

In this paper, we argue that internal resources, especially the resource endowment of firms, should be examined to investigate firm strategies (McGrath, Venkataraman, & Macmillan, 1994; Shelton, 2005). The resource endowment perspective explains that specific resource endowment is related to tactical and strategic decisions and actions (Chandler & Hanks, 1994; Gilbert et al., 2006). In addition, this perspective implies that the configuration of a new venture's resources and capabilities can contribute to effective resource allocation (Arthurs & Busenitz, 2006), thus enabling the firm to efficiently and effectively pursue its growth objectives (Brush & Chaganti, 1999; Chandler & Hanks, 1994).

In fact, new ventures often face constraints in their access to, or control over resources, or even do not have a clear idea about the source of competitive advantages. It is likely that new ventures fail more quickly than mature organizations because they have limited or no access to critical resources, such as money, people and networks (Stinchcombe, 1965). This leads to a "liability of newness" for start-up firms where their survival may be significantly reduced and their growth cannot be achieved (Bruton & Rubanik, 2002; Gilbert et al., 2006). Despite the "liability of newness," new ventures with the presence of given resources could enable firms to build competitive advantage (Barney, 1991), conceive and implement strategies and promote growth (Barney, 1996; Penrose, 1959). The conceptual framework is presented in Figure 1.




Note: Firm age, firm size, and firm type are control variables.

**Figure 1** Conceptual framework

## Resources-based capabilities and new venture growth strategies

In recent years, the knowledge-based economy alongside the wave of technological innovation has generated numerous business opportunities and changed the competitive environment. New ventures, as sources of innovation, possess specific technological capabilities and flexibility that allow them to exploit business opportunities more readily than established firms. Accordingly, new venture growth literature centers on the question of why some new ventures grow more than others do, particularly in high-tech industries. However, the manner by which growth has been attained is still an under-explored question (Gilbert et al., 2006).

In their review work on new venture growth literature, Gilbert and his colleagues (2006) point out that different resource sets can lead to different growth strategies. For example, growth resulting from an internal mechanism requires new ventures to possess advanced technological capabilities in order to achieve product breakthroughs (Zahra, 1996), whereas partnering arrangements enable new ventures to reduce the risks in reaching new markets with their product offerings or to establish their business legitimacy in emerging economies through existing network relationships. In this study, we assume that new ventures can have three strategic choices to achieve competitive advantage and growth. First, organic growth strategy refers to the strategic focus on internal R&D applied to product development, enhancements and extensions (McCann, 1991). Second, growing through cooperative mechanisms can occur when the venture licenses technology from another firm to jump-start its own internal innovation process (McCann, 1991) or builds up a strategic partnership to gain access to distribution channels, customers and reliable sources of inputs in order to gain a competitive advantage over rivals (Baucus, Baucus, & Human, 1996). Third, which does not apply to most young and relatively inexperienced ventures, growth can be aggressively obtained through acquisitions where core business could be focused either by forward or backward integration.

In his discussion regarding firm's competitive advantages, Barney (1991) suggests that "causal ambiguity" exists because firms may not understand the link between its resources and competitive advantages fully, which further influences the strategic choice of firms. Thus, to recognize and configure the resources that generate a competitive advantage is important for firms to pursue successful strategies. This concept is in accordance with Osborn and Hunt's (1974) suggestion that specific resources can be related to tactical and strategic decisions and actions. Following this reasoning, high-tech new ventures may select their growth strategies to achieve competitive advantage and growth based upon resource capabilities. In this study, we identify four types of resource-based capabilities that are likely to be particularly important for growth strategy: (1) technological capability, (2) marketing capability, (3) networking relationship and (4) financial capital. These four types of resource-based capabilities have different characteristics and play different roles in helping firms to grow through their competitive advantages. Technological capability is more internally oriented and emphasizes improving a firm's innovation ability through internal mechanisms. It plays a critical role in determining the success of new ventures (Su, Tsang, & Peng, 2009; Zahra, 1996), and is regarded as an important strategic resource endowment that contributes to the establishment of a competitive position in the market (Jones, Lanctot, & Teegen, 2001; Yam, Guan, Pun, & Tang, 2004). Technological capability is not easy to imitate because of its embeddedness in the company operation (Barney, 1991). Similarly, marketing capability is developed inside the firm and is critical for new ventures to commercialize their products and reach new markets (McCann, 1991). Networking capability, including both strong ties and weak ties, is a bridge between internal operation and external environment (Mort & Weerawardena, 2006). It helps firms to gain access to valuable complementary resources such as advanced technologies, distribution channels and customers (Baucus et al., 1996; Zhang & Li, 2008). As another intangible resource, networks enable new ventures to identify, establish, coordinate and develop a variety of relationships with different players in the market to generate new resource configurations and increase the venture's capacity to integrate, reconfigure, gain and release resource combinations (Gao, Xu, & Yang, 2008). This capability is also difficult to replicate, and provides new ventures with a significant competitive advantage (Lin, Liang, Xu, Li, & Xie, 2008; Peng & Luo, 2000). However, unlike technological capability and marketing capability, network capability is more embedded in the key persons instead of in the whole organization. Financial sources, as a critical driver for growth (Chandler & Hanks, 1994), help ventures to achieve fast expansion by purchasing an existing business (Gilbert et al., 2006). However, financial sources are tangible resources and not closely associated with a firm's internal operation. This can be easily imitated by others, and is not a sustainable capability. We expect that different growth strategies, due to their different focus, may require different resource-based capabilities.

Organic growth strategy based on internal innovation, as a means of generating new product breakthroughs for new businesses, has great potential to enter niche markets which might be ignored by established firms, and to build the venture's market share (Antoncic & Hisrich, 2001; Banbury & Mitchell, 1995). Both incremental introduction and radical introduction arranged by new ventures could lead to sustainable advantage and long-term growth (Banbury & Mitchell, 1995)

because of the pioneering advantage (Park & Bae, 2004). As high-tech industries in China face rapidly changing technological and market conditions, first-mover advantages can greatly increase the possibility to establish technological leadership and enable better performance than incumbents. In this vein, ventures growing through internal mechanisms rely on advanced technological capabilities, valuable technology sources, patents and frequent upgrades; and marketing capabilities prompt organic growth (Roure & Maidique, 1986; Siegel, Siegel, & Macmillan, 1993; Zahra, 1996). Therefore, we hypothesize:

**Hypothesis 1a** High-tech new ventures with strong technological capabilities will tend to prefer organic growth strategy above partnership growth strategy and acquisition growth strategy.

Other than innovative capability, when new ventures are ready to extend their reach into new markets, marketing capabilities or experiences are critical to identifying and developing competitive products to capture prospective customers (McCann, 1991; Su et al., 2009). Such capabilities can be even more critical in high-tech industries in emerging economies. First, market condition in such a context is likely to be conditioned not only by the level of existing competition but also by the institutional factors (Fu, Tsui, & Dess, 2006; Su, Xie, & Li, 2009; Zhao & Aram, 1995). New ventures are required to understand how to compete in a turbulent market. Second, small new ventures are likely to pay considerable attention to both product and process quality and to develop new products that are valued by their customers. Once they finish "in-house" product or process development and enhancement, successful new product launching will also require considerable marketing capability (Andersen & Kheam, 1998; Bruton, Dess, & Janney, 2007). In addition, innovative new ventures with a competitive product and product technology have to take marketing actions continuously after their initial product launch, like promoting new uses, promoting more frequent and large quantity usage, and promoting product usage at new times (Kerin, Mahajan, & Varadarajan, 1990). Thus, we propose:

**Hypothesis 1b** High-tech new ventures with strong marketing capabilities will tend to prefer organic growth strategy above partnership growth strategy and acquisition growth strategy.

Partnering arrangements for venture growth are expected to reduce production and inventory costs, speed product development, expand markets, or secure technology, while enjoying congenial business relations with partners (Larson, 1991; Park & Kim, 1997). Learning from partners and gaining complementary resources, which new ventures do not possess initially, allow new ventures to obtain external resources to integrate with their own resource sets, thereby creating a resource bundle that provides unique and difficult-to-imitate value (Barney, 2001; Harrison, Hitt, Hoskisson, & Ireland, 2001). In order to exchange required complementary resources, ventures growing through partnership mean that the firms have to identify, cultivate and manage their networks with different strategic partners and develop their networking skills to utilize, maintain and extend the relationship.

By doing so, new ventures are likely to get access to suppliers, distributors and customers and establish long-term relationships (Baucus et al., 1996; Shepherd, 1991). Researchers in the general strategic management field conceptualize the facets of *guanxi*, interpersonal network or relationship in China's context, as a dynamic evolution—such as strong ties which are connected with family members, former classmates or persons coming from the same hometown, and weak ties which are derived from strangers (Bian, 2002; Poutziouris, Wang, & Chan, 2002). Many founding members of new ventures largely rely on friends or schoolmates to start their business in China, showing the important role that strong ties play in organizations. Such strong ties based on sharing of the same natal or ancestral origin, or identical education and personal growing-up routes, would imply the strong obligations and high expectations because of the embedded degree of trust and dependability associated with people related either by kinship or emotional closeness (Fu et al., 2006). These types of relationship aid the process of knowledge application or exploitation, the control and protection of proprietary knowledge and related intellectual property because of the high level of trust among individuals and trust facilitates internal innovation.

*Guanxi* ties with professional association members tend to be more heterogeneous and transient. Great disparity exists in the association in terms of gender, age, education, technical background, managerial mindset and even *guanxi* ties within and outside the association. Therefore, compared with strong ties, this kind of ties can be regarded as a special form of weak ties due to the sparse interconnection and low level of intimacy between one entrepreneur and the other persons. However, such ties can have relative advantages in terms of leading to novel ideas, providing greater access to a broader base of information and resources and enabling the transfer of knowledge among individuals or teams (Uzzi, 1996), which provide growth opportunities for new ventures through learning and cooperation (Hardy, Phillips, & Lawrence, 2003). In addition, such an association provides opportunities for new ventures to obtain information and other resources such as financial injections from venture capitalists or governmental sponsorship (Peng, 2001; Pissarides, 1999; Yli-Renko, Autio, & Sapienza, 2001).

**Hypothesis 1c** High-tech new ventures with various network relationships will tend to prefer partnership growth strategy above organic growth strategy and acquisition growth strategy.

Alternative to the above two growth mechanisms is a rather aggressive external growth strategy undertaken by acquiring firms competing in the same or a complementary market. Acquisition allows new ventures to obtain external advanced technology (Jones et al., 2001), introduce their product or service offerings (Penrose, 1959), enjoy the reputation of the firm established in the market (Banbury & Mitchell, 1995) or extend their reach into new markets without physically experiencing a time-consuming internal development (Forssbæck & Oxelheim, 2008; Gilbert et al., 2006). Evidence shows that 10% of the ventures grew primarily through acquisitions (Delmar, Davidsson, & Gartner, 2003). Yet, this strategy would not be appropriate for those young and small ventures in China, not just due to their limited internal resources but also to the absence of well-established institutional

rules in China when transition from a centrally-planned to a market-oriented economy is in process (Yang & Li, 2008). Theoretically and ideally, aggressive acquisition can be adopted when ventures possess sufficient resources and experiences in handling the integration. McCann (1991) finds that slower-growing, publicly held firms are more likely to make acquisitions as a growth choice than privately held and younger ones. They enter new business via acquisitions, using their capital and equity more easily than privately held firms, suggesting that financial resources may play a critical role in deciding on acquisition growth strategy. Therefore, we hypothesize:

**Hypothesis 1d** High-tech new ventures with various financial sources will tend to prefer acquisition growth strategy above organic growth strategy and partnership growth strategy.

## New venture growth strategies and performance

Growth can affect various aspects of a venture's performance, such as its cash flow, net income, sales, employment and market share (Murphy, Trailer, & Hill, 1996). The relationship between growth strategies and venture performance has been extensively studied, but the results are not very consistent (McDougall, Shane, & Oviatt, 1994). One possible reason is the breadth of or scope of the venture's growth strategies (McCann, 1991). Therefore, we suggest there is a need to delineate the effects of different growth choices on different performance measures. As profit and survival or viability are among the most important measures of a new venture's growth performance, we include them in our study (Gilbert et al., 2006). We also add competitive advantage as another performance measure for it reflects a new venture's competitive position among rivals. Even though some empirical evidence has confirmed the existence of strong correlations among several different measures of growth performance, there are distinct considerations that differentiate each measure from the others (Gilbert et al., 2006). Penrose (1959) has long reckoned that growth resulting from internal or external mechanisms should affect various performance outcomes differently. In line with this argument, we will further discuss how organic, partnership and acquisition growth strategies affect different performance outcomes in the following section.

Extensive research has acknowledged that new ventures face an analogous liability of smallness together with liability of newness, where in the absence of large size and established viability (Carroll, 1983) the survival of the firms is challenged. Thus, new venture growth is first about obtaining viability (Gilbert et al., 2006) and increasing the likelihood of survival (Freeman, Carroll, & Hanan, 1983). We propose that firms pursuing organic growth are more likely to survive. First, organic growth is the most conservative growth strategy among the three, and involves the lowest level of uncertainties. New ventures adopting this strategy can concentrate on their internal operations without worrying too much about dealing with external partnerships or integrating a totally different business entity. Second, new ventures in pursuit of organic growth are usually more innovative, and could apply technologies more rapidly and economically to new markets (McCann, 1991). They

can focus on making extensions to existing products, or improving production processes or gaining better control of their operation. By doing so, these new ventures can respond better to changes in the market (Edelman, Brush, & Manolova, 2005) and are less likely to fail. Therefore, we propose:

**Hypothesis 2a** High-tech new ventures pursuing organic growth strategy are more likely to survive in the marketplace.

Partnership growth allows ventures to combine their own resources with those of their strategic partners. Such cooperation not only enables new ventures to achieve fast and large-scale expansion, but also helps them to improve their competitive advantages. First, it offers learning opportunities for new ventures. Because of the "embedded" ties in partnership, both parties are more willing to share knowledge in managerial skills, technology know-how and market opportunities (Lee, Lee, & Johannes, 2001). This is very beneficial to enable new ventures to overcome their liability to inexperience or newness. Second, the relationship with strategic partners is an important means to obtain critical inputs such as financial investment, good reputation and market access, especially for high-tech firms (Larson, 1991; Zhao & Aram, 1995). New ventures can leverage these inputs to build their capabilities. In summary, growth through partnership cooperation helps new ventures to upgrade their technologies, establish their reputation, obtain complementary resources and thus achieve competitive advantages over rivals (Baucus et al., 1996; Shepherd, 1991). This is particularly true in the high-tech industry in China where new ventures are more likely to rely on learning and borrowing from their partners to build their own competitiveness. This leads to our hypothesis:

**Hypothesis 2b** High-tech new ventures pursuing partnership growth strategy are more likely to achieve competitive advantage in the marketplace.

Growth through acquisition is the most aggressive and risky choice of the three. Unlike organic growth or partnership growth, this growth strategy could quickly diversify new ventures' business operation and increase their market share (Gilbert et al., 2006; Hustedde & Pulver, 1992; Kuratko, Ireland, & Hornsby, 2001). However, the possible positive impact resulting from fast expansion (Zou & Ghauri, 2008) may be offset by the difficulties new ventures need to overcome during the process of consolidating a new business entity. Some researchers have already demonstrated a negative relationship between acquisition and performance (Jones et al., 2001). In the Chinese high-tech industry, the majority of ventures are small or medium players that have limited management experience in market economies, not to mention skills in managing acquisitions. Thus, the possible positive impacts of acquisition growth on different performance aspects are also challenged by the difficulties to manage post-acquisition operations. Given the inconsistency in extant literature, we propose:

**Hypothesis 2c** High-tech new ventures pursuing acquisition growth strategy would have mixed performance outcomes.

## Methodology

### Sample and data collection

The study sample consists of new ventures operating in high-technology sectors within China. The sampling frame comprises firms located in the High Technology Experimental Zones of Shanghai, one of the most developed high-technology industrial areas in the country.

Many previous studies have recognized the difficulties in collecting primary data from firms in China (Park & Luo, 2001; Zhou, Wu, & Luo, 2007). In order to overcome the problems of low response rate, distrust and managers' unwillingness to respond, we used local research assistants to conduct interview-based questionnaire surveys with top managers in high-tech new ventures, a method similar to that of Zhou, Wu and Luo (2007). Four senior-level postgraduate business students from a well-respected local university were trained to conduct face-to-face field visits from April to August 2007. Each of those selected students was provided with financial support to conduct interviews and collect data. The research assistants, with adequate knowledge about the research project, were instructed to take, in person, an official letter (issued by the local institution) to the top managers of the selected firms, in order to ensure good response rates and data reliability (Gao, Zhou, & Yim, 2007; Hoskisson, Eden, Lau, & Wright, 2000).

There are approximately 30 High Technology Experimental Zones and Incubators in Shanghai, with a total number of more than 1,500 high-tech ventures and RMB 3 billion profit by 2003. We contacted the administrative offices of the zones, as well as industrial associations to obtain lists of firms, and then randomly selected 400 firms. Through formal and informal sources of information, we obtained the names of top managers from the list. Telephones and emails were used to explain the purpose of the study and invite their participation. Of the 400 contacted firms, 306 agreed to participate. A good key informant, mostly within the founding team, or top management team, with sufficient knowledge and rich information about the strategy decision-making and company performance, was identified and contacted to secure an interview.

A screening questionnaire ensured that the respondents had sufficient knowledge to respond to the questionnaire. All respondents were informed of the confidentiality of their responses in advance. The average time for each interview was 30 min. A total of 306 responses were collected. We removed 54 responses from the analysis because by the year 2007, they were more than 8 years old since establishment. Thus, the final sample contains a total of 252 high-tech new ventures. In short, we obtained a response rate of 63% of the total sample (252 out of an effective 400 firms).

New ventures in this sample mainly operated in the information technology and electronics sectors, accounting for over 65% of the total sample; other industry coverage included pharmaceutical products (16.7%), materials (6.3%) and environmental protection technology (10.4%) (See Table 1). Most of the ventures (80.6%) had been in business for a maximum of 6 years. The annual sales of the sample ranged from US$2,500 to $1.8 million, with a mean value of US$20,000. The majority of the firms were small and medium-sized enterprises with between 20 and 200 employees (69.3%). Sixty-six (27.7%) firms operated in a single business area

**Table 1** Sample profile ($N$=252).

| | $N$ | Percent |
|---|---|---|
| **Product type** | | |
| Information technology and software | 84 | 33.3 |
| Electronics and equipment manufacturing | 81 | 32.2 |
| Pharmaceutical products | 42 | 16.7 |
| Materials | 16 | 6.3 |
| Environmental protection technology | 16 | 6.3 |
| Other | 13 | 5.2 |
| **Age of firm** | | |
| 0 to 3 years | 62 | 24.6 |
| 4 to 6 years | 123 | 48.8 |
| 7 to 8 years | 67 | 26.5 |
| **Number of employees** | | |
| Below 20 | 92 | 36.5 |
| 20–50 | 105 | 41.7 |
| 50 to 200 | 51 | 20.2 |
| Over 200 | 4 | 1.6 |
| **Firm stage** | | |
| Infancy | 4 | 1.6 |
| Early growth | 90 | 35.7 |
| Late growth | 122 | 48.4 |
| Mature | 36 | 14.3 |
| **Industry stage** | | |
| Early growth | 42 | 16.7 |
| Late growth | 110 | 43.7 |
| Mature | 100 | 39.7 |
| **Scope** | | |
| Local/regional | 14 | 5.6 |
| National | 208 | 82.5 |
| International | 30 | 11.9 |
| **Number of businesses** | | |
| Single | 74 | 29.4 |
| Multiple | 178 | 70.6 |

and 172 (72.3%) in more than one business area. Over 80% of the firms served the national market, and the rest competed in regional or international markets. Most of the managers (98%) were between 24 and 45 years of age, and over 40% had obtained a Master's degree or PhD.

To check the representativeness of our sample, we looked for information about the number of deals in M&As and joint ventures from the ZEPHYR database. The database reports a global coverage on partnership and acquisition data using a variety of sources and includes company financial information and historical news. From 2000 to 2006, there were approximately 1,800 deals on acquisitions and

partnership by high-tech ventures. Although the data did not provide the growth strategies of high-tech new ventures, the figures and the pattern of high-tech ventures actively participating in M&A and partnership deals have similar characteristics to our sample data. There is a large percentage of high-tech new ventures following partnership growth strategy. Seventy percent of total deals in the database are reported in terms of partnership. The ZEPHYR database also shows that high-tech new ventures that actively engaged in M&As and partnership activities mainly operate in high-tech sectors including IT and internet services, communications, computers, electronic equipment, biotechnology, pharmaceuticals and life sciences, which is similar to our sample's industry coverage. Therefore, institutional maturity in terms of quality of labor, availability of capital and product market does not show great disparity in our data sample.

## Variables

We mainly adapted the measures for this study from established studies in entrepreneurship, with modifications to represent the research context in the Chinese high-tech industry. The measures were translated into Chinese, followed by a back-translation procedure, in accordance with common standards to verify the equivalence between the English and Chinese versions (Peng, 2001). In addition, we discussed the questionnaire with marketing and economics professors of Chinese origin as well as mangers who had at least three years business experience in the high-tech industry to ensure the measures' validity and accuracy (Atuahene-Gima, 1995), before finalizing the questionnaire. All items are reported in the Appendix, and use five-point Likert scales (1=strongly disagree; 5=strongly agree).

*Growth strategies* To measure the growth strategies adopted by the new ventures, we drew on existing measures of strategy patterns developed by McCann (1991). We focused on six strategies: internal technological development, licensing technology to/from other firms, partnering with other firms, acquiring firms in related or unrelated business, and selling out the core unit of the firm, based on conceptualization of existing ideas (Gilbert et al., 2006; Lu & Beamish, 2006; McGee, Dowling, & Megginson, 1995).

*Technological capability* According to prior research, technological capability includes the use of advanced technology, valuable technology sources, patents and copyright (Lee et al., 2001; Roure & Maidique, 1986; Siegel et al., 1993; Zahra, 1996). Following prior research, we measured technological capabilities in terms of the organization's emphasis on innovation, existing product/process patents or copyrights, high-profile technological team and product development.

*Networking relationship* Networking relationship, also known as social capital (Baron & Markman, 2000), external links (Lee et al., 2001; Shepherd, 1991) or personal networks (Ostgaard & Birley, 1994), is extensively studied in earlier strategic management as well as entrepreneurship studies. In this study, networking relationships are conceptualized as interpersonal relationship based on strong ties (i.e., classmates, former colleagues, family members, etc.) and intra-firm relationship

based on weak ties (i.e., industrial associations, governmental agencies and venture capitalists) (Fu et al., 2006).

*Marketing capability* The selection of which markets to enter and how to enter, characterized as two of the most important marketing decisions for new ventures (Bantel, 1998; Park & Bae, 2004), are influenced by the marketing resources and capability of new ventures. To measure such marketing capabilities, we examined the nature of product/service offerings, marketing expertise and knowledge, and product promotion activities that new ventures have.

*Financial resource* Existing studies usually measure financial resources in terms of the amount of total R&D investment, advertising expenditure and market research (Lee et al., 2001; Schoonhoven, Eisenhardt, & Lyman, 1990), based on the logic that a firm's strategy and organizational performance largely depend on the amount and appropriate timing of financial resources invested during the development period of new ventures. However, as suggested by Gilbert and his colleagues (2006), we examined different financial resources of new ventures in order to enhance understanding of whether and how financial capital enables or constrains the strategic decisions entrepreneurs make and ultimately the growth of the firm (Gilbert et al., 2006; Pissarides, 1999). We asked the respondents to evaluate two types of financial capital: (1) internally oriented and socially oriented funds, referring to internally generated funds and bank loans (Winborg & Landstrom, 2001) and (2) public equity offerings.

*Venture performance* In order to investigate the impact of growth strategies on venture performance, it is important to recognize the multidimensional nature of the performance construct (Chandler & Hanks, 1993; Walter, Auer, & Ritter, 2006). Existing entrepreneurship research has conceptualized growth in various ways in terms of sales, employment and market share as the most important measures of new venture growth. However, the objective performance measure or dimension requires the willingness to disclose information and can be problematic due to the accuracy of self-report performance data (Chandler & Hanks, 1993; Kor et al., 2007). Additionally, due to the difficulty in obtaining objective measures of firm performance in China (Park & Luo, 2001), incorporating a firm's objectives and aspiration levels into measurements of firm performance is considered useful because they could demonstrate the degree of congruence between intended goals and performance. Thus, we choose three perceptual measures: profit attainment, realized competitive advantages and securing long-term survival as Walter, Auer and Ritter (2006) suggest.

The profit attainment was measured with a single item indicating whether the new venture had achieved its respective growth objective on a 5-point scale. A venture's realized competitive advantages were measured with three items indicating the extent to which a new venture had gained advantage in its generation of know-how, customization of technologies and value-added product/services. Finally, we considered a new venture's securing of long-term survival as a non-financial performance measure (one item).

*Control variables* We controlled for several variables, which fall outside the purview of our theory, yet might affect growth strategy and venture performance. These

control variables include firm size, firm age, the life cycle of firms and the industry life cycle. We controlled for firm size, which is measured as the number of full-time employees (Lee et al., 2001). We controlled for firm age, which is the number of years between the founding and 2007, since it would predict performance as the "liability of newness" argument suggested by Stinchcombe (1965).

Prior studies suggest that firm stage and industry stage, from the life cycle perspective, can influence the strategic choice and performance (Bantel, 1998; McCann, 1991; Robinson, 1999). New ventures' growth choice is examined as paralleling its life cycle of start-up, rapid growth, maturity and either renewal or decline stages. The existence of stages of new ventures may lead to mixed results (Kazanjian, 1988; McCann, 1991). We controlled for the firm and industry life cycle in terms of infancy (very early growth stage), early growth stage (rapid, still increasing rate of growth), late growth stage (growing, but at a slowing rate), mature (about as fast as it will get) and decline (decreasing growth rate), as operationalized by McCann (1991).

## Common method bias

We used several precautionary design and statistical procedures to minimize common method bias. First, we followed the suggestion of Harrison, McLaughlin, and Coalter (1996) and used multiple item constructs, because common method bias is more problematic at the item level than at the construct level. Second, the items we used to measure independent and dependent variables occurred separately in time and in varied question order, as suggested by Barden, Steensma, and Lyles (2005). We checked for this potential problem in our data using Harman's single-factor test (Gao et al., 2007; Podsakoff & Organ, 1986). The exploratory factor analysis of all the multiple-item constructs results in the expected factor solution that accounts for 75.63% of the total variance, and the first factor only accounts for 14.54%. Because a single-factor solution did not emerge and the first factor did not explain most of the variance, common method bias is not a serious concern for this study.

## Measurement validity

We assessed the uni-dimensionality of the measures with a confirmatory factor analysis (CFA) using AMOS (see Appendix). The overall model fits the data satisfactorily: $\chi(181)=296.408$, $p=0.000$; confirmatory fit index=0.91, incremental fit index=0.92, GFI=0.91; and root mean squared error of approximation=0.050. The CFA results support its convergent validity, because all factor loadings for the underlying constructs are significant ($p<0.01$) (see Appendix). In testing for the discriminant validity of the latent constructs, we ran series of chi-square difference tests for all constructs in pairs using a constrained and an unconstrained model. In each case, the constrained model is significantly worse than the unconstrained model, in support of discriminant validity (Anderson & Gerbing, 1988). Taken together, these results indicate that the measurement model fits the data adequately and possesses both convergent and discriminant validity.

## Results

With the uni-dimensionality of the measures established, we used the composite scores of each construct in the analysis. Table 2 presents the means, standard deviations and bivariate correlations for all variables.

We first ran exploratory factor analysis of all growth items to verify the existence of three conceptual growth choices of new high-tech start-ups in China. Then we ran a set of OLS regressions to test the hypotheses regarding the antecedents and performance consequences of growth strategies. To minimize the confounding effects of other industry and firm variables, we include firm size, firm age, firm life stage and industry stage variables as controls.

The exploratory factor analysis of all six growth measures demonstrates a three-factor solution. As shown in the Appendix, the first growth choice is to grow internally through innovation and R&D, which could be termed as organic growth. The second option is to grow either via licensing technology to/from other firms or partnering with other firms, labeled as partnership growth. The last growth choice is to acquire firms in related or unrelated business, or to sell out the core unit of the firm.

The set of regressions estimate the antecedents and performance consequences of a new venture's growth strategy. Table 3 shows that technological capability has a positive effect on organic growth ($\beta$=0.125, $p$<0.05). Therefore Hypothesis 1a is supported. Similarly, marketing capability has a positive effect on organic growth ($\beta$=0.204, $p$<0.01), consistent with Hypothesis 1b. Besides, we found marketing capability also contributes to the choice of partnership growth ($\beta$=0.189, $p$<0.01), indicating that firms with strong marketing capability tend to prefer organic growth strategy and partnership growth strategy. Hypothesis 1c is supported because both strong ties ($\beta$=0.195, $p$<0.001) and weak ties ($\beta$=0.111, $p$<0.05) have a positive effect on partnership growth strategy, indicating network relationships increase the likelihood of choosing partnership growth strategy. In addition, weak ties are also positively related to organic growth strategy ($\beta$=0.143, $p$<0.05). Funding through internal sources such as internal fund generation or bank loans/debts ($\beta$=0.288, $p$<0.001), and funding through public equity offerings ($\beta$=0.392, $p$<0.001) have a positive effect on acquisition growth strategy, lending support to Hypothesis 1d. Besides its impact on acquisition growth strategy, internal financial capital also affects organic growth strategy ($\beta$=−0.256, $p$<0.01) and partnership growth strategy ($\beta$=0.193, $p$<0.05).

In regard to the effects of growth strategy on performance, Table 3 shows that organic growth positively affects a new venture's survival rate ($\beta$=0.105, $p$<0.05) but not competitive advantage and profit. Thus Hypothesis 2a is supported. Partnership growth strategy is positively related to a new venture's competitive advantage ($\beta$=0.136, $p$<0.05) but not to survival and profit, in support of Hypothesis 2b. Acquisition growth strategy has a negative impact on competitive advantage ($\beta$=−0.122, $p$<0.05) and a weak but positive effect on both survival ($\beta$=0.085, $p$<0.1) and profit ($\beta$=0.079, $p$<0.1). Thus, Hypothesis 2c is also supported. The three types of growth strategies contribute to new venture performance but with a differential effect on different dimensions of performance.

*Controls* Table 3 reveals the effects of control variables. Firm size is positively related to a new venture's competitive advantage ($\beta$=0.193, $p$<0.01) and profit

**Table 2** Means, standard deviations and correlations.

| Variables | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1. Internal organic growth | 1.000 | | | | | | | | | | | | | | | |
| 2. Growing through partnership | 0.208*** | 1.000 | | | | | | | | | | | | | | |
| 3. Growing through acquisition | −0.114 | 0.177** | 1.000 | | | | | | | | | | | | | |
| 4. Technological capability | 0.264*** | 0.195** | 0.059 | 1.000 | | | | | | | | | | | | |
| 5. Marketing capability | 0.291*** | 0.296*** | 0.016 | 0.515*** | 1.000 | | | | | | | | | | | |
| 6. Strong ties | 0.000 | 0.316*** | 0.207*** | 0.159* | 0.196** | 1.000 | | | | | | | | | | |
| 7. Weak ties | 0.199*** | 0.298*** | 0.101 | 0.313*** | 0.336*** | 0.303*** | 1.000 | | | | | | | | | |
| 8. Internal financial resources | −0.228*** | 0.220*** | 0.576*** | −0.042 | −0.034 | 0.198** | 0.158* | 1.000 | | | | | | | | |
| 9. IPO | −0.135* | 0.118 | 0.618*** | 0.093 | −0.017 | 0.176*** | 0.105 | 0.712*** | 1.000 | | | | | | | |
| 10. Survival | 0.089 | 0.015 | −0.046 | 0.142* | 0.205*** | 0.028 | 0.051 | 0.137* | 0.025 | 1.000 | | | | | | |
| 11. Competitive advantage | −0.012 | 0.112 | −0.068 | 0.113 | 0.081 | 0.028 | 0.072 | 0.035 | −0.071 | 0.040 | 1.000 | | | | | |
| 12. Profit | −0.050 | 0.016 | 0.144* | 0.034 | 0.088 | 0.154* | 0.255*** | 0.022 | 0.048 | 0.035 | 0.361*** | 1.000 | | | | |
| 13. Firm size | 0.018 | 0.165** | 0.101 | 0.093 | 0.090 | 0.094 | 0.212*** | 0.163* | 0.128* | 0.041 | 0.242*** | 0.338*** | 1.000 | | | |
| 14. Firm age | −0.005 | −0.216*** | −0.178** | −0.091 | −0.181** | −0.153* | −0.135* | −0.111 | −0.057 | 0.108 | 0.107 | −0.067 | 0.025 | 1.000 | | |
| 15. Firm stage | −0.028 | −0.114 | 0.057 | 0.012 | 0.055 | −0.015 | −0.026 | −0.128* | −0.043 | −0.019 | 0.145* | 0.161* | 0.187** | 0.303*** | 1.000 | |
| 16. Industry stage | 0.017 | −0.158* | −0.194** | −0.124* | −0.068 | −0.108 | −0.179** | −0.153* | −0.231*** | 0.165** | −0.053 | −0.169** | −0.140* | 0.427*** | 0.340*** | 1.000 |
| Mean | 3.925 | 3.762 | 2.652 | 4.052 | 4.090 | 3.788 | 3.929 | 3.130 | 2.718 | 4.631 | 3.492 | 2.937 | 3.459 | 5.103 | 2.754 | 3.226 |
| Standard deviation | 0.724 | 0.726 | 1.017 | 0.563 | 0.620 | 0.786 | 0.749 | 0.883 | 1.235 | 0.867 | 0.960 | 1.570 | 0.816 | 2.317 | 0.711 | 0.725 |

***$p<0.001$; **$p<0.01$; *$p<0.05$ (two-tailed).

**Table 3** Antecedents and consequences of growth strategy (standard parameter estimates).

| | Internal organic growth | Growing through partnership | Growing through acquisition | Survival | Competitive advantage | Profit |
|---|---|---|---|---|---|---|
| Control variables | | | | | | |
| Firm size | 0.021 | 0.100 | −0.041 | 0.108 | 0.193** | 0.294*** |
| Firm age | 0.036 | −0.086 | −0.129* | 0.012 | 0.095 | −0.076 |
| Firm stage | −0.107 | −0.077 | 0.198*** | −0.239*** | 0.104 | 0.144* |
| Industry stage | 0.081 | −0.015 | −0.075 | 0.222** | −0.126† | −0.156* |
| Independent Variables | | | | | | |
| Technological capability | 0.125* | 0.030 | 0.021 | | | |
| Marketing capability | 0.204** | 0.189** | −0.010 | | | |
| Network capability | | | | | | |
| Strong ties | −0.058 | 0.195*** | 0.074 | | | |
| Weak ties | 0.143* | 0.111* | −0.028 | | | |
| Financial resources | | | | | | |
| Bank loans & government funds | −0.256** | 0.193* | 0.288*** | | | |
| IPO | 0.032 | −0.088 | 0.392*** | | | |
| Internal organic growth | | | | 0.105* | −0.051 | −0.026 |
| Growing through partnership | | | | −0.008 | 0.136* | −0.062 |
| Growing through acquisition | | | | 0.085† | −0.122* | 0.079† |
| *R*-square | 0.181 | 0.236 | 0.470 | 0.077 | 0.097 | 0.168 |
| *F*-value for incremental *R*-square | 5.228*** | 7.301*** | 20.889*** | 2.872** | 3.699*** | 6.938*** |

***$p<0.001$, **$p<0.01$, *$p<0.05$, †$p<0.10$ (two-tailed).

($\beta$=0.294, $p<0.001$). Firm age has a negative effect on acquisition growth strategy ($\beta$=−0.129, $p<0.05$). New ventures in a later life stage are more likely to grow through acquisition ($\beta$=0.198, $p<0.001$), and they tend to have a lower survival rate ($\beta$=−0.239, $p<0.001$) and higher profitability ($\beta$=0.144, $p<0.05$). Last, industry stage does not affect new ventures' growth choices but positively affects their viability ($\beta$=0.222, $p<0.01$) and negatively affects their competitive advantage ($\beta$=−0.126, $p<0.1$) and profit ($\beta$=−0.156, $p<0.05$).

## Discussion

In this study, we investigated both the antecedents and consequences of new ventures' growth strategies, built on the RBV. The results presented here are noteworthy in providing the first evidence that high-tech new ventures in an emerging economy, such as China, have similarities and unique differences, with their counterparts in more developed economies.

## Resource-based capabilities and new venture growth strategies

In the first research setting, we treated technological capability, networking relationship, marketing capability and financial resource as antecedents of venture growth strategies. Specifically, we provide evidence to support the arguments of entrepreneurship scholars regarding the importance of firm-specific resources for strategic choice (Chandler & Hanks, 1994; McGrath et al., 1994) applicable in emerging economies such as China. Various theoretical growth choices drawn from the literature (Bantel, 1998; McCann, 1991; Shepherd, 1991) do load together, leading to the characterization of three main growth strategies adopted by Chinese high-tech new ventures. These growth strategies with different emphasis on internal technological development, partnership and external acquisitions, demonstrate the various growth paths and focus on where new ventures in China strive for growth.

As we have identified various resources and capabilities possessed by Chinese new ventures, we recognize the differential impact of resources on growth strategies (Gilbert et al., 2006). Typically, high-tech firms in emerging economies tend to find a competitive niche by producing low cost, undifferentiated products (Bruton & Rubanik, 2002) while in developed economies it is typically believed that new ventures should be willing to both invest in new product innovation and experiment with new innovative processes and methods to service market needs (Low & Abrahamson, 1997; McCann, 1991). Although we did not differentiate the types of technological innovation, the evidence here supports the argument that innovation is viewed as a "concrete" strategic focus and investment in pursuing growth (Tan, 2001).

The ability to identify the changing situation during the turbulent time of transition has a significant impact on the strategic choice (Tan, 2007). Here, evidence shows that Chinese high-tech new ventures with strong marketing capability can enhance or develop technological products and services in response to market requirements and involve cooperative arrangements. As the economic transition is in process in China, it is likely that the ability to identify, evaluate and respond to market changes will continue to be emphasized by new ventures.

The results also indicate that firms with sufficient financial capital can choose aggressive external growth directions, with a stronger focus on achieving profitable operations (Robinson, 1999). There is a tendency that high-tech new ventures in China are utilizing various capital resources to grow aggressively. It can be explained that new ventures operating in the business market with increased environmental complexity and scarcity aim at fast returns and liquidity through short-term strategic decisions such as mergers and acquisitions (Nee, 1992; Tan, 1996).

We analyze the networking relationship with both strong ties and weak ties, which contributes to an insight motivated from the RBV of the firm as well as social capital theory, highlighting that the relationship with various network ties prompts the decision on partnering arrangements in China's context. Furthermore, while existing research addresses the importance of ties with venture associations, venture capitalists, government agencies or other enterprises to increase the knowledge flows and external resources' injection (Birley, 1985; Ostgaard & Birley, 1994), results are rather inconsistent (Lee et al., 2001). This study finds the positive and statistically significant effect of relationship based upon weak ties in organic growth strategy, indicating that links with professional associations can have the potential for greater access to a

broader base of information and resources, enabling new ventures to have far broader perspectives and inputs necessary for innovative strategies and actions (Fu et al., 2006). As our results show that partnership growth strategy is significantly linked with network relationships based upon both strong and weak ties, we suggest that high-tech new ventures rely on both networks and being able to cultivate capabilities to deal with interpersonal and intra-firm relationship. Furthermore, we add to prior arguments that various network relationships and capabilities enable a balance between organizational controls on proprietary knowledge and related intellectual property and generation of new knowledge and ideas in order to effectively respond to competition and meet the changing market conditions (Fu et al., 2006; McGee & Dowling, 1994), which increase the possibility for cooperation with various partners in high-tech ventures in China.

## New venture growth strategies and performance

We investigated the outcomes of different growth strategies, by using three subjective performance measures. Results indicate that ventures growing through organic development tend to enjoy long-term survival. Ventures growing based on partnership are likely to have sustained competitive advantages in the market but competitive advantages are negatively associated with acquisition growth choice. Profit measures are only found to be positively and marginally statistically significantly associated with acquisition growth choice. This study, therefore, suggests that the three growth strategies have differentiated influence on new venture performance (Gilbert et al., 2006).

Growth based on internal technological development is found to be important for helping new ventures secure long-term survival, suggesting that technological capability, as the unique resources, is the core capability to develop and enhance customized product or service offerings, enables a continuous presence in existing markets and extends the reach to new businesses (Thornhill, 2006). Thus, new ventures in China, regardless of inadequate resources, the inherent disadvantages of being small and new and external, can find the way to obtain their viability by applying internal R&D to product development, enhancements and extensions economically or innovatively (McCann, 1991).

Partnership mechanism brings out more competitive advantages than the internal and acquisition growth strategies, as shown in our results. This strategy can have immense implications for Chinese firms since they are embedded in a unique institutional environment quite different from that of market-driven economies (Park & Luo, 2001; Tan, 2001, 2005). Typically, in China, business behavior revolves around the form of dependable personal relations, or *guanxi*. New ventures are believed to involve individuals with a long history of knowing each other, which can act to mitigate many of the internal difficulties in starting up the business. As the economic transition and institutional system compete in China, it is likely that the situation, with respect to network relationship, will evolve significantly. Increasingly, intra-organizational relationship, in terms of many types of potential venture contacts and partners through professional associations and other platforms, will enhance its status within new ventures' networks (Zhao & Aram, 1995). Networking with various strategic partners contributes to the reduction of innovation uncertainty

(Ramachandran & Ramnarayan, 1993), legitimacy (Lounsbury & Glynn, 2001), information exchange and coordination (Larson, 1991), increasing the speed of know-how and technology transfer and acquiring core human resources (Leung, Zhang, Wong, & Foo, 2006), and provides effective means to strive for competitive advantages for new ventures (Li & Zhang, 2007).

However, we found that acquisition growth strategy has a mixed effect on new venture performance. A highly negative effect is found on the realization of competitive advantages. This can be explained by means of three aspects. First, acquisition strategy is strategically and rationally chosen because of synergy, fast entry speed and access to existing markets. However, it can also be the result of managerial decisions or takeover mania (Seth, 2000), which may exert negative influence over acquisition performance. Second, acquisition performance may be largely influenced during the post-integration stage (Datta, 1991; Uhlenbruck, Meyer, & Hitt, 2003). New ventures, due to the inadequate knowledge and resources, may face a great challenge during the integration stage. Consequently, new ventures may struggle to achieve competitive advantage before the organization structuring and integration successfully finishes (Fombrun & Wally, 1989). Third, we did not differentiate between related and unrelated acquisitions in our assessment. Compared with related acquisition, unrelated acquisition may pose an even greater challenge for these small and inexperienced new ventures. They may find it extremely difficult to integrate an unrelated business to their operation due to the liability to smallness and newness.

A marginally positive link between acquisition growth strategy and survival is observed. It is obvious that aggressive acquisition strategy demonstrates the viability of new ventures and the ambition to extend its reach into either the same or complementary markets (Malone, 1989). It is interesting to find out that profit is also marginally positively associated with this strategy, showing opposite results to prior studies (Jones et al., 2001). However, this finding supports the notion of Gilbert and his colleagues (2006) that purchasing an existing firm substantially increases the year-to-year sales and profit based on operational synergy, acquisition of market share and sales growth can be achieved. The evidence further demonstrates that acquisition strategy, defined as a short-term investment decision aimed at fast returns and liquidity (Nee, 1992), can be an effective means to construct especially in China, where the transition process is accompanied with increased environmental complexity and uncertainty and scarcity of factor inputs.

## Conclusion

### Theoretical contributions

As a response to Bruton and Rubanik's (2002) call for further research in high-tech ventures in emerging economies, this study adds to prior studies that have explored the impact of resources and capabilities on firm growth strategies in several ways. First, the extensive review by Gilbert and his colleagues (2006) of new venture growth literature has demonstrated that researchers have been intrigued with the question of why some ventures grow more rapidly than others. One dominant view is that "growth will occur most readily when the entrepreneur possesses the

resources that enable growth" (Gilbert et al., 2006: 937). Researchers have suggested that a variety of resources such as human capital and financial capital are important for growth of ventures, yet few attempts have been made to assess their differential effects on how new ventures choose to grow. Our study extends current literature by examining the differential effects of a set of internal or external resources/capabilities on three growth choices: organic growth, partnership growth and acquisition growth. The study advances our knowledge by suggesting that internal and external (via partnership or acquisition) growth requires different sets of competencies. For example, internal growth through innovation may demand high technological capability while growth through partnership needs new ventures to have networking relationships with various partners. Hence, to successfully execute the decision of growth choices requires the venture to possess the right fit of resources.

Second, the findings enrich understanding of the link between growth strategy and venture performance. Existing literature has generated much evidence showing that different growth choices may lead to different growth outcomes. For example, Baum, Locke, and Smith (2001) found that ventures with focused strategy negatively correlate with their venture sales and employment growth, whereas differentiation exhibits a positive relationship with sales, profit and employment growth. As only limited studies have been done to assess the different performance implication of growth strategies, our study adds to the literature by simultaneously demonstrating that different growth choices will affect different performance measures.

Finally, as the largest emerging economy, China provides a highly interesting setting to refine and test existing theories and findings in new venture literature (Meyer, 2006). China has witnessed a dramatic development in new ventures and entrepreneurial activities in the past decades. As reported by Deloitte Touche Tohmatsu (2008), of the top 100 fast-growing Asia Pacific firms in the technology-intensive industry, 29 firms are from China and over half of these have established their international presences. This study therefore contributes to our understanding of the growth choices of Chinese high-tech new ventures and their growth performance. Further, this study demonstrates the value of the RBV in explaining new ventures' growth strategies and performance in China's context.

## Managerial implications

This study offers some managerial implications for high-tech new venture in China. We found that the resources or capabilities determine the choice and execution of new ventures' growth strategies. To pursue their growth strategy successfully, new ventures should possess corresponding resources or capabilities. For example, firms that intend to expand their entity via organic growth need to have strong technological and marketing capabilities. Firms that choose to grow through partnership have to maintain both strong ties and weak ties with their business partners to realize growing via partnership. For firms that are interested in more aggressive growth choices such as through acquisitions, to obtain adequate financial capital via different streams such as internal generation, bank loans or IPO is the most important issue to consider. Managers are strongly recommended to consider the current resources of their firm and then choose the appropriate growth strategies.

As different growth strategies result in varying growth performance in terms of survival, competitive advantage and profit, managers should be clear about their performance objectives before making choices. For ventures with survival as their major goal, organic growth might be a good choice. These firms should build up their internal capabilities (technological and marketing), strengthen and expand these capabilities and become more competitive in the market. Another option for these firms is to grow via acquisition. For instance, by purchasing an existing business, a firm can benefit from the reputation that firm established in the market (Banbury & Mitchell, 1995) and thus can withstand more threats and uncertainties. Ventures that want to build up competitive advantage are recommended to choose partnership growth strategy and avoid acquisition growth strategy. For those aiming to obtain high profit, acquisition growth strategy might be a direct means to achieve immediate effects. However, the goals or objectives change as ventures grow. Managers should adjust their growth strategies and make appropriate transitions if needed.

## Limitations

It is critical to recognize the limitations of this study. We used a survey-based approach, and all of the limitations of such an approach are applicable here. For example, the cross-sectional design makes it difficult to assess causal relationships. Further, as we used a single informant approach in our data collection to test a number of hypothesized relationships, issues relating to common method bias arise. Although we took steps to mitigate common method problems and to ensure the validity of our data, with single-source data these concerns persist. In addition, the conceptual model does not take into account contextual diversity in new venture growth. Although we control for industry stage and find it has no significant effects, we still need to be cautious about the possibility that new venture growth strategies can be influenced by industry structure and environmental turbulence (McDougall et al., 1994). Finally, in their extensive review, Gilbert and his colleagues (2006) conclude that the most important predictors of new venture growth include the entrepreneur characteristics, resources, strategy, industry, and organizational structure and system. We narrow this study to the factor of organizational resource and capability based on the notion of Arthurs and Busenitz (2006) that resources or capabilities are of great significance because entrepreneurs have to have access to resources to execute their strategic endeavors. However, future efforts need to investigate the dynamic interplay among resource-based capabilities and the impacts on new venture growth.

## Future research directions

Besides resources or capabilities, other factors such as entrepreneur characteristics, geographic location, firm strategy and organizational structures or systems may also contribute to the growth of new ventures (Gilbert et al., 2006). Current literature focuses on using these factors to predict why some ventures grow more than others, neglecting their differing impact on different growth strategies. It would be rewarding to examine beside resource and capabilities, how other factors affect new ventures' choice of various growth patterns, as Gilbert and his colleagues (2006) addressed.

Our study shows that different growth strategies demand different sets of resources and capabilities. However, choosing how to grow is a dynamic and complex decision process and may involve the interplay of various factors (Barney, 1991). Lee, Lee and Johannes (2001) found that technological capability helps new ventures to achieve high levels of sales growth through their network relationships. McGee and Dowling (1994) similarly demonstrated that the experience of top management teams moderate the relationship between cooperative arrangements and venture sales growth. To better understand the complexity, researchers should take a contingency or "fit" perspective in future studies to investigate the interactions between resources and other factors such as entrepreneur characteristics, other strategies and organizational structures, etc. (Chandler & Hanks, 1994; Eisenhardt & Schoonhoven, 1990).

Our study shows that different growth choices have different impacts on different performance measures from an emerging economy perspective. Though a number of studies have also demonstrated the differing implications of growth choices for performance (Gilbert et al., 2006), few attempts have been made to explore the possible mediating process between the two in emerging economies. It would be interesting to delineate the processes through which growth strategies contribute to different dimensions of performance differently. Future research therefore may generate valuable implications for both practitioners and policy-makers in China or other economies in terms of how to deliver successful growth strategies in high-tech new ventures.

Finally, the result of our study is context-specific and should be viewed cautiously when generalized to other contexts. For example, future research could explore whether new venture growth strategies and their drivers are more salient in high-tech than in other "low-tech" industries. The application of the results to other emerging economies would also enrich our insight into this topic.

## Appendix

| Items | Loading |
|---|---|
| **Technological capability** | |
| In regard to the establishment and utilization of technology in product development, to what extent do you agree with the following statements? | |
| 1. Internal research and development is greatly emphasized | 0.62 |
| 2. We have our own product or process patents/copyright | 0.97 |
| 3. We have a large number of financial investments in R&D and product development | 1.00[a] |
| 4. We look for new employees with desirable capabilities through internal recommendations | 0.84 |
| **Marketing capability** | |
| In regard to the marketing planning and practices of your firm, to what extent do you agree with the following statements? | |
| 1. We provide differentiated and customized products/services | 0.89 |
| 2. We provide extensive customer services/support | 1.00[a] |
| 3. We provide a broad range of products to a large customer base | 0.90 |
| 4. We have a wide range of marketing expertise within the firm | 0.99 |

| | |
|---|---|
| **Networks** | |
| Strong ties | |
| 1. We establish our business partnership through previous relationships with friends, family members and schoolmates | 0.93 |
| 2. We establish our political partnership through previous relationships with friends, family members and schoolmates | 1.00[a] |
| Weak ties | |
| 1. We get to know our business partners through professional associations/events | 0.63 |
| 2. We get to know our political partners through professional associations/events | 1.00[a] |
| **Financial resources** | |
| In regard to the planning, exploration and utilization of financial capitals, to what extent do you agree with the following statements? | |
| Internal financial strategy | |
| 1. We use internally generated funds | 1.00[a] |
| 2. We use bank loans/debts | 0.72 |
| IPO fund raising | |
| 1. We use public equity offerings to raise funds | *[b] |
| **Growth strategies** | |
| To what extent is the following growth strategy currently pursued by your firm? | |
| Internal organic growth | |
| 1. Internal venturing via innovation and R&D | *[b] |
| Growing through partnership | |
| 1. Licensing technology to/from other firms | 0.81 |
| 2. Partnering with other firms | 1.00[a] |
| Growing through acquisition | |
| 1. Acquiring firms in related businesses | 0.98 |
| 2. Acquiring firms in unrelated businesses | 1.00[a] |
| **Firm performance** | |
| To what extent have the following objectives of your firm been achieved? | |
| Survival | |
| 1. Long term survival of our firm in the market | *[b] |
| Competitive advantages (CA=0.55; CR=0.34; AVE=0.15) | |
| 1. Advantages in the customization of performance over our competitors | 0.60 |
| 2. Advantages in the creation of know-how | 1.00 [a] |
| 3. Advantages in the value-added products and services | 0.91 |
| Profit | |
| 1. Increase in profit level | *[b] |
| Model fit: $\chi(181)=296.408$, $p=0.000$; CFI=0.91, IFI=0.92, GFI=0.91; RMSEA=0.050 | |

[a] Fixed factor loading.

[b] Single scale.

*CA* Cronbach's alpha, *CR* composite reliability, *AVE* average variance extracted.

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