Strategic Alliances as a Source of Early-Stage Seed Capital in Technology-Based, Entrepreneurial Firms

Elias G. Carayannis
Suleiman K. Kassicieh
Raymond Radosevich

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¹ Science, Technology, and Innovation Program, Department of Management Science, School of Business and Public Management, George Washington University, Washington, DC 20052, USA, (202) 994-4062, E-mail: caraye@gwu.edu

² Management of Technology Program, Finance, International and Technology Management Department, Anderson Schools of Management, University of New Mexico, Albuquerque, NM 87131, USA

³ Management of Technology Program, Finance, International and Technology Management Department, Anderson Schools of Management, University of New Mexico, Albuquerque, NM 87131, USA
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Executive Summary

A significant gap exists in early-stage seed capital for technology-based new ventures. This article reports the results of a survey of embryonic firms in the southwestern United States, which received significant amounts of their initial capital from strategic partners.

Our concern in this paper is the resource development process of high-growth (technology-intensive), early-stage firms through the process of alliance formation with an established firm. The importance of technology development and sharing as a motivation for the formation and operation of alliances has been stated by Osborn and Baughn (1990: 504): "Many of the alliances made between firms with headquarters in developed nations are in high-tech areas, and many also involve joint research and development." In some areas of the U.S., an active seed capital resource exists, as either formal institutional capital sources or "angels."

Firms in the region surveyed here (primarily New Mexico, Arizona, Utah, Colorado and parts of Texas) are not so fortunate. In these states, venture capital presence is much scarcer than in the Silicon Valley or Route 128 areas, making procuring high risk capital and especially early stage high risk capital particularly challenging. Thus, the study of alternative means of accessing early stage, high risk capital in the southwestern region of the U.S., such as strategic alliance formation should be of interest to both academic researchers and practitioners in the areas of technological entrepreneurship and regional economic development.
Through a survey of firms which received a significant portion of their early-stage seed capital from a strategic alliance with an established firm, the authors have examined various characteristics of the partnerships. The firms were identified through extensive research of multiple sources (at least thirty) such as universities, federal laboratories, state and local economic development agencies, incubator centers, technology parks, venture capital funds, NASA Regional Technology Transfer Centers, corporate alliance partners, entrepreneurial networking organizations and via word-of-mouth from other entrepreneurs.

In selecting the target firms for the study, the authors adopted the definition of a strategic alliance (SA) as a collaborative relationship between an established and an early stage technology-based firm which is seeking seed capital to grow its business, where the established firm invests seed capital in the early stage firm, usually through one of the established firm's operating divisions, corporate functions, or functional units.

Of 96 firms originally identified, 45 responded (46%) and of these, 33 (34%) were deemed fitting to our research criteria and were included in our sample population. The 33 firms we researched cover a wide range of technologies embodied in products and services from such areas as telecommunications, energy/environmental systems, software, hardware, biotechnology/medical, advanced materials, photonics and laser applications.

High levels of satisfaction with the alliance were reported by most of the capital recipients and the alliances tended to evolve into long-term relationships. The alliances were set up to gain access to risk capital as well as complementary tangible and
intangible assets such as embodied technologies, patents, know-how, and distribution networks. Nonetheless, there were individual cases where the strategic partners were not as satisfied and this will constitute part of continuing future research in this area.

The prescriptions from the normative literature on alliance formation and operation appear mostly valid in the experiences of the surveyed firms. We did however, notice a few divergences from established perspectives on strategic alliance formation and management:

a) Only 5 out of the 33 firms surveyed used intermediaries in forming a strategic alliance.
b) Only 2 out of the 33 firms surveyed formed a new corporate entity pursuant to forming a strategic alliance.
c) No differences in success rates between international and domestic alliances were established by our empirical findings.

Our empirical research findings identified the following key issues as salient to small-firm / large-firm, technology-driven strategic alliances formed for seed capital investment purposes:

a. Processes of strategic alliance formation
b. Benefits accruing from strategic alliance formation
c. Alternative market roles to forming a strategic alliance
d. Governance processes of strategic alliances
e. Alternative sources of funding to forming a strategic alliance
f. Critical success / failure factors in strategic alliance formation

Introduction

A serious early-stage seed capital gap exists in the United States for technology-based new ventures: "According to a survey of 637 venture funds by Venture Economics,
a Boston research firm, total investment in early-stage companies skidded from an all-
time high of $1.1 billion in 1987 to $749 million in 1993.... Why has the venture capital
industry changed? In a word, money. Generous management fees not tied to
performance are skewing the business." (Fortune Magazine, June 26, 1995) (see also
[Meyer et al, 1995]).

Botkin and Matthews (1992) and Niederkofler (1991) predict an acceleration of
partnerships between large and small companies which will become a substantial source
of early-stage risk capital for embryonic firms. This was corroborated by a Coopers and
Lybrand study in 1995 which found that: "55% of the nations fastest-growing companies
are involved in an average of three alliances. Another 8% have plans to enter such a
venture over the next 12 months." (The Wall Street Journal, April 20, 1995). The
evidence is not conclusive, however, that small firms typically benefit from alliances
with established firms: "One of the key aspects of any successful partnership is a
continued mutual dependence on each other so that one partner doesn't progressively
become the dominant player" (Douglas Bartek, VLSI Technology VP and General
Manager [Electronic Business, 1990]).

In their examination of the information technology industry, Hagedoorn and
Schakenraad (1994) determine that small firms in such an alliance often lack the
capabilities to take advantage of the opportunities afforded by alliances. Nonetheless,
Deeds and Hill (1996) show that strategic alliances, up to a certain level at least, help
increase the rate of new product development in the case of entrepreneurial
biotechnology firms. Such firms form partnerships with firms that possess
complementary assets thus enhancing their chances of survival and success as start-ups.

Freear and Wetzel (1990) found that only 21 of 445 rounds of investment in new, technology-based firms were made by nonfinancial corporations in their study of 284 firms in New England.

A counter argument is provided by Lorange and Roos (1993). They contend that the ability to form and successfully manage alliances will be a key factor in the future success of many firms. Also, evidence from a study by Booz Allen suggests that a surprising percentage of alliances are successful even though U.S. managers are behind Japanese and European companies in the alliance formation process. According to Bamford (1994), Booz Allen found that the average return on investment in alliances has been nearly 17 percent, which is significantly higher than normal ROI of the same company. Boosting profits is the end result from a number of reasons that motivate companies to form strategic alliances: "to collapse the period needed to get a product to market, slash development costs rein in capital spending, plug gaps in product lines, add valuable skills, enhance images, crack foreign markets, get entrepreneurial firms up and running, and generally enhance competitive position with customers." (Sales and Marketing Management, 1993). Furthermore, many large corporations have found that they can enhance their efficiency, flexibility, and innovativeness by partnering with small firms for specific products and services (McKee, 1992).

Firms form alliances with a variety of intents. Yoshino and Rangan (1995) and Schmidt and Fellermann (1993) articulate the objectives of and the benefits accrued from strategic alliance formation. Specifically, Yoshino and Rangan identify strategic
flexibility, the protection of core form assets, learning opportunities, and value adding potential as strategic objectives motivating an alliance. Schmidt and Fellermann (ibid) identify the following four kinds of benefits associated with forming an alliance:

a) economies of scale of the static and dynamic kind, and economies of scope, which accrue to the established alliance partner,
b) quick and easy access to knowledge and markets, which accrue to the start-up alliance partner,
c) the reduction of the capital requirements and the risks involved in the development of new kinds of products and technologies which accrue to the established alliance partner, and
d) the possibility of influencing the structure of competition in the relevant markets which accrue to both partners.

While these benefits may accrue through alliance formation in general, Radosevich (1995) addresses the advantages brought by small and large firms respectively when an alliance is formed between them. Technology-driven strategic alliances provide large firms with benefits such as:

a) adequate internal technical capacity,
b) market power,
c) established key linkages to customers, distributors, suppliers, regulators, etc.,
d) access to capital markets,
e) potential synergy with current products and operations,
f) better protection of proprietary technology,
g) professional management for later-stage growth,
h) ability to absorb large fixed transaction costs (ibid: 884).

In such alliances, the small firms receive the following benefits:

a) strong commitment to the technology,
b) ability to move rapidly,
c) lower costs of development and operations,
d) less bureaucratic, more innovative,
e) more efficient job and wealth creators,
f) entrepreneurial management for early-stage growth (ibid: 884).
Robert Porter Lynch (1989) reports the tightening of the venture capital markets since the mid-1980s and the consequences for funding of embryonic firms from strategic alliances with established firms:

The problems created by the overzealous financing of many high-tech companies in the early 1980s has resulted in a shortage of funds for many early-stage firms seeking venture capital. Moreover, the subsequent dismissal of many entrepreneur-founders by venture capitalists has driven many small company presidents to seek other financing sources to help enlarge their companies (ibid: 11).

Furthermore, few small companies have the growth potential demanded by most venture capitalists. Consequently, many are forced to use a corporate partnership approach as their only other means of rapid growth. Martin Pinson, a venture capitalist in Washington, D.C., suggests that larger corporations seeking to invest in smaller companies through a strategic partnership tend to place a higher value on the smaller company than would the venture capitalist. The smaller company will, therefore, often receive more money and give up less equity because the partnership approach actually lessens the risk of the investment, thereby increasing the small company's valuation.

Some entrepreneurs with significant potential will have to seek capital from sources other than venture capitalists simply because they do not fit the investment criteria with respect to their own characteristics (e.g., age, experience, education), characteristics of the firm, or characteristics of the proposed deal. The study by Hustedde and Pulver (1992) demonstrates that failure to find venture capital funding can be related to any of these characteristics. Choy (1990) argues that the peculiarities of risk capital markets in nations other than the U.S. may force the local entrepreneurs to seek alternative forms of financing including strategic alliances.
The Study Methodology

A survey instrument was designed and pretested to gather data from early-stage, technology-based firms that had received significant amounts of their seed capital through an alliance with an established company, although investments by a venture capital subsidiary were not included. A number of companies were known to the authors, who had provided management assistance to them. Other firms which fit the desired sample characteristics were identified through extensive research of multiple different sources (at least thirty) such as universities, federal laboratories, state and local economic development agencies, incubator centers, technology parks, venture capital funds, NASA Regional Technology Transfer Centers, corporate alliance partners, entrepreneurial networking organizations and via word-of-mouth from other entrepreneurs. In all, 33 complete and appropriate responses were received. Since there is no known established data base to identify firms which fit the study's sampling parameters, the sample is limited to identifications made through an informal network.

Initially, firms were surveyed by mailing the instrument to them with a cover letter explaining the study and including instructions for completing the questionnaire. Telephone calls were used as a follow-up. The effective response rate of 34% is typical of surveys of this nature and is deemed appropriate. Attempts to determine a non-response bias revealed that many non-responders felt the information too proprietary or were simply too busy (not surprising for early-stage entrepreneurial efforts).
We feel that issues of validity and generalizability have been dealt with thanks to the exhaustive nature of the study in terms of:

a) number and diversity of sources for identifying candidate firms for our survey (more than 30 and from the industry, laboratory, government and university sectors),

b) number and diversity of firms identified and surveyed (96 firms from seven different industries), and

c) size and diversity of actual study sample (33 firms from seven different industries).

Regarding reliability, the value of Cronbach's alpha (Nunally, 1978) for our study sample population was 0.7256, indicating fairly good data reliability.

Sample Characteristics

The sample of 33 respondents represented a number of alliances with interesting characteristics. Seventeen respondents had more than one alliance which provided early stage seed capital while the other 16 had only one. Of the seventeen with more than one alliance, there was an average of 2.3 alliances. In each instance of multiple alliances, each alliance was developed separately (as opposed to developed as part of a syndicate or consortium). Respondents with more than one alliance were requested to complete the major portions of the questionnaire with respect to their “most significant” alliance.

The literature suggests that circumstances in particular industries can affect the forms and results of strategic alliances ([Osborn and Baughn, 1990] and [Harrigan,
In this sample, the effect from idiosyncracies of a specific industry does not appear to be significant, as no three firms of the 33 are in the same SIC category at the three-digit level.

**Testing the relationship between survey variables**

Variables in the survey were analyzed to understand the relationship between them. Pearson correlation matrixes were used to compute the correlations between each of the variables. The Bartlett Chi-Square test was used to determine if the correlations were significant. To insure that the correlation results were not caused by interrelationships between the variables, Bonferroni probabilities are used to test for significant correlation between each pair of variables. Bonferroni probabilities adjust for errors accruing from interrelationships between variables (Wilkinson, 1990).

**Propositions Derived from Survey Data**

We identified a number of issues that we tabulated as propositions of potential interest to both academics and practitioners from the empirical survey data we compiled. These propositions are grouped by key issue they address, such as:

- Processes of strategic alliance formation
- Benefits accruing from strategic alliance formation
- Alternative market roles to forming a strategic alliance
- Governance processes of strategic alliances
- Alternative sources of funding to forming a strategic alliance
- Critical success / failure factors in strategic alliance formation
These propositions reflect some of the alliance management findings and guidelines set forward by Bamford (1994: 56-57):

- During alliance negotiations see if you can articulate the other side's objectives, ...
- Decide which potential partners are most important and make your own contacts, ...
- US corporations lag their Japanese and European counterparts in forming strategic alliances, ...
- 74% of Japanese CEOs say they are happy with their alliances. Just 17% of Americans do. ...
- Don't enter an alliance thinking it will solve a weakness ... a partner that is not sharing a strength will get gobbled up...
- Some of the longest-lasting and most lucrative alliances ... started out simply as licensing agreements or arm's length supplier relationships.

Although the sample size of the firms that could be identified as fitting the study parameters is relatively small (33) albeit statistically robust, there are a number of correlates to satisfaction with the alliance as reported by the capital recipient.

We group our research propositions by the four main areas of focus listed above.

I. Processes of strategic alliance formation

According to Stafford (1994), many alliances encounter problems and fail because of inadequate advance planning. In his article, he articulates three necessary steps to avoid this potential pitfall: 1) the choice of cooperative strategy, 2) the choice of the type of relationship upon which the alliance is to be based, and 3) the choice of the alliance partner. Badaracco (1991) presents a number of prescriptive guidelines, many of which advocate improved advanced planning of the alliance formation process.

*Proposition 1. Existence of “champions”. Strategic alliances (SA) have a definite individual in the SA partner's organization that acts as a "champion".*
A number of sources in the alliance literature have suggested that most successful alliances have key individuals in each partner who are enthusiastic “champions” of the alliance formation. For example, Hara and Kanai (1994) suggest that a “networker of networks” is critical to the formation of alliances between firms, especially if the cultures in which they reside are as diverse as Japan and the United States (the basis of their study).

In the study reported herein, the respondents believed that such a champion existed in their partner in all instances except two. In the majority of the cases, the partner's champion was a technical person within an R&D group, which suggests that the early-stage company was performing interesting technical work or had acquired valuable intellectual property. In several instances, the champion resided within the senior management of the partner, and in one instance, a marketing person served as the champion (see Table 1).

Proposition 2. Alliance Partners Networking Style: SAs are set up based on word-of-mouth and informal networking among the alliance partner principals rather than on formal search processes.

The literature on strategic alliances suggests that a qualified intermediary can be of considerable assistance in the process of forming an alliance (see, for example,
[Rothstein and Eberly, 1992] and [McKee, 1992]). However, only five respondents reported the use of an intermediary and 26 declared that none was used. Of the five that used an intermediary, all were pleased with the assistance received. On a scale of 1 to 10, with 10 signifying “the intermediary was critical to the successful creation of an alliance,” the scores ranged from 4 to 10. The average score of the five alliances using an intermediary was 8. The most important uses of the intermediaries were: 1) negotiations, 2) in consultation on the alliance-forming process, 3) legal and contracting assistance, and 4) post-alliance consultation.

Only 6 of the firms were pursuing a formal search process when initial contact with a potential partner was established. One firm reported the identification of over 200 potential partners, but the average, excluding that firm, was less than 4. On the average, formal negotiations were held with three potential partners, and ten respondents reported multiple parallel negotiations. The period from the time the early-stage firm started seeking a partner to provide seed capital until the deal was consummated ranged from one month to three years; the average was 14 months.

Moreover, the literature on strategic alliances suggests that often a large firm will encourage an early-stage potential partner to initiate legal contracts so that the large firm is not open to charges of unfairly dominating the relationship. Sixteen out of the thirty-three alliances were formed with the large firm defining the contractual relationship.
Proposition 3. Formation of New Organizational Entities: SAs that provide seed capital, do not tend to foster the creation of a new organizational entity to supplement the partners.

A number of studies have examined the range of types or structures resulting from strategic alliances ([Osborn and Baughn, 1990], [Forrest and Martin, 1992], [Stafford, 1994], [McKee, 1992]). In this study, a number of interesting and somewhat surprising results were obtained; for example, 18 out of 33 capital recipients gave up equity and only 2 of 33 respondents reported that the alliance resulted in the formation of a new legal entity, and in both instances the entity was a new corporation.

Proposition 4. Role of Intermediaries and Nationality of Partners: SAs are set up without the use of intermediaries and with domestic, rather than foreign, partners with a previous success record in such ventures.

Eight of the 33 respondents indicated that their most significant alliance partner is a foreign firm. Eight of the 33 respondents indicated that their most significant alliance partner is a foreign firm. When asked if their partners had one or more previous successful alliances before becoming their partners, 9 of the 33 respondents did not know their partner's alliance history. Seventeen respondents had found partners who had previously enjoyed successful alliances and seven had partners for whom the act of forming alliances was novel.

Significant correlation was found between restriction on funds and partners who have had other successful strategic alliances (Bonferroni probability is 0.018, this means
that the probability of rejecting the hypothesis that there is a relationship between the two variables is 0.018).

Moreover, significant correlation was found between continuing flow of capital and the likelihood that the donor has had more than one strategic alliance formed (Bonferroni probability is 0.057).

II. Benefits accruing from strategic alliance formation

Proposition 5. Uses of Seed Capital Acquired: The use of funds derived from a SA is primarily aimed at acquiring and developing tangible strategic assets such as proprietary technology and general working capital and secondarily at manufacturing, marketing and sales expenses and acquiring and developing intangible strategic assets such as skills and know-how possessed by key managerial personnel.

Thirty one of the 33 respondents were willing to reveal the amount of the seed capital received. For these 31 firms, the range of commitments for seed capital was $5000 to $17 million with an average of $1,633,125 (see Figure 1).

____________________________________
Insert Figure 1

____________________________________

At the time of the survey, not all commitments had been fully met. For the 31 respondents, an average of $1,305,645 had actually been received from their most significant partners. For 13 of the respondents, there is a continuing flow of capital beyond the initial commitment. The total incremental capital received from alliances (beyond the initial commitment) was $61,682,000 although some of this was provided by
alliances other than the most significant one. Of this amount, the largest infusion received by one firm was a total of $17 million (see Figure 2).

In eight instances, the entity infusing the capital was a corporate function (but not a venture capital function) while in all other instances it was an operating division, functional unit (such as R&D), or separate strategic business unit.

In thirteen instances, the funding received was restricted to specific uses. Whether restricted or not, the actual uses of the seed capital received are shown in Table 2 as the percentage of the total capital acquired by all responding firms.

Significant correlation was found between the restriction of funds and the likelihood of continuing flow of capital (Bonferroni probability is 0.007) as well as the likelihood that agreements were developed by the donor's attorneys (Bonferroni probability is 0.0038).

Proposition 7: Alliance Benefits Other Than Capital from the Recipient Perspective: The start-up firm in a SA benefits primarily in terms of enhanced image, credibility, and
respectability from the alliance and secondarily in terms of marketing and sales assistance, physical distribution, continuing R&D assistance and manufacturing technical assistance.

There is growing consensus in the entrepreneurship literature that the ability to form and manage strategic alliances can create many benefits for early-stage firms ([Choy, 1990] and [Osborn and Baughn, 1990]). According to Larsen (1991), benefits include product advances, administrative process improvements, increased information available and more rapid response times. Since small firms lack the resources to integrate vertically, alliances (especially with potential suppliers or customers) present a viable alternative. While recognizing these potential benefits, the possibility of unforeseen deleterious effects should also be noted. For example, Forrest and Martin (1992) have discovered in their research that key personnel of small entrepreneurial firms tend to leave if large partners or acquirers represent a change to a bureaucratic environment. All of the 33 respondents in this study reported receiving significant benefits from their alliance partners beyond the seed capital funding. Table 3 below shows the composite rank ordering of these benefits from the most important to the least. Since the acquisition of proprietary technology was perceived by the respondents as the least important benefit received, it appears that the early-stage firm was the technical leader in the aspects of technology which served as the basis for the alliance.

Insert Table 3
Proposition 8. Alliance Benefits Other Than Capital from the Donor Perspective: The established firm in a SA receives primarily equity followed by marketing rights, technology-related intellectual property rights (IPRs), manufacturing rights, licenses, trade secrets, patent rights, and copyrights, in exchange for its capital infusion.

The respondents were also asked to describe what they gave up in exchange for the seed capital (see Table 4). 18 of the 33 recipients in our study sample, reported that the partner received equity in their firms. In comparison, 13 of the partners received technology or intellectual property; 16 also received marketing rights, and 10 acquired manufacturing rights in exchange for their seed capital. When equity was received, the average valuation of the early-stage company was an imputed $6.8 million. Of the 13 partners who received technology, 7 acquired patent rights, 9 obtained licenses, 2 acquired copyrights and 8 received trade secrets or know-how. Of the 16 who obtained marketing rights, one had those rights restricted to a specific application and 5 were restricted to particular geographic regions. Of the geographic restrictions to marketing rights, four partners had only foreign rights and one acquired only domestic rights. Five of the partners had rights to manufacture only domestically and four others could manufacture only abroad.
III. Alternative market roles in forming a strategic alliance

Proposition 9. Alternatives to Forming a Strategic Alliance: The alternatives to a strategic alliance for a SA partner are to become a competitor, a customer, supplier, or distributor or in order of decreasing likelihood.

Nineteen respondents provided data with respect to the relationship that might have evolved with their eventual partners had an alliance not been consummated (see Table 5). Ten of the firms reported that the partner would have been a competitor if the alliance had not succeeded. By eliminating a potentially potent competitor through the alliance-forming process, these firms may well have strengthened their competitive position. As Young (1995) has reported in his comparison of small entrepreneurial firms to large established firms which formed vertical alliances, both firms benefit except when the alliance is between rivals. Then only the established firm appears to benefit. Three respondents declared that the eventual partner would have been a customer, if not a partner, and four revealed the possibility of the partner being a supplier had the alliance not evolved.

Insert Table 5

IV. Governance processes of strategic alliances
**Proposition 10. Profile of the Alliance Relationship:** SAs are governed informally and with exchange of directors rather than through such formal means as joint management committees.

Thirteen respondents reported that their partners had one or more seats on their boards of directors; twenty declared that no seats were given up. Of the 13 firms that gave up seats, seven gave up one seat, five firms gave up two seats and one gave up three seats. Six respondents stated that the alliance was managed with a joint managing committee or some form of cross-membership of managers. Twenty five said that no such relationship existed. For fifteen respondents, the alliance is managed through an informal relationship. Two reported that the partner is simply a passive investor. Four replied that a contractual relationship spelled out the respective decision prerogatives.

Twenty eight of the respondents reported that they still had a formal relationship with their partners at the time of the survey. Of these 28, only 9 stated that their relationship had a schedule for termination (see Table 6).

Significant correlation was found between having donor’s representatives on the board of directors and the amount of capital invested by the donor (Bonferroni probability is 0.047).

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**Insert Table 6**
V. Alternative sources of funding to forming a strategic alliance

Proposition 11. Preferred Sources of Seed Capital: SAs were the first choice for securing early-stage seed capital for SA partners, while venture capital funds were the last one.

Twenty eight of the 33 respondents saw difficulties in securing seed capital and reported that substantial efforts were required to obtain the first early round of capital and many efforts were abortive. In most instances a round of capitalization of several hundred thousand dollars was needed beyond that which was personally available. Since the average seed capital received from alliance partners was over $2 million, this first external round was more than is typically sought in the staged-financing process and very likely more than the average first round secured by most early-stage, technology-based firms from venture capitalists. One critical advantage to this level of funding is the avoidance by a firm's senior management of significant efforts toward raising more capital immediately after the closing of the first seed capital.

When asked for their perception of the best source of early-stage seed capital, strategic alliances were, not surprisingly, the first choice when the rankings were averaged. Table 7 presents the average ranking from 1 which is the poorest to 5 which is the best. Private Seed / Venture Capital Funds were the least desirable corroborating the findings of other empirical research as well: "Our findings support a popular stereotype that venture capital firms are more likely to place stringent controls on an entrepreneurial venture than Pis [private investors]. Moreover, venture capital firms require entrepreneurs to report to them on a more frequent basis and supply a higher amount of verbal feedback." (Ehrlich et al, 1994: 80).
In addition to the seed capital received from their strategic alliance partners, other sources of funds were used as well by many of the respondents. Table 8 presents a listing of other sources and the number of respondents who actually received funds from each source.

Also, we have found that respondents believed in the existence of a real "capital gap" for start-up and early-stage entrepreneurial companies. 28 respondents felt the gap covered a range from the average minimum of $100,000 to an average maximum of $1 million.

VI. Critical success / failure factors in strategic alliance formation

Proposition 12. Strategic Alliance Formation Critical Success / Failure Factors: Knowledge transfer and market position were among the expectations of the small or start-up firm (namely the seed capital recipient) SA partner other than seed capital and the seed capital recipient in a successful SA has received on the average $2 million capital infusion.

As demonstrated by the above discussion of benefits derived from the alliance other than a capital infusion, many partners enter an alliance with high expectations other
than financial goals. The study by Hatfield and Pearce (1994) found that goals relative to knowledge transfer and to market position were most frequently cited as critically important from the perspective of joint venture partners.

In the study described herein, 31 respondents reported their perceptions of the degree of success achieved through the alliance formation using a 6-point semantic scale ranging from “excellent” to “disastrous.” (see Figures 3 & 4). None reported that the alliance was “disastrous” or “poor”. While surprising, this result appears valid given the high proportion of the alliances still operating within this sample. 13 firms reported that the results of the alliance were “excellent” and 11 stated that the partnership was “very good.” 4 firms reported the alliance as “good” and three of the least satisfied firms described the partnership as “fair.” The unusually high success rate may be at least partially caused by the fact that one partner was a very small firm and therefore unlikely to separate the negotiating members from the people responsible for making the relationship work. This separation is one of the principal reasons for dissatisfied expectations, according to Bell (1990). Thirty-one firms responded to the question, “what degree of success do you believe your alliance partner would assign to the alliance?” Again, no respondent perceived the partner as dissatisfied to the extent that they would describe as “disastrous.”
They were on average, however, slightly less sanguine about their partner's probable perception of success. One felt the partner would only perceive the result as “poor”, three perceived as "fair" and six felt that “good” would best describe the partner's degree of satisfaction. Nine respondents categorized their partners perception of success as “very good” and the remaining eleven firms felt their partners would rank it as “excellent.” This phenomenon of greater perceived success on the part of the small firm as compared to the large investor firm is consistent with the findings of Forrest and Martin (1992: 49) in their study of the biotechnology industry. Rankings of alliance success from "moderate" to "very successful" were reported by 83 percent of the small firms and only 47.5 percent of the large firms.

In order to understand the factors that correlate with perceived success in the alliance, the respondents who thought the partnership was excellent or very good (24 in all) were compared to the 7 that felt it was only good or fair. Although the sample is too small to suggest statistical significance, some interesting observations can be made. For example, the more satisfied group received an average of $1.95 million in seed capital through the process of forming strategic alliances. In marked contrast, the less satisfied group received on average only $530,000 (see Figures 1 & 2).

Although Morris and Hergert (1987) maintain that international alliances are difficult to govern and prone to failure, this was not evident in this sample. There was no significant differences between the high success group and the low success group as far as the nationality of the alliance partner.
Significant differences exist between the high success group and the low success group as far as restrictions on the use of funds, the use of funds for the acquisition or development of new technology and in the image and credibility benefits of the partnership.

No significant differences existed between the high success group and the low success group as perceived from the partner's viewpoint.

Significant correlations were found between restriction on funds and a better perception of success from the recipient's view (Bonferroni probability is 0.052).

Conclusions

The results of this survey reveal that seed capital for early-stage firms is being successfully acquired through strategic alliances with established firms. Significant amounts of early-stage capital were acquired by the survey firms -- over $2 million on average. This was a larger sum than typically is provided to embryonic firms by early-stage venture capital funds.

The importance of technology development and sharing as a motivation for the formation and operation of alliances has been stated by Osborn and Baughn (1990: 504): "Many of the alliances made between firms with headquarters in developed nations are in high-tech areas, and many also involve joint research and development." In some areas of the U.S., an active seed capital resource exists, as either formal institutional capital sources or "angels." Firms in the region surveyed here (primarily New Mexico, Arizona, Utah, Colorado and parts of Texas) are not so fortunate. In these states, venture
capital presence is much scarcer than in the Silicon Valley or Route 128 areas, making procuring high risk capital and especially early stage high risk capital particularly challenging. Thus, the study of alternative means of accessing early stage, high risk capital in the southwestern region of the U.S., such as strategic alliance formation should be of interest to both academic researchers and practitioners in the areas of technological entrepreneurship and regional economic development.

Of special note was the high level of satisfaction with the partnership as expressed by the capital recipient. The terms, such as restrictions on the use of funds, appear to be less onerous than those commonly associated with venture capital infusions. The benefits from the alliance beyond the funding were reported to be widespread.

The time required to establish an alliance, however, was surprisingly long. In most instances, various rights were acquired, rather than an equity position, by the established partner.

The prescriptions from the normative literature on alliance formation and management appear to be mostly valid in terms of the experiences of the surveyed firms. Most firms found a champion within the partner. Potential competitors became partners to strengthen their mutual positions in the market place. The early-stage firms were most often active participants in defining the contractual relationship.

Surprisingly, the use of experienced intermediaries was not the norm. Unless equity was acquired by the capital provider (in which case board of directors seats were also secured), the alliance was managed without substantial formality. These funding
alliances tended to evolve into long-term relationships demonstrating that expectations and benefits other than financial were important.

Prior to receiving capital through the alliance, the early-stage firms typically engaged in substantial and unsuccessful search for seed capital. Thus the survey results suggest that alliances with established companies may well be a significant and viable source of early-stage seed capital for technology-based, high-growth potential entrepreneurial firms.

All in all, most of Niederkofler's (1991) key success factors in creating a partnership were detected in the alliances studied, at least as goals pursued if not realities attained:

a) a cooperative agreement should be based on a clear understanding of each partner's resources and interests, focused on specific goals...
b) time pressures must not be allowed to take priority in the negotiation process...
c) ...the amount of actual cooperation should be limited to the amount necessary to achieve the goals of the cooperation...
d) well-connected, veteran entrepreneurial managers with boundary-spanning skills should be assigned as liaisons by the larger firm...
e) top management needs to legitimate and support the entrepreneurial actions of the liaison manager...
f) cooperation management focused on the creation of trust and goodwill creates the best basis for a mutually beneficial relationship...
g) a sequential build-up of relationship intensity enables firms to get to know each other's interests and operating styles...
h) ...flexibility is key in gaining benefits from cooperation.

High levels of satisfaction with the alliance were reported by most of the capital recipients and the alliances tended to evolve into long-term relationships. The alliances were set up to gain access to risk capital as well as complementary tangible and intangible assets such as embodied technologies, patents, know-how, and distribution networks.
Nonetheless, there were individual cases where the strategic partners were not as satisfied and this will constitute part of continuing future research in this area. This research will consist of both multivariate analysis with a number of dependent variables such as satisfaction of strategic alliance partners with the partnership at different points in time and under diverse sets of contingency factors identifying the alliances under study, as well as families of case studies that will focus on representative individual firms that were involved in both, successful and failed strategic alliances that are part of our sample population. The intent will be to combine quantitative (statistical) with qualitative (case study) data and attempt to capture insights and patterns that might enrich our understanding about the motivations and needs for forming strategic alliances, the particulars of their evolutionary lifecycle, and the critical success and failure factors underlying a strategic alliance.
References


Figure 1. Early Stage Total Capital Provided

<table>
<thead>
<tr>
<th>Dollars</th>
<th>Number of Recipients</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-100K</td>
<td>1</td>
</tr>
<tr>
<td>100-200K</td>
<td>2</td>
</tr>
<tr>
<td>200-500K</td>
<td>3</td>
</tr>
<tr>
<td>500K-1M</td>
<td>4</td>
</tr>
<tr>
<td>1-2M</td>
<td>2</td>
</tr>
<tr>
<td>2-5M</td>
<td>3</td>
</tr>
<tr>
<td>5-10M</td>
<td>1</td>
</tr>
<tr>
<td>10-20M</td>
<td>1</td>
</tr>
<tr>
<td>20-25M</td>
<td>1</td>
</tr>
</tbody>
</table>
Table 1: Responses to survey questions

<table>
<thead>
<tr>
<th>Issue</th>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>More than One Strategic Alliance Which Provided Early-Stage Risk Capital</td>
<td>17</td>
<td>16</td>
</tr>
<tr>
<td>A Definite Individual in Partner's Organization as &quot;Champion&quot; for the Alliance</td>
<td>31</td>
<td>2</td>
</tr>
<tr>
<td>Continuing Flow of Capital</td>
<td>16</td>
<td>17</td>
</tr>
<tr>
<td>Funds Provided by the Partner Restricted in Their Usage</td>
<td>13</td>
<td>20</td>
</tr>
<tr>
<td>Most Significant Alliance Is Domestic Firm</td>
<td>25</td>
<td>8 (foreign)</td>
</tr>
<tr>
<td>Partner Had Successful Strategic Alliances with Other Small Firms</td>
<td>17</td>
<td>16</td>
</tr>
<tr>
<td>Did You Investigate Partner's Alliance Record Prior to Negotiations</td>
<td>13</td>
<td>20</td>
</tr>
<tr>
<td>Did Your Firm Pursue a Formal Search Process</td>
<td>6</td>
<td>27</td>
</tr>
<tr>
<td>Attorney That Drafted the Initial Agreement Is Yours</td>
<td>15</td>
<td>18 (theirs)</td>
</tr>
<tr>
<td>Alliance Partner Have Seats on Your Firm's Board of Directors</td>
<td>13</td>
<td>20</td>
</tr>
<tr>
<td>Intermediary Used in Process of Forming Alliance</td>
<td>5</td>
<td>28</td>
</tr>
<tr>
<td>Still Have a Formal Relationship with Your Most Significant Strategic Alliance</td>
<td>28</td>
<td>5</td>
</tr>
</tbody>
</table>
Table 2: Percentage Uses of Capital Infused Through Alliances

<table>
<thead>
<tr>
<th>Use of Capital</th>
<th>Average Use</th>
</tr>
</thead>
<tbody>
<tr>
<td>General Working Capital</td>
<td>30.0%</td>
</tr>
<tr>
<td>Development of New Technology</td>
<td>29.0%</td>
</tr>
<tr>
<td>Other</td>
<td>16.0%</td>
</tr>
<tr>
<td>Manufacturing Expenses</td>
<td>9.2%</td>
</tr>
<tr>
<td>Marketing and Sales Expenses</td>
<td>6.5%</td>
</tr>
<tr>
<td>Hiring of Key Management</td>
<td>4.8%</td>
</tr>
<tr>
<td>Acquisition of Plant or Equipment</td>
<td>4.4%</td>
</tr>
</tbody>
</table>
Table 3: List of Benefits Received from Alliance Other than Capital

<table>
<thead>
<tr>
<th>Significant Benefits Other than Seed Capital</th>
<th>Number of Recipients</th>
</tr>
</thead>
<tbody>
<tr>
<td>Image, Credibility or Respectability</td>
<td>21</td>
</tr>
<tr>
<td>Marketing and Sales Assistance</td>
<td>17</td>
</tr>
<tr>
<td>Physical Distribution</td>
<td>12</td>
</tr>
<tr>
<td>Continuing R&amp;D Assistance</td>
<td>12</td>
</tr>
<tr>
<td>Manufacturing Technical Assistance</td>
<td>12</td>
</tr>
<tr>
<td>General Management</td>
<td>11</td>
</tr>
<tr>
<td>Proprietary Technology</td>
<td>10</td>
</tr>
<tr>
<td>Manufacturing Facilities/Equipment</td>
<td>10</td>
</tr>
<tr>
<td>Market or Brand Recognition</td>
<td>9</td>
</tr>
<tr>
<td>Other</td>
<td>6</td>
</tr>
<tr>
<td>Technical Know-How</td>
<td>5</td>
</tr>
</tbody>
</table>
**Table 4: List of Benefits Received by Alliance Partner**

<table>
<thead>
<tr>
<th>Strategic Alliance Partner Received</th>
<th>Number of Firms</th>
</tr>
</thead>
<tbody>
<tr>
<td>Equity</td>
<td>18 (average equity 25%)</td>
</tr>
<tr>
<td>Marketing Rights</td>
<td>16</td>
</tr>
<tr>
<td>Technology/Intellectual Property</td>
<td>13</td>
</tr>
<tr>
<td>Manufacturing Rights</td>
<td>10</td>
</tr>
<tr>
<td>Licenses</td>
<td>9</td>
</tr>
<tr>
<td>Trade Secrets</td>
<td>8</td>
</tr>
<tr>
<td>Patent Rights</td>
<td>7</td>
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<tr>
<td>Copyrights</td>
<td>2</td>
</tr>
</tbody>
</table>

**Table 5**

<table>
<thead>
<tr>
<th>Partner Would Have Become</th>
<th>Number of Firms</th>
</tr>
</thead>
<tbody>
<tr>
<td>Competitor</td>
<td>10</td>
</tr>
<tr>
<td>Supplier</td>
<td>4</td>
</tr>
<tr>
<td>Customer</td>
<td>3</td>
</tr>
<tr>
<td>Distributor</td>
<td>3</td>
</tr>
<tr>
<td>Technology License Recipient</td>
<td>2</td>
</tr>
</tbody>
</table>

**Table 6**
### Methods Used to Jointly Manage the Alliance

<table>
<thead>
<tr>
<th>Method</th>
<th>Number of Firms</th>
</tr>
</thead>
<tbody>
<tr>
<td>Other</td>
<td>28</td>
</tr>
<tr>
<td>Informally</td>
<td>15</td>
</tr>
<tr>
<td>Board of Directors Actions</td>
<td>12</td>
</tr>
<tr>
<td>Through a Contractual Relationship</td>
<td>3</td>
</tr>
<tr>
<td>Partner as a Passive Investor</td>
<td>2</td>
</tr>
<tr>
<td>Joint Operating Committee</td>
<td>2</td>
</tr>
<tr>
<td>Alliance Manager on Your Management Team</td>
<td>1</td>
</tr>
</tbody>
</table>

### Table 7. Ranking of Desirability of Seed Capital Sources

<table>
<thead>
<tr>
<th>Source of Seed Capital</th>
<th>Average Ranking</th>
</tr>
</thead>
<tbody>
<tr>
<td>Strategic Alliances</td>
<td>3.5</td>
</tr>
<tr>
<td>Private Investors</td>
<td>3.3</td>
</tr>
<tr>
<td>Family or Friends</td>
<td>2.7</td>
</tr>
<tr>
<td>Federal/State/Local Government Programs</td>
<td>2.6</td>
</tr>
<tr>
<td>Private Seed/Venture Capital Funds</td>
<td>2.5</td>
</tr>
</tbody>
</table>

### Table 8. Number of Early Stage Firms Receiving Funds from Other Sources in Addition to Alliance Partners
<table>
<thead>
<tr>
<th>Other Sources of Capital</th>
<th>Number of Firms</th>
</tr>
</thead>
<tbody>
<tr>
<td>Angels</td>
<td>18</td>
</tr>
<tr>
<td>Institutional Investors</td>
<td>16</td>
</tr>
<tr>
<td>Family and Friends</td>
<td>14</td>
</tr>
<tr>
<td>Private Offerings</td>
<td>11</td>
</tr>
<tr>
<td>Public Offerings</td>
<td>3</td>
</tr>
</tbody>
</table>