Pergamon

JOURNAL OF MANAGEMENT

Journal of Management 2004 30(3) 377–395

Entrepreneurs' Decisions to Exploit Opportunities

Young Rok Choi*
School of Business, Singapore Management University, 469 Bukit Timah Road, Singapore 259756, Singapore
Dean A. Shepherd
Leeds School of Business, University of Colorado at Boulder, Boulder, CO 80309-0419, USA

Received 29 August 2002; received in revised form 22 January 2003; accepted 21 April 2003

Opportunity exploitation is a necessary step in creating a successful business in the entrepreneurial process, yet there has been little conceptual and empirical development of this issue in the literature. This study examines the decisions of entrepreneurs to begin exploiting business opportunities from a resource-based view. Our analysis of a sample of entrepreneurs whose businesses are located in incubators suggests that entrepreneurs are more likely to exploit opportunities when they perceive more knowledge of customer demand for the new product, more fully developed necessary technologies, greater managerial capability, and greater stakeholder support. Moreover, the findings of this study shed a light on a less emphasized aspect of the resource-based view: the new product's anticipated lead time acts as an enhancing moderator in entrepreneurs' exploitation decision policies. Implications for future research on opportunity exploitation are discussed.

Entrepreneurship involves phenomena and processes related to discovering, evaluating, and exploiting opportunities to create future goods and services (Shane & Venkataraman, 2000). The outcome of this process is *new* products or services or both. Newness, however, is a double-edged sword. On the one hand, newness represents something rare, which can help differentiate a firm from its competitors. On the other hand, newness creates a number of challenges for entrepreneurs. Newness can increase entrepreneurs' uncertainty over the value of a new product (Knight, 1921; Olson, Walker & Ruekert, 1995; Sapienza & Gupta, 1994) and place a greater strain on the resources necessary for successful exploitation (Sapienza & Gupta, 1994; Stinchcombe, 1965). The exploitation of an opportunity refers to those activities and investments committed to gain returns from the new product arising from the opportunity through the building of efficient business systems for full-scale operations (cf. March, 1991).

* Corresponding author. Tel.: +65-6822-0728; fax: +65-6822-0777.
E-mail addresses: yrchoi@smu.edu.sg (Y.R. Choi), dean.shepherd@colorado.edu (D.A. Shepherd).

0149-2063/$ – see front matter © 2003 Elsevier Inc. All rights reserved.
doi:10.1016/j.jm.2003.04.002

Entrepreneurs can take time and gather information to reduce uncertainties and build the firm's resources and capabilities before making the decision to enter the market and exploit the opportunity. Alternatively, entrepreneurs can exploit the opportunity now to lengthen their lead time. Lead time refers to the period of monopoly for the first entrant prior to competitors entering the industry. Lengthening one's lead time can generate important performance benefits, including helping the firm strengthen its brand name (Schmalensee, 1982), broaden its product line (Robinson & Fornell, 1985), achieve cost advantages through experience effects (Abell & Hammond, 1979), and maintain higher margins in the absence of price competition (Porter, 1985). Therefore, entrepreneurs are faced with a difficult question: Should they exploit an opportunity now to maximize lead time or delay exploitation to reduce uncertainties, build management capabilities, and generate stakeholder support?

The decision of the "right" time to exploit opportunities is an important one in creating a successful business (see Schoonhoven, Eisenhardt & Lyman, 1990 for the importance of investment in full-scale operations to business success). Important entrepreneurial activities prior to exploitation include market research into potential customer demand (Chrisman & McMullan, 2000), further development and testing of technologies (Manning, Birley & Norburn, 1989; Rice, 2002), developing and building the management team (Rice, 2002), and generating stakeholder support (e.g., investors, government, employees, and the incubator manager; Rice, 2002). These activities provide entrepreneurs with resources needed for opportunity exploitation.

Although considerable scholarly attention has focused on the discovery and recognition of opportunities to bring into existence new products (e.g., Busenitz & Barney, 1997; Sarasvathy, Simon & Lave, 1998; Shane, 2000; Shaver & Scott, 1991), little research has focused on the decision to begin exploitation. We follow Alvarez and Busenitz (2001) and utilize elements of the resource-based view to investigate entrepreneurs' decisions to exploit opportunities. Alvarez and Busenitz (2001) propose that the resource-based view of the firm offers considerable potential to assist scholars in addressing entrepreneurship questions because resources represent an important level of analysis for investigating entrepreneurial phenomena (see also Chrisman, Bauerschmidt & Hofer, 1998).

The resource-based view suggests that a valuable new product (e.g., there is substantial customer demand for the new product) that is possessed by a firm with resources necessary for exploitation (such as access to enabling technologies, a capable management team, and stakeholder support) can generate a competitive advantage but that advantage will not be sustainable unless the new product is also inimitable (Barney, 1991). This view of the importance of inimitability is reflected in the entry strategy literature where protection from imitation is critical in developing first mover advantages. Protection from imitation lengthens a pioneer's *lead time*, allowing it to capitalize on first mover advantages (Lieberman & Montgomery, 1988). Given the importance of a lead time to the successful launch of new products and the likelihood that a deeper understanding of firm performance resides in uncovering the orchestrating themes and integrative mechanisms that ensure complementarity among a firm's various aspects (Black & Boal, 1994; Inkpen & Choudhury, 1995; Miller, 1996), we empirically investigate the moderating role of perceived lead time in entrepreneurs' decisions to exploit opportunities using a conjoint experiment on a sample of entrepreneurs whose businesses are located in incubators.

This article makes a contribution to the entrepreneurship and strategy literatures by providing an experimental test of contingent relationships between some important elements of the resource-based view. This test is conducted in one of the less frequently studied aspects of entrepreneurship, namely, decisions to begin exploiting opportunities, and uses a sample of entrepreneurs whose businesses are located in business incubators. Given the importance of business incubators to most western economies, this topic has real world significance. For example, according to a national survey in the US, business incubators have created nearly 19,000 companies and more than 245,000 jobs (University of Michigan, NBIA, Southern Technology Council & Ohio University, 1997). Moreover, this research makes a small, but important, contribution to the research stream investigating interrelationships between the elements of the resource-based view. This article's findings of interactions between the anticipated lead time for a new product and other resource attributes in the exploitation decision provide experimental evidence of the existence of resource complementarity in the application of resources.

This article proceeds as follows. First, based upon the literatures of entry strategy and the resource-based view, we hypothesize criteria used by entrepreneurs in their decision of whether to begin the exploitation of an opportunity. Second, we explain the conjoint research method, sample frame, analyses, and results. Finally, we discuss the implications of our findings.

A Model of the Decision to Exploit Opportunities

The decision to exploit an opportunity represents a commitment to market entry. To gain a greater understanding of this decision we refer to the entry strategy literature in which the success of a pioneer has been explained primarily in terms of its first mover advantages. First mover advantages arise from several sources: technological leadership, preemption of assets, buyer switching costs, and consumer preference formation (Carpenter & Nakamoto, 1989; Lieberman & Montgomery, 1988). The realization of first mover advantages may be difficult to obtain without large scale operation. For instance, Lambkin (1988) showed that first movers must make a disproportionate level of investment in developing new markets and Datar, Jordan, Kekre, Rajiv and Srinivasan (1997) found that the benefits to be gained by a long lead time are greatest at the volume production stage. Therefore, to maximize first mover advantages and to attain long run success, firms need to begin exploitation with an investment in full-scale operations. But, even by being first to full-scale operations, the firm is not ensured a competitive advantage.

Recently, strategic management scholars seeking to explain firm performance have refocused their attention on factors internal to the firm (Hoskisson, Hitt, Wan & Yiu, 1999). Fundamental to this perspective is the belief that a source of competitive advantage arises from resources and capabilities that are rare, valuable, and costly to imitate (Barney, 1991, 1995). Something is rare when it is possessed by few, if any, current or potential competitors (Barney, 1995; Hoskisson et al., 1999).

However, for a rare new product to be a source of competitive advantage, it also must be valuable. It is of value when it enables the entrepreneur's firm to formulate and implement strategies that create value for specific customers (Barney, 1995; Hoskisson et al., 1999).

Therefore, to be valuable a new product must be perceived by customers as something that provides them net benefits that are "well-priced." For the entrepreneur, value to the customer is represented by knowledge of customer demand for the new product arising from the opportunity (Knight, 1921). To more fully realize the potential of a valuable new product, the entrepreneur needs to possess other resources and capabilities necessary for effective exploitation, such as enabling technologies, managerial capability, and stakeholder support. Each of these aspects of the resource-based view is now addressed in terms of its impact on entrepreneurs' decisions to exploit opportunities.

Knowledge of Customer Demand and the Decision to Exploit Opportunities

Entrepreneurs who decide to begin exploitation must commit to a number of key factors that will lead to success within the competitive environment (Slater, 1993), but in doing so, they face uncertainty over the value of the new product. For example, if an entrepreneur commits to exploitation, s/he faces the risk of demand uncertainty. Observing the failure of telecommunications firms offering new services, a venture capitalist stated that "[N]ew products and services must be based on real customer needs not the assumption that if you introduce something there will be an automatic demand for it" (Cowley, 2002: 27).

An opportunity is anchored in a new product (or service), which creates or adds value for its buyer or end user (Shane & Venkataraman, 2000). Unlike for established products, entrepreneurs exploiting new products likely face considerable demand uncertainty (Knight, 1921; Olson et al., 1995). Customer demand for the new product depends, in part, on whether customers know of the new product and find it valuable (Aldrich & Fiol, 1994). A lack of knowledge about the firm's market offerings increases a customer's uncertainty surrounding the purchase decision. Given that people are typically uncertainty averse (Kahneman & Tversky, 1979), we argue that entrepreneurs will need to resolve some of the uncertainty surrounding market demand before they can determine whether their new product is sufficiently valuable to commit to its full-scale exploitation. That is, until customer uncertainty has been resolved, entrepreneurs will remain uncertain over customer demand. Thus,

Hypothesis 1: Entrepreneurs' decisions to begin opportunity exploitation are positively associated with perceived knowledge of customer demand.

Development of Enabling Technologies and the Decision to Exploit Opportunities

The resource-based view of the firm suggests that various external and internal factors of a firm can neutralize or dissipate a resource's comparative advantage (Barney, 1991; Peteraf, 1993; Reed & DeFillippi, 1990). Thus, the value of the new product to existing or new customers requires that technologies be sufficiently developed so that the product can be produced to meet quality (e.g., reliability, durability, etc.) and efficiency (e.g., cost per unit) expectations. Wherever these technologies are not fully developed, the entrepreneur faces uncertainty over the costs and the probability of accomplishing technical success (Dixit & Pindyck, 1994; Wernerfelt & Karnani, 1987). In the situation in which ignorance of technical solutions is substantial, entrepreneurs may be not able to fully translate their opportunity into product specifications.

In research on new product development, scholars suggest that firms that release products into the market when still uncertain over product quality face a higher risk of failure (Meyer & Utterback, 1995). Thus, reducing the uncertainty embedded in the new product is necessary: "it is better to iteratively evaluate and refine ideas so that the best possible strategy is obtained before national introduction" (Urban & Hauser, 1980: 59).

Delaying new product exploitation provides entrepreneurs the time to experiment more with the new technologies and learn from this experimentation to reduce technological uncertainty (Folta, 1998; McGrath, 1997; Meyer & Utterback, 1995). For example, Boo.com, a UK-based online fashion retailer, pursued full-scale operations with an extensive and long-term marketing campaign even though it had not yet developed a key technology for delivering part of the service to customers (3D presentation technology for the web). As a result of its "hasty" decision to exploit this new service for retailing fashion online, Boo.com incurred large financial losses. However, if the enabling technologies are fully developed then entrepreneurs face less risk and are more likely to exploit these opportunities. Thus,

Hypothesis 2: Entrepreneurs' decisions to begin opportunity exploitation are positively associated with perceived development of enabling technologies.

Managerial Capability and the Decision to Exploit Opportunities

Prior to exploitation, entrepreneurs are typically focused on specific activities, such as market research (Chrisman & McMullan, 2000) and prototype testing (Manning et al., 1989; Rice, 2002). However, opportunity exploitation requires management of other critical and complex tasks. For example, management must begin production of the product at a higher volume, efficiently manage inbound and outbound logistics, provide customer service, and prepare for competition. Managers of a firm make sense of their stock of assets and manage the process by which resources are used and renewed (Fiol, 1991; Penrose, 1959). Collis (1994: 145–146) suggests that better managerial capabilities "allow firms to more efficiently and effectively choose and implement the activities necessary to produce and deliver a product or service to customers." Managerial capability refers to a firm's skills, knowledge, and experience to be able to handle difficult and complex tasks in management and production. From the resource-based view, managerial capability is considered the key to the management of resources (Barney, 1991; Mahoney, 1995; Penrose, 1959).

The exploitation of an opportunity is likely novel to management increasing the firm's risk of failure (Shepherd, Douglas & Shanley, 2000). Delaying exploitation provides a longer "safe" period for the new organization to more easily build managerial capabilities and routines, e.g., hire high-caliber employees, establish social relations among strangers, develop roles and routines, and overcome management problems (Aldrich & Auster, 1986; Singh, Tucker & House, 1986; Stinchcombe, 1965). Thus,

Hypothesis 3: Entrepreneurs' decisions to begin opportunity exploitation are positively associated with perceived capability of the management team.

Stakeholder Support and the Decision to Exploit Opportunities

Besides managerial capability, another important organizational resource required to exploit a firm's valuable new products is the commitment of its stakeholders (i.e., management team, employees, and investors) to exploitation. In the strategic management literature, scholars have found that successful implementation of strategy requires more than a just leader, the organization, as a whole, should support and be prepared to execute the exploitation of an opportunity (Eisenhardt, Kahwajy & Bourgeois, 1999; Hambrick, 1995). Noble and Mokwa (1999) revealed that organizational commitment (the extent to which a person identifies with and works toward organization-related goals and values) and strategy commitment (the extent to which a manager comprehends and supports the goals and objectives of a marketing strategy) are important resources for the overall success of the implementation effort.

The stakeholder literature suggests that systematic managerial attention to stakeholder interests is critical to firm success (e.g., Berman, Wicks, Kotha & Jones, 1999; Freeman, 1984). Clarkson (1995) has noted that without the continuing participation of primary stakeholders, an organization cannot survive as a going concern. This is particularly the case with the exploitation of an opportunity. Support from stakeholders is required in the form of money, time, and skills. Although all firms exploring an opportunity will have some level of stakeholder commitment, no matter how well intentioned, initial commitments may not always lead to long-lasting and successful relationships (Gundlach, Achrol & Mentzer, 1995). It may take time to build stakeholder support toward the exploitation of an opportunity. Thus, we propose that when stakeholder support is low, entrepreneurs are likely to delay immediate full-scale exploitation to allow time to cultivate this commitment. Thus,

Hypothesis 4: Entrepreneurs' decisions to begin opportunity exploitation are positively associated with perceived stakeholder support.

Lead Time and the Decision to Exploit Opportunities

The resource-based view suggests that valuable products possessed by firms with resources necessary for exploitation can generate a competitive advantage but that advantage will not be sustainable unless the products are also inimitable (Barney, 1991). This view of the importance of inimitability is reflected in the entry strategy literature where protection from imitation is critical in developing first mover advantages. Protection from imitation lengthens a pioneer's lead time, allowing it to capitalize on first mover advantages, such as strengthening its brand name (Schmalensee, 1982), broadening its product line (Robinson & Fornell, 1985), achieving cost advantages through experience effects (Abell & Hammond, 1979), and thus building a proprietary position in the market (Huff & Robinson, 1994; Lieberman & Montgomery, 1988).

A modest lead time over competitors appears insufficient to ensure first mover gains, since there exists a lead time threshold (in volume production), within which competitor entry can negate first mover advantages (Datar et al., 1997). If firms are identical in terms of their resources and capabilities for perceiving and exploiting an opportunity (i.e., resource

homogeneity), first mover advantages barely exist (Barney, 1991). Thus, competitors' imitation diminishes the value of the firm's products and related resources, resulting in a shorter lead time and greater difficulty for it to build a proprietary position in the market (Huff & Robinson, 1994; Lieberman & Montgomery, 1988, 1998).

Based on the above discussion and drawing from research on the resource-based view and resource complementarity, we propose that a new product's lead time works as an enhancing moderator (Howell, Dorfman & Kerr, 1986) in the decision to begin exploitation. Specifically, the positive relationships that knowledge of high customer demand, access to enabling technologies, considerable management capability, and high stakeholder support have on entrepreneurs' decisions to exploit are magnified when the new product is perceived as having a long lead time.

Scholars have argued that a deeper understanding of firm performance likely resides in uncovering the orchestrating themes and integrative mechanisms that ensure complementarity among a firm's various aspects (Black & Boal, 1994; Inkpen & Choudhury, 1995; Miller, 1996). A complementary relationship between firm resources indicates that the strategic value of a resource increases with an increase in the relative magnitude of another resource. An example is Teece's (1986) notion of co-specialized assets—the combined value of the firm's resources and capabilities may be higher than the cost of developing or deploying each asset individually (Amit & Schoemaker, 1993).

Consideration of a new product's lead time as an enhancing moderator provides the basis for a deeper understanding of entrepreneurs' decisions to exploit opportunities. For example, information of high customer demand lowers entrepreneurs' uncertainty, but without a lead time, competitors would likely follow quickly because they also face less uncertainty over customer demand. A long lead time magnifies the positive impact that knowledge of high customer demand has on the decision to exploit, because knowledge of the customer is more valuable when the firm can establish a proprietary position in the market (Huff & Robinson, 1994; Lieberman & Montgomery, 1988). Similarly, access to enabling technology could encourage entrepreneurs to exploit, but without a sufficient lead time, competitors likely face less uncertainty over technology and are likely to follow quickly. A longer lead time provides more time for entrepreneurs to use available technology to profitably exploit their opportunities.

A more capable management team is best able to capitalize on first mover advantages by better positioning the new products in product attribute space and by building its market reputation (Brown & Lattin, 1994; Golder & Tellis, 1993). When a new product is easily imitated, the scope for the management team to apply its capabilities effectively is limited. A longer lead time also allows stakeholder support to be further built after exploitation is underway and before facing competition. When a new product has only a short lead time, there is greater risk in attempting to build that support, especially after exploitation and in the face of competition from imitators. Thus,

Hypothesis 5: The impacts of (a) more perceived knowledge of customer demand, (b) perceived access to more developed enabling technologies, (c) the perception of a more capable management team, and (d) the perception of greater stakeholder support on entrepreneurs' decisions to exploit opportunities are magnified when the new products are perceived as having a longer lead time.

Method

Sampling Plan, Survey Method, and Sample

The sampling frame for this research is independent entrepreneurs involved in high-technology new ventures located in business incubators in the US. We focused on entrepreneurs with ventures in incubators because business incubators are specifically designed for entrepreneurs to explore the potential of their opportunities and move towards full-scale operations (Rice, 2002). For example, business incubators provide an environment that helps new ventures cope with jolts, crises, and problems. Moreover, they provide time for the entrepreneur to develop the knowledge, competencies, and resources to achieve economic sustainability (Rice, 2002). Therefore, the decision to begin opportunity exploitation is highly salient for this sample of entrepreneurs. We further focused on those entrepreneurs of high-tech businesses because this group of entrepreneurs deals with emerging technologies and their businesses have the greatest growth potential (Mian, 1994). They are, therefore, of particular importance to a nation's economy.

We randomly selected 37 business incubators from the US list of incubator members (National Business Incubator Association, 2000). For each of these incubators, we visited its website and constructed a list of all lead entrepreneurs. From this list we randomly chose to contact 267 lead entrepreneurs (CEO or president). We excluded those entrepreneurs of a subsidiary business because their decisions on exploiting opportunities are likely influenced by the parent corporation.

We attempted to contact each of the 267 entrepreneurs *via* a phone call or an emailed letter and requested their participation in the study. Sixty-eight out of the 267 entrepreneurs agreed to our request. Seventeen entrepreneurs denied our request for participation and the rest (182) did not return our phone calls or emails. Of the 68 that agreed to participate, 55 completed the experiment (a response rate of 24%). Of the 55 completed experiments, 17 were collected personally because the incubators were within a 50 mile radius of the authors' offices, and the other 38 were collected through mail. Respondents did not significantly differ across the two methods of data collection in terms of reliability of responses or in terms of personal characteristics (e.g., start-up and business experience, education level, and gender). Consequently, the two groups of responses were treated as one.

A sample size of 55 is consistent with other conjoint studies (Shepherd & Zacharakis, 1997; e.g., Zacharakis & Meyer, 1998). The sample represents a wide range of technological entrepreneurs in terms of age, business experience, and start-up experience. The average age, business experience, and start-up experience of participating entrepreneurs were 41 years old (S.D., 13.03), 16 years (S.D., 11.93), and 2 start-ups (S.D., 2.01), respectively. The participating entrepreneurs represent a relatively homogenous group of technological entrepreneurs in terms of gender, education level, and full-time commitment. That is, 89% of the participants were male; 67% of them hold a Master's or higher degree; and 80% of the participants were working full-time on their new venture's products or services. Based on median statistics, the entrepreneurs' new ventures can be characterized as employing six people, 2 years old, realized $300,000 in revenue, and experienced an average per annum growth rate of 40%.

Conjoint Analysis

This study uses conjoint analysis, a technique that requires respondents to make a series of judgments based on a set of attributes from which the underlying structure of their decisions can be decomposed by means of hierarchical linear modeling (HLM). This method allows the researcher to examine how respondents process contingency relationships (Hitt & Barr, 1989; Priem & Harrison, 1994), without relying on the respondents' (generally inaccurate) introspection (Fischhoff, 1982; Priem & Harrison, 1994). Conjoint analysis and policy capturing have been used in hundreds of studies of judgment and decision making (Green & Srinivasan, 1990). These studies vary from research into consumer purchase decisions (Lang & Crown, 1993), manager's strategic decisions (Hitt, Dacin, Levitas, Arregle & Borza, 2000; Priem, 1994) and expert judgment (Davis, 1996). Conjoint analysis is particularly appropriate for this study because as a real time method it overcomes many of the potential research biases associated with post-hoc methods, such as, self-reporting biases, retrospective reporting biases, and difficulty collecting contingent decision data.

Research Instrument

In this conjoint experiment, entrepreneurs evaluate a series of hypothetical profiles and decide on the likelihood in which they would begin opportunity exploitation. Opportunity exploitation is defined in terms of commencing immediate full-scale operations on the product or service arising from the opportunity, where full-scale operation is the scale required to ship the first product for revenues (Schoonhoven et al., 1990)—not market testing. Thus, it entails significant irreversibility in terms of product model and facilities. For example, it requires a substantial investment for full operation in E-Commerce businesses: $1 million to $5 million is required to develop and launch a site that is functionally equivalent to most industry participants (Alexander, 1999). To measure the likelihood of exploitation, we used a 7-point Likert scale anchored by very unlikely ("1") to very likely ("7").

Independent variables. The scenarios used four independent variables: knowledge of customer demand, development of enabling technology, managerial capability, and stakeholder support.

Knowledge of customer demand is defined as the level of customer acceptance of the new product. Response scales ranged from high (customers have substantial knowledge about the new venture's products and services and you are quite certain that there is substantial future demand) to low (customers have little knowledge about the new venture's products and services and you are uncertain that there is substantial future demand). *Development of enabling technology* is defined as the level of technological uncertainty (Reverse Coded). Response scales ranged from high (the new venture has not yet established the technologies necessary to fully grasp the new opportunity) to low (the new venture has established the technologies necessary to fully grasp the new opportunity). *Managerial capability* is defined as the level of managerial capability of the new venture. Response scales ranged from high (you and your management team have considerable skills,

knowledge, and experience to be able to handle difficult and complex tasks in management and production) to low (you and your management team have limited skills, knowledge, and experience to be able to handle difficult and complex tasks in management and production). *Stakeholder support* is defined as the level of supporters' commitment to the new venture. Response scales ranged from high (supporters such as management team, investors, and suppliers are highly supportive of the new venture) to low (supporters such as management team, investors, and suppliers are marginally supportive of the new venture).

Moderator variable. The scenarios used one moderator variable: anticipated length of lead time. *Anticipated length of lead time* is defined as the level of threat of imitation (Reverse Coded). Response scales ranged from high (a substantial amount of information about your business/technological ideas and methods has been diffused throughout the industry so that current or potential competitors have access to them) to low (little amount of information about your business/technological ideas and methods has been diffused throughout the industry so that current or potential competitors do not have access to them).

Control variables. The strategy literature suggests that two further attributes are likely to impact entrepreneurs' decisions on opportunity exploitation. These were included in the experiment to control for their possible influence. Gersick (1994) suggested that in project groups and new ventures, people set a specific time point where they evaluate progress to date and change their course of actions if progress differs from expectation—they behave based on milestones. The presence of a milestone for exploitation will add impetus for the decision. Therefore, given the concept of temporal pacing, we control for the length of the search period. Further, Romanelli (1989) found that the availability of resources encourages people to found new firms. In the presence of attractive financial markets, where the IPO market is booming and abundant venture capital is available (see Birley, 1997; Thornton, 1999), entrepreneurs may be optimistic about the possibility of garnering enough resources necessary for firm growth. Thus, we control for the attractiveness of the financial market.

Length of search period is defined as the level of exploration (search) period. Response scales ranged from long (since founding the new venture, you have spent 3 years exploring and searching for better products, businesses, and technological alternatives arising from this opportunity and have not taken the next step of a full-scale investment) to short (since founding the new venture, you have spent 1 year exploring and searching for better products, businesses, and technological alternatives arising from this opportunity and have not taken the next step of a full-scale investment). *Attractiveness of financial market* is defined as the level of financial market attractiveness for new ventures. Response scales ranged from attractive (the current financial market for new ventures such as venture capital and IPO market is highly attractive) to unattractive (the current financial market for new ventures such as venture capital and IPO market is highly unattractive).

The instructions specified that all conditions, other than the attributes described in the profile, are to be considered constant across all profiles. This controlled for other possible confounding attributes. We pilot tested the instrument on three practicing entrepreneurs and a business incubator manager. Comments suggested that the instructions and definitions of attribute levels were clear and that the instrument appeared realistic (had face validity).

Experimental Design

Because a fully crossed factorial design for this study would require 128 (2^7) profiles, an orthogonal fractional factorial design was used to reduce the number of attribute combinations and thus make the decision making task more manageable (Green & Srinivasan, 1990). In choosing an orthogonal fractional factorial design, we followed the general rule of confounding effects of most interest with effects that are unlikely to be significant or, if they are significant, are unlikely to cause much bias in the parameters that are estimated (Louviere, 1988). We chose an experimental design from Hahn and Shapiro (1966) which confounded the main effects and all two-way interactions involving the new product's anticipated lead time (the effects of most interest) with other two-way and all higher order interactions (those effects of least interest); and therefore, it is unlikely that non-hypothesized higher order effects biased this study's results (as higher order interactions typically account for minuscule proportions of variance; Louviere, 1988). Each of the profiles was fully replicated. We randomly assigned the 32 profiles and the order of attributes within a profile for four versions of the experiment to test for order effects. There was no significant difference across versions ($p > .10$) and therefore order effects are unlikely to have influenced the results. A practice profile was used at the start of the experiment to familiarize respondents with the experiment but was not used in the analysis.

Conjoint analysis helps researchers to overcome data accessibility problems during the early entrepreneurial process and to account for survival, self-reporting, and retrospective reporting biases. Like other experimental methods, however, conjoint analysis frequently faces questions over external validity. We have minimized issues related to a lack of external validity for this conjoint experiment by investigating entrepreneurs who most likely face exploitation decisions and by using realistic profiles that adopt decision criteria that are theoretically justified in a number of management literatures and that have face validity with entrepreneurs (cf. Brehmer & Brehmer, 1988; Riquelme & Rickards, 1992).

Results

Ninety-five percent of the individual models of entrepreneurs' exploitation decisions explained a significant proportion of variance ($p < .001$) with a mean R^2 of .72. Further, Pearson R correlations were computed between each participant's assessment of both the original and the 16 replicated profiles. Ninety-six percent of the entrepreneurs were significantly reliable in their responses ($p < .05$). The mean test–retest correlation for the sample was .82 (which is high relative to Shepherd's, 1999, test–retest reliability of .69). This high degree of judgmental consistency provides assurance that the conjoint task was performed consistently by the entrepreneurs.

Hierarchical regression analysis was used to explore the amount of variance explained by the base model (control variables only), the main-effects model (controls and independent variables), and the full model (controls, independent variables, and hypothesized interactions). The results of this analysis are presented at the bottom of Table 1, which indicate that each model explains a significant amount of variance in entrepreneurs' decisions and the main-effects model explains a significant amount of variance over and

Table 1
Entrepreneurs' opportunity exploitation decisions

	Base model		Main-effects model		Full model	
	Coefficient	S.E.	Coefficient	S.E.	Coefficient	S.E.
Intercept	3.369	.083***	3.369	.082***	3.369	.082***
Length of search period	.237	.083**	.237	.076**	.237	.076**
Attractiveness of financial market	.768	.099***	.768	.098***	.768	.098***
Length of lead time	.918	.089***	.918	.085***	.712	.113***
Knowledge of customer demand			1.592	.119***	1.828	.136***
Enabling technology			.690	.074***	.882	.085***
Managerial capability			1.200	.096***	1.157	.113***
Stakeholder support			.761	.071***	.966	.088***
Lead time × customer demand					.473	.086**
Lead time × enabling technology					.384	.106***
Lead time × managerial capability					−.086	.076
Lead time × stakeholder support					.409	.106***
Model[a]						
R^2		.13***		.71***		.72***
Change in R^2		.13***		.58***		.01***

$n = 1760$.
[a] These model statistics were calculated using hierarchical regression analysis.
** $p < .01$.
*** $p < .001$.

above the base model and the full model explains a significant amount of the variance over and above the main-effects model. Although the experiment provides 32 observations per entrepreneur and therefore 1760 observations for the sample, there may be autocorrelation because each of the 32 observations is nested within individuals. HLM accounts for variance among individuals such that the observations within an individual are independent.

As shown in Table 1 for the base model and main-effects model, all main effects and control attributes were significantly used by entrepreneurs in their decisions of whether to begin opportunity exploitation. All main-effect coefficients are positive indicating that decisions to begin opportunity exploitation is more likely when there is greater knowledge of customer demand, more fully developed enabling technologies, greater managerial capability, and greater stakeholder support. These findings provide support for Hypotheses 1, 2, 3, and 4, respectively.

As shown in Table 1 for the full model, three interaction effects out of four were statistically significant, specifically the interactions between the new product's anticipated lead time and knowledge of customer demand, between the new product's anticipated lead time and development of enabling technologies, and between the new product's anticipated lead time and stakeholder support. The interaction between the new product's anticipated lead time and managerial capability was not significant, and therefore, Hypothesis 5c is not supported.

The nature of each interaction is plotted in Figure 1(a)–(c). In Figure 1(a), long and short "anticipated lead time" are plotted on an *x*-axis of "knowledge of customer demand" and

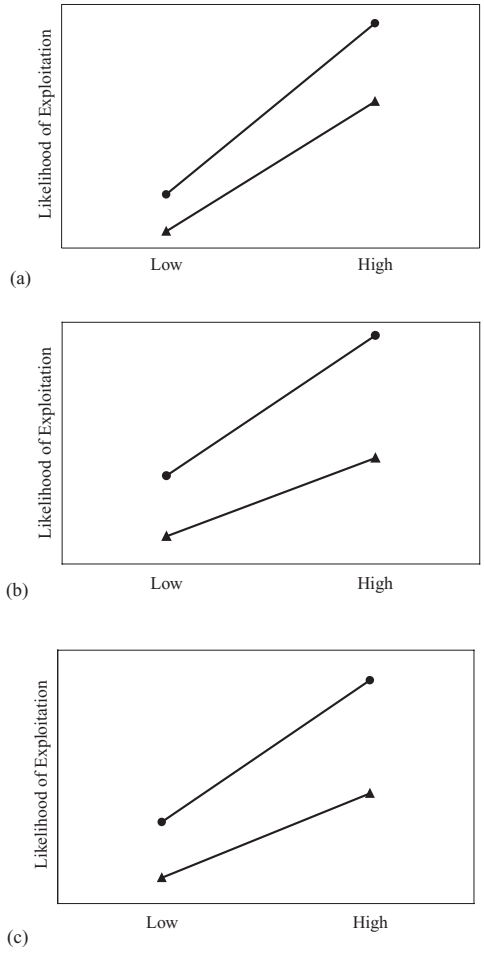

Figure 1. Interaction effects between new product's lead time and main factors (●: new product's lead time high; ▲: new product's lead time low). (a) New product's lead time and knowledge of customer demand; (b) new product's lead time and development of enabling technologies; (c) new product's lead time and stakeholder support.

a *y*-axis of "likelihood of opportunity exploitation." The plot indicates that the positive impact of knowledge of customer demand on the decision to begin opportunity exploitation is magnified when the new product is perceived as having a long lead time. This finding provides support for Hypothesis 5a. In Figure 1(b), the x-axis is now "development of enabling technologies," and the plot indicates that the positive impact of more developed enabling technologies on the decision to begin opportunity exploitation is magnified when

the new product is perceived as having a long lead time. This finding provides support for Hypothesis 5b. In Figure 1(c), the *x*-axis is now "stakeholder support" and the plot indicates that the positive impact of greater stakeholder support on the decision to begin opportunity exploitation is magnified when the new product is perceived as having a long lead time. This finding provides support for Hypothesis 5d.

Discussion

Following Alvarez and Busenitz (2001) and others, we use elements of the resource-based view to gain a deeper understanding of an important entrepreneurial phenomenon. Our focus was on entrepreneurs' decisions to exploit opportunities based upon perceptions of the attributes of the new products that arise from these opportunities and perceptions on the resources and capabilities required for full-scale operations. We found that entrepreneurs were more likely to exploit opportunities when they perceived more knowledge of customer demand for the product, more fully developed enabling technologies, greater managerial capability, and greater stakeholder support. These findings appear to support four simple notions:

(1) Entrepreneurs who believe that customers will value their new product(s) are more likely to proceed with exploitation.
(2) Entrepreneurs who believe that they have the enabling technologies for full-scale operations are more likely to proceed with exploitation.
(3) Entrepreneurs who believe that they have a highly capable management team are more likely to proceed with exploitation.
(4) Entrepreneurs who believe that they have strong stakeholder support for full-scale operations are more likely to proceed with exploitation.

These four simple notions for opportunity exploitation are consistent with elements of the resource-based view. However, we also found evidence that the decision policies of entrepreneurs were more complex than that suggested by these notions above. The perceived lead time of a new product impacts the way that the other attributes are used by entrepreneurs in deciding on exploitation. Attributes considered by entrepreneurs as favorable for exploitation can be enhanced or diminished by the length of the new product's lead time. For example, knowledge of customer demand is perceived to be even more favorable when the new product is believed to have a long lead time. Similarly, access to fully developed enabling technologies and high stakeholder support are both perceived as even more favorable when the new product has a long lead time. This suggests that entrepreneurs' decision policies, at least with regard to opportunity exploitation, are more complex than the simple notions presented above (i.e., more complex than a main-effects-only model).

Future Research

We hope that future research continues to develop our understanding of opportunity exploitation to complement recent works on opportunity discovery and recognition. For example, a contribution to the literature will likely come from a more fine-grained analysis

of the timing of exploitation decisions, one that explicitly considers the benefits and costs of earlier vs. delayed exploitation of an opportunity.

There is also an opportunity for scholars to investigate other elements of the resource-based view not addressed here. For example, we argued that opportunities produce new products that could be considered rare. However, there is likely heterogeneity in rarity among new products, and this likely impacts the exploitation decision. Rarity may also moderate the relationship between other resource attributes and opportunity exploitation. More theoretical and empirical work is required.

To more fully meet the call from scholars of the resource-based view for research on the integrative mechanisms and orchestrating themes of resources (Barney & Griffin, 1992; Black & Boal, 1994; Grant, 1991; Miller, 1996; Priem & Butler, 2001), future research likely requires an investigation of three-way and higher order interactions. However, such investigations are less likely to be fruitful to decision-making scholars (see Louviere, 1988 for the difficulty of finding support for three-way and higher order interactions in decision making research).

In this article, we have followed the tradition of the strategic choice and entrepreneurship literatures by using the CEO as a proxy for the management team or the firm. It is possible that a lead entrepreneur's decisions on exploiting opportunities differ from those of the management team. This is a valid concern for this, and many other strategy and entrepreneurship studies. Future research could take on the challenging task of capturing the social cognition of entrepreneurial teams.

Finally, entrepreneurs with businesses in incubators represent a sample of entrepreneurs in which the decision to begin opportunity exploitation is highly salient. We must note, however, that entrepreneurs with businesses in incubators may differ from those with non-incubator businesses. Therefore, care must be taken in generalizing our findings beyond entrepreneurs of businesses in incubators. Entrepreneurs within business incubators represent an important population in the US and other countries. For example, business incubators in the US are considered to be one of the main sources of high-tech and high-growth new firms (University of Michigan, NBIA, Southern Technology Council & Ohio University, 1997). The importance of business incubators has been highlighted in other countries, such as, in European countries (e.g., Colombo & Delmastro, 2002), Asian countries (e.g., Harwit, 2002), and African countries (e.g., Adegbite, 2001). Generalizing findings to entrepreneurs of new ventures in incubators is important. We hope that scholars interested in young businesses consider this population. For example, a sample similar to the one used in this article may be highly suitable for investigations into opportunity exploration activities.

Conclusion

This article provides an experimental test of opportunity exploitation in an entrepreneurial context. Consistent with elements of the resource-based view, we found that entrepreneurs were more likely to exploit opportunities when they perceived more knowledge of customer demand for the product, more fully developed enabling technologies, greater managerial capability, and greater stakeholder support. The favorable perceptions of more

knowledge of customer demand for the product, more fully developed enabling technologies, and greater stakeholder support were further enhanced when the new product has a long lead time. The contingent relationships between lead time and other elements of the resource-based view provide experimental evidence of the existence of resource complementarity in entrepreneurs' exploitation decisions. We hope scholarly work continues to investigate opportunity exploitation further through the resource-based view. We believe it makes reciprocal contributions to the theory development of both entrepreneurship and the resource-based view.

Acknowledgments

The authors would like to thank Daniel Feldman, Jeff McMullen, and three anonymous reviewers for their valuable comments on a previous version of this article as well as the Coleman Foundation CEAE Fellowship for partially funding this study.

References

Abell, D. F., & Hammond, J. 1979. *Strategic market planning: Problems and analytical approaches*. Englewood Cliffs, NJ: Prentice-Hall.

Adegbite, O. 2001. Business incubators and small enterprise development: The Nigerian experience. *Small Business Economics*, 17: 157–166.

Aldrich, H. E., & Auster, E. R. 1986. Even dwarfs started small: Liabilities of age and size and their strategic implications. In B. M. Staw & L. L. Cummings (Eds.), *Research in organizational behavior*: Vol. 8, 165–198. Greenwich, CT: JAI Press.

Aldrich, H. E., & Fiol, C. M. 1994. Fools rush in? The institutional context of industry creation. *Academy of Management Review*, 19: 645–670.

Alexander, A. 1999. E-Commerce: Money, money, and more money. *Accounting Technology*, 15(10): 18–26.

Alvarez, S. A., & Busenitz, L. W. 2001. The entrepreneurship of resource-based theory. *Journal of Management*, 27: 755–775.

Amit, R., & Schoemaker, P. J. H. 1993. Strategic assets and organizational rent. *Strategic Management Journal*, 14: 33–46.

Barney, J. B. 1991. Firm resources and sustained competitive advantage. *Journal of Management*, 17: 99–120.

Barney, J. B. 1995. Looking inside for competitive advantage. *Academy of Management Executive*, 9(4): 49–61.

Barney, J. B., & Griffin, R. W. 1992. *The management of organizations: Strategy, structure, behavior*. Boston: Houghton Mifflin.

Berman, S. L., Wicks, A. C., Kotha, S., & Jones, T. M. 1999. Does stakeholder orientation matter? The relationship between stakeholder management models and firm financial performance. *Academy of Management Journal*, 42: 488–506.

Birley, S. 1997. *Entrepreneurship in the U.K.* Paper presented at the Waseda University Entrepreneurial Research Unit 1997 International Symposium, Tokyo, Japan.

Black, J. A., & Boal, K. B. 1994, Summer. Strategic resources: Traits, configurations and paths to sustainable competitive advantage. *Strategic Management Journal*, 15: 131–148.

Brehmer, A., & Brehmer, B. 1988. What have we learned about human judgment from thirty years of policy capturing? In B. Brehmer & C. R. B. Joyce (Eds.), *Human judgment, the SJT view*. Amsterdam: Elsevier Science.

Brown, C., & Lattin, J. M. 1994. Investigating the relationship between time in market and pioneering advantage. *Management Science*, 40: 1361–1369.

Busenitz, L., & Barney, J. B. 1997. Differences between entrepreneurs and managers in large organizations: Biases and heuristics in strategic decision-making. *Journal of Business Venturing*, 12: 9–30.

Carpenter, G. S., & Nakamoto, K. 1989. Consumer preference formation and pioneering advantage. *Journal of Marketing Research*, 26: 285–298.

Chrisman, J. J., Bauerschmidt, A., & Hofer, C. W. 1998. The determinants of new venture performance: An extended model. *Entrepreneurship Theory and Practice*, 23(1): 5–29.

Chrisman, J. J., & McMullan, W. E. 2000. A preliminary assessment of outsider assistance as a knowledge resource: The longer-term impact of new venture counseling. *Entrepreneurship Theory and Practice*, 24(3): 37–53.

Clarkson, M. B. E. 1995. A stakeholder framework for analyzing and evaluating corporate social performance. *Academy of Management Review*, 20: 92–117.

Collis, D. J. 1994. How valuable are organizational capabilities? *Strategic Management Journal*, 15: 143–152.

Colombo, M. G., & Delmastro, M. 2002. How effective are technology incubators? Evidence from Italy. *Research Policy*, 31: 1103–1122.

Cowley, L. 2002. Telecoms: Still suffering from sector blues? *European Venture Capital Journal*, 96: 27–29.

Datar, S., Jordan, C. C., Kekre, S., Rajiv, S., & Srinivasan, K. 1997. Advantages of time-based new product development in a fast-cycle industry. *Journal of Marketing Research*, 34: 36–49.

Davis, J. T. 1996. Experience and auditors' selection of relevant information for preliminary control risk assessments. *Auditing: A Journal of Practice and Theory*, 15(1): 16–37.

Dixit, A. K., & Pindyck, R. S. 1994. *Investment under uncertainty*. Princeton, NJ: Princeton University Press.

Eisenhardt, K., Kahwajy, K. M., & Bourgeois, L. J. 1999. How management teams can have a good fight. *Harvard Business Review*, 75(4): 77–85.

Fiol, C. M. 1991. Managing culture as a competitive resource: An identity-based view of sustainable competitive advantage. *Journal of Management*, 17: 191–211.

Fischhoff, B. 1982. For those condemned to study the past: Heuristics and biases in hindsight. In D. Kahneman, P. Slovic, & A. Tversky (Eds.), *Judgment under uncertainty: Heuristics and biases*: 335–351. Cambridge, UK: Cambridge University Press.

Folta, T. B. 1998. Governance and uncertainty: The trade-off between administrative control and commitment. *Strategic Management Journal*, 19: 1007–1028.

Freeman, R. 1984. *Strategic management: A stakeholder perspective*. Englewood Cliffs, NJ: Prentice-Hall.

Gersick, C. J. 1994. Pacing strategic change: The case of a new venture. *Academy of Management Journal*, 37: 9–45.

Golder, P. N., & Tellis, G. J. 1993. Pioneer advantage: Marketing logic or marketing legend? *Journal of Marketing Research*, 30: 158–170.

Grant, R. M. 1991. The resource-based theory of competitive advantage: Implications for strategy formulation. *California Management Review*, 33(3): 114–135.

Green, R., & Srinivasan, V. 1990. Conjoint analysis in marketing: New developments and directions. *Journal of Marketing*, 54(4): 3–19.

Gundlach, G. T., Achrol, R. S., & Mentzer, J. T. 1995. The structure of commitment in exchange. *Journal of Marketing*, 59(1): 78–92.

Hahn, G., & Shapiro, S. 1966. *A catalogue and computer program for the design and analysis of orthogonal symmetric and asymmetric fractional factorial designs* (Report No. 66-C-165). Schenectady, NY: General Electric Corporation.

Hambrick, D. 1995. Fragmentation and the other problems CEOs have with their top teams. *California Management Review*, 37(3): 110–127.

Harwit, E. 2002. High-technology incubators: Fuel for China's new entrepreneurship? *China Business Review*, 29(4): 26–29.

Hitt, M. A., & Barr, S. 1989. Managerial selection decision models: Examination of configural cue processing. *Journal of Applied Psychology*, 74: 53–61.

Hitt, M. A., Dacin, M. T., Levitas, L., Arregle, J.-L., & Borza, A. 2000. Partner selection in emerging and developed market contexts: Resource-based and organizational learning perspectives. *Academy of Management Journal*, 43: 449–467.

Hoskisson, R. E., Hitt, M. A., Wan, W. P., & Yiu, D. W. 1999. Theory and research in strategic management: Swings of a pendulum. *Journal of Management*, 25: 417–456.

Howell, J. P., Dorfman, P. W., & Kerr, S. 1986. Moderator variables in leadership research. *Academy of Management Review*, 11: 88–102.

Huff, L. C., & Robinson, W. T. 1994. The impact of leadtime and years of competitive rivalry on pioneer market share advantage. *Management Science*, 40: 1370–1377.

Inkpen, A., & Choudhury, N. 1995. The seeking of strategy where it is not: Towards a theory of strategy absence. *Strategic Management Journal*, 16: 313–323.

Kahneman, D., & Tversky, A. 1979. Prospect theory: An analysis of decision under risk. *Econometrica*, 47: 263–291.

Knight, F. H. 1921. *Risk, uncertainty, and profit*. Chicago, IL: University of Chicago Press.

Lambkin, M. 1988. Order of entry and performance in new markets. *Strategic Management Journal*, 9: 127–140.

Lang, J. Q., & Crown, E. M. 1993, March. Country-of-origin effect in apparel choices: A conjoint analysis. *Journal of Consumer Studies and Home Economics*, 17: 87–98.

Lieberman, M. B., & Montgomery, D. B. 1988. First mover advantages. *Strategic Management Journal*, 9: 41–58.

Lieberman, M. B., & Montgomery, D. B. 1998. First mover (dis)advantages: Retrospective and link with the resource-based view. *Strategic Management Journal*, 19: 1111–1125.

Louviere, J. J. 1988. *Analyzing decision making: Metric conjoint analysis.* Newbury Park, CA: Sage Publications, Inc.

Mahoney, J. T. 1995. The management of resources and the resource of management. *Journal of Business Research*, 33: 91–101.

Manning, K., Birley, S., & Norburn, D. 1989. Developing a new venture's strategy. *Entrepreneurship Theory and Practice*, 14(1): 67–76.

March, J. G. 1991. Exploration and exploitation in organizational learning. *Organization Science*, 2: 71–87.

McGrath, R. G. 1997. A real options logic for initiating technology positioning investments. *Academy of Management Review*, 22: 974–996.

Meyer, M. H., & Utterback, J. M. 1995. Product development cycle time and commercial success. *IEEE Transactions on Engineering Management*, 42: 297–304.

Mian, S. A. 1994. US university-sponsored technology incubators: An overview of management, policies and performance. *Technovation*, 14: 515–528.

Miller, D. 1996. Configurations revisited. *Strategic Management Journal*, 17: 505–512.

National Business Incubator Association. 2000. *Directory of business incubators and members*. Athens, OH: NBIA Publications.

Noble, C. H., & Mokwa, M. P. 1999. Implementing marketing strategies: Developing and testing a managerial theory. *Journal of Marketing*, 63(4): 57–73.

Olson, E. M., Walker, O. C., Jr., & Ruekert, R. W. 1995. Organizing for effective new product development: The moderating role of product innovativeness. *Journal of Marketing*, 59(1): 48–62.

Penrose, E. G. 1959. *The theory of the growth of the firm*. New York: Wiley.

Peteraf, M. A. 1993. The cornerstones of competitive advantage: A resource-based view. *Strategic Management Journal*, 14: 179–191.

Porter, M. E. 1985. *Competitive advantage: Creating and sustaining superior performance*. New York: Free Press.

Priem, R. L. 1994. Executive judgment, organizational congruence, and firm performance. *Organizational Science*, 5: 421–437.

Priem, R. L., & Butler, J. E. 2001. Is the resource-based "view" a useful perspective for strategic management research? *Academy of Management Review*, 26: 22–40.

Priem, R. L., & Harrison, D. A. 1994. Exploring strategic judgment: Methods for testing the assumptions of prescriptive contingency theories. *Strategic Management Journal*, 15: 311–324.

Reed, R., & DeFillippi, R. J. 1990. Causal ambiguity, barriers to imitation, and sustainable competitive advantage. *Academy of Management Review*, 15: 88–102.

Rice, M. 2002. Co-production of business assistance in business incubators: An exploratory study. *Journal of Business Venturing*, 17: 163–187.

Riquelme, H., & Rickards, T. 1992. Hybrid conjoint analysis: An estimation probe in new venture decisions. *Journal of Business Venturing*, 7: 505–518.

Robinson, W. T., & Fornell, C. 1985. The sources of market pioneer advantages in consumer goods industries. *Journal of Marketing Research*, 22: 305–317.

Romanelli, E. 1989. Environments and strategies of organizational start-up: Effects on early survival. *Administrative Science Quarterly*, 34: 369–387.

Sapienza, H. J., & Gupta, A. K. 1994. Impact of agency risks and task uncertainty on venture capitalist-entrepreneur relations. *Academy of Management Journal*, 37: 1618–1632.

Sarasvathy, D., Simon, H., & Lave, L. 1998. Perceiving and managing business risks: Differences between entrepreneurs and bankers. *Journal of Economic Behavior and Organization*, 33: 207–225.

Schmalensee, R. 1982. Product differentiation advantages of pioneering brands. *American Economic Review*, 72: 349–365.

Schoonhoven, C. B., Eisenhardt, K. M., & Lyman, K. 1990. Speeding products to market: Waiting time to first product introduction in new firms. *Administrative Science Quarterly*, 35: 177–207.

Shane, S. 2000. Prior knowledge and the discovery of entrepreneurial opportunities. *Organization Science*, 11: 448–469.

Shane, S., & Venkataraman, S. 2000. The promise of entrepreneurship as a field of research. *Academy of Management Review*, 25: 217–226.

Shaver, K. G., & Scott, L. R. 1991. Person, process, and choice: The psychology of new venture creation. *Entrepreneurship Theory and Practice*, 16(2): 23–42.

Shepherd, D. A. 1999. Venture capitalists' assessment of new venture survival. *Management Science*, 45: 621–632.

Shepherd, D. A., Douglas, E. J., & Shanley, M. T. 2000. New venture survival: Ignorance, external shocks and risk reduction strategies. *Journal of Business Venturing*, 15: 393–410.

Shepherd, D. A., & Zacharakis, A. 1997. Conjoint analysis: A window of opportunity for entrepreneurship research. In J. Katz & R. Brockhaus (Eds.), *Advances in entrepreneurship, firm emergence and growth*: Vol. 3, 203–248. Greenwich, CT: JAI Press.

Singh, J. V., Tucker, D. J., & House, R. J. 1986. Organizational legitimacy and the liability of newness. *Administrative Science Quarterly*, 31: 171–193.

Slater, S. F. 1993. Competing in high velocity markets. *Industrial Marketing Management*, 24: 255–268.

Stinchcombe, A. L. 1965. Social structure and organizations. In J. G. March (Ed.), *Handbook of organizations*: 142–193. Chicago, IL: Rand McNally.

Teece, D. J. 1986. Profiting from technological innovation: Implications for integration, collaboration, licensing and public policy. *Research Policy*, 15: 285–306.

Thornton, P. H. 1999. The sociology of entrepreneurship. *Annual Review of Sociology*, 25: 19–46.

University of Michigan, NBIA, Southern Technology Council, & Ohio University. 1997. *Business incubation works*. Athens, Ohio: NBIA Publications.

Urban, G. L., & Hauser, J. R. 1980. *Design and marketing of new products*. Englewood Cliffs, NJ: Prentice-Hall.

Wernerfelt, B., & Karnani, A. 1987. Competitive strategy under uncertainty. *Strategic Management Journal*, 8: 187–194.

Zacharakis, A., & Meyer, G. D. 1998. A lack of insight: Do venture capitalists really understand their own decision processes? *Journal of Business Venturing*, 13: 57–76.

Young Rok Choi is Assistant Professor of Management at the Singapore Management University. He received his Ph.D. from Rensselaer Polytechnic Institute. His research interests include decision making in entrepreneurship, new venture growth and survival strategy, and alliances between large and venture firms.

Dean A. Shepherd is Assistant Professor of Strategy and Entrepreneurship at the University of Colorado. Dean received his doctorate and MBA from Bond University (Australia) and a Bachelor of Applied Science from the Royal Melbourne Institute of Technology. His research interests include the decision making of entrepreneurs, new venture strategy, venture capital, growth, failure and optimization.