ANGEL INVESTING: A CASE STUDY OF THE PROCESSES, RISK, AND INTERNAL RATE OF RETURN

by

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A Dissertation Presented in Partial Fulfillment

of the Requirements for the Degree

Doctor of Business Administration

UNIVERSITY OF PHOENIX

December 2008

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ABSTRACT

One of the most difficult components in starting and growing a new enterprise is acquiring capital and other resources. Funding for many new enterprises comes from a large, yet relatively unidentified, group called angel investors. This case study is one of the few to examine the returns from angel investing and one of the first to examine the dynamics of angel investing groups. Computing internal rate of return for angel investments for Keiretsu Forum, an angel group, for the years 2000-2006 revealed that the investments generated higher returns than could have been obtained from the broader equity market as measured by popular index funds. Perhaps more important, this study also indicated that the processes developed by and regularly used by the angel group are effective at identifying potential failed deals and are not so restrictive as to bypass potential winners. This research also showed that networks of angel groups are beginning to develop and this development not only contradicts the established notion that angels only invest locally but also reveals that the amount of capital that may be raised from angels in these networks of groups can be greater than previously thought. The information that can be generated from the angel group processes is increasing and the speed and cost by which that information can be developed and shared is decreasing. These results point to an area for future research that may indicate a change in the investment ecosystem and potential changes in the relationships between angels and venture capital firms. This information and the ability to raise capital for early stage enterprises quickly and effectively may help make more capital available ultimately driving the creation of new enterprises and economic growth.

ACKNOWLEDGMENTS

This research would have been impossible without the members and staff at Keiretsu Forum. The vision and dedication of Randy Williams, the CEO and founder of Keiretsu, created the environment that made this work possible. Sonja Markova, Vice President of Keiretsu, was indispensable in her wealth of knowledge about the investments, the members, and the entrepreneurs. Krupa Patel, Neda Mehran, Heinz Blennemann, Mathrew LeMerle, and Colin Wiel from Keiretsu played a significant role in gathering the data and validating the methods used in the work. The Keiretsu members in the San Francisco Bay Area, San Diego, and Seattle chapters also helped shaped this study with their interest and feedback.

Many other people in the investment and finance fields provided feedback and the motivation to finish this work. William Sharpe provided early direction and Mark Garmin helped shape the ideas around the investment processes. Rob Wiltbank helped navigate previous research into the angel world. Carol Sands and Laura Roden provided the sanity checks that helped keep the research on track. Lew Petrinovich and Mary Lynn Wilson provided the editing and pointers to help make the writing comprehensible. Mark Allen, Alex Hapka, and Eugene Lee are a great committee and provided the insight and direction needed in the University of Phoenix environment.

Completing a study and program like this could not have been done without the support of colleagues and friends. The staff and board of directors at San Jose Jazz provided much needed support and help. Friends like Arturo Riera, Bruce Labadie, Lucie Paye, Madelyn Crawford, Barbara Christmann, Vera Gert, Gary Duyanen, Jan De Carli, Dennis Broughton, Robert Griffin, Harley Christensen, Kim Stoermer, Kelly Eastmoor,

and so many others helped. Matt Kesner, Randy Smith, John Schermer, Bill Hazzard, Jack Conway, Brian Brockhouse, and Roy Kaufmann, the members of Octobop, the jazz octet, provided much needed relief from the pressure of the doctoral program. Last, but certainly not least, are the thanks due Colleen Hansen who provided the real spark and encouragement to finish.

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CHAPTER 1: INTRODUCTION

One of the most difficult components in starting and growing a new enterprise is acquiring capital and other resources. The lack of funding can lead to cash flow problems, missed opportunities, and shutdown of the fledgling enterprise (Van Auken, 2002). Funding for many new enterprises comes from a large, yet relatively unidentified, group called angel investors. Angel investing brings together two different areas of study: entrepreneurship and equity investing. Angel investing supplies more capital to early-stage companies than do venture capital firms, and this capital drives most of the economic growth and job creation in the United States (Wiltbank, 2005). In spite of this impact, the dynamics of angel investing have received relatively little attention from researchers than the effect on economic growth should warrant.

This study is one of the few to examine the returns from angel investing and one of the first to investigate the dynamics of angel investing groups. The focus is on angel investing in Silicon Valley and the returns from the investments made by an angel group and the processes used by the group to obtain those returns. Understanding the risks, returns, and dynamics of angel investing should encourage greater participation in the early stage investing ecosystem and foster economic growth (Morrisette, 2007). This chapter provides background on angel investing, the problem to be addressed, and the purpose of the current study. The significance of the study and the questions and hypotheses to be researched are then presented. The chapter concludes with relevant assumptions, limitations, and a discussion of scope.

Background of the Problem

Angel investing draws on many different areas ranging from theories such as portfolio theory and risk management to the practical experience of venture investing and entrepreneurship. The term angel comes from the theater in New York during the early 20th century. Investors in Broadway shows would make high-risk investments to produce shows to earn both financial returns and gain status in the community. Today, the term angel usually refers to high-net-worth individuals who make investments of time and money to help startup companies through their initial stages of growth (Lange, Leleux, & Surlemont, 2003).

Innovation emerging from investments made by angels is important. Utterback, at MIT, studied the process of innovation and found that in no case has the leader in a market led a radical innovation (Preston, 2001). Most revolutionary breakthroughs have come from firms of less than 500 people. Small companies are more effective in producing innovations that have high value and can create new markets or can change old ones (Baumol, 2004). Entrepreneurs financed by early stage capital develop and introduce new technologies, products, and services that lead to the creation of the majority of new jobs. In turn, economic growth increases through cost reduction or additional production (Proimos & Murray, 2006). The performance of early stage investment capital and the funded companies needs to be a concern to entrepreneurs, investors, and public officials. Economic growth depends on entrepreneurship and innovation. The fuel for this growth is the risk capital that is required for the formation and growth of new entrepreneurial ventures (Wetzel, 1987). Angel investors provide the risk capital that propels the creation of new jobs in the United States. Venture capital

firms depend on angels to finance and shepherd new companies until those companies reach the point where a venture fund can invest. Without angels there would be far fewer deals for venture firms (Morrisette, 2007).

Investing in early-stage companies involves high degrees of risk. Business angels, the risk they incur, and the returns they receive have historically posed problems for researchers. Angels may invest for non-economic reasons and may not be rational investors in economic terms. Angels have also been hard to investigate because many make only single investments or invest infrequently. Many angels do not understand the returns from their investments. Yet this same class of investors is the principal source of capital at the seed and startup stages of companies (Baty & Sommer, 2002). Estimates show that three times more capital is available to be invested than commitments made (Van Osnabrugge, 1998).

The germinal research on business angels was conducted by Wetzel (1983). This work is acknowledged by many as the first work to establish the existence of what are called business angels, angel investors, or angels (Sohl, 1999). Wetzel made two important observations about the funding of early stage companies. Prior to his research most researchers and practitioners assumed there was a gap in the funding of entrepreneurial ventures below the threshold at which venture firms would invest. In reality, the gap is filled by angel investors, and the amount of financing angels supply may be at least twice what more formal venture firms invest. The second is that financial theories assume the existence of efficient capital markets and perfect knowledge. In the angel investing segment, capital markets are highly inefficient and the flow of capital is highly impeded. Wetzel also divided the market for risk capital into three segments: the

public equity market, the professional venture capital market, and the business angel or informal risk capital market (Wetzel, 1983). The focus of this current study is the latter, the angel or informal risk capital markets.

Research into the financing models of entrepreneurial ventures is important to potential investors, entrepreneurs seeking resources, and later-stage investors such as venture capitalists (Wiltbank, 2005). The companies started by entrepreneurs and funded by risk capital provide a competitive edge for the United States. Even with the increasing globalization of the economy, the United States remains at the center of innovation (Harris, 2007). Business angels are the primary source of equity capital for young ventures. The capital and wisdom of angels are some of the most underutilized and the least understood economic resources (Freear, Sohl, & Wetzel, 2002). Providing funds to new enterprises has transaction costs, agency issues, asymmetric information problems, and risk relative to future returns. The characteristics of the party providing the funding can have a significant impact on the eventual outcome of the investment and the company (Wall, 2007). Better understanding of the issues that drive successful angel investing can have a direct impact on entrepreneurship and economic growth.

Statement of the Problem

Lack of capital is one of the leading barriers to growth of entrepreneurial firms, yet angel investors indicate that not enough opportunities for investment are available. (Aernoudt & Erikson, 2002; Mason & Harrison, 2002a). This mismatch between the need for funding and the need for investment opportunities could be caused by a lack of information on risks and returns that prevents the funds from reaching the entrepreneur (Mason & Harrison, 2002a). This case study focused on an angel investment group in

Silicon Valley, Keiretsu Forum, to examine the returns individuals obtain from investing in high-risk ventures. Additionally, the angel group was studied to discern how the processes the group uses impact those investments and their returns.

The returns from angel investing are neither well documented nor well understood. This lack of knowledge results in increased risk to the stakeholders involved in the investing and entrepreneurial processes. The problem involves both economic and non-economic factors. The first facet of the problem concerns the returns from angel investing. The rewards should be proportional to the risk according to theories such as the Capital Asset Pricing Model. However, few studies have been performed to examine those returns. Non-economic factors include the processes used by angels and angel groups to make those investment decisions. This research used case study research methodology. One component of the current research is an analysis of returns from angels in an angel group. The second part concerns the effectiveness of angel groups and the added value that groups bring to angels, entrepreneurs, and others in the investing ecosystem. Angel groups that enable angels to make better investments and that decrease friction in the relationships between angels and entrepreneurs should benefit the stakeholders involved in the investments. The objective of the study was to provide information that may help increase the capital and other resources available to early stage companies.

Purpose of the Study

The purpose of this case study was to determine the risk and returns present in early-stage investing using internal rate of return (IRR) on invested capital as the measurement and to examine how the processes used by an angel group in Silicon Valley

impact those returns. The focus of the current study was on the investments that angels in an angel group headquartered in Silicon Valley have made in companies primarily located in the Western United States in from 2000 through 2006. Because investments made by individual angels are extremely hard to capture, investments that have been facilitated by the angel group were studied.

The motivations for angel investing contain both economic and non-economic factors leading to the need for a case study. A case study is an in-depth study of a bounded system that represents a specific entity (Stake, 1995). A case study is distinguished from other research methods in that the subject of a case study is a contemporary phenomenon and the context in which that phenomenon exists (Yin, 1994). The information on returns from investments focused on IRR. Factors that impact IRR are the date of the original investment, the date of a liquidity event, the amount invested, and the amount received or new valuation at the liquidity event. The case study provided the opportunity to explore the dynamics of angel group interactions to determine if angel groups bring any additional value to the investment process. Previous research has shown that angels also invest and join into groups for reasons other than economic or potential high-returns (Mason & Harrison, 2002b).

Data were collected in several stages. Most of the data on investments and returns from those investments was in the possession of the management of the angel group. In some cases, the data on individual investments was missing or incomplete. In those cases, the data was obtained from either an angel making the investment or from the management of the company in which the investment was made by email or phone call. Information on the investment processes used by the angel group was obtained by

attending meetings of the investment group, by participating in the steps of the investment processes, and from documentation provided by the angel group or on the angel group website.

Significance of the Problem

To date, only three studies have been completed on the returns from angel investing (Mason & Harrison, 2002b; Wiltbank, 2005; Wiltbank & Boeker, 2007). The previous studies have not provided comparisons of returns to industry benchmarks. Little information has surfaced as to the effectiveness of angel groups or the process of angel investing, especially at the group level. Conventional wisdom indicate that the angels place a geographic limitation on investments, yet little research has considered the possibility or reality of syndicating deals among groups of angels. Removing geographic limitations should provide access to more capital and better decision making.

Even with the large numbers of angels in the United States, lack of capital constrains growth of new enterprises and places limits on entrepreneurs (Van Auken, 2002). Capital to be invested is available, yet angels and entrepreneurs have difficulty connecting and dealing with each other. Some estimates indicate that three times as much capital is available for investing than committed (Van Osnabrugge, 1998). Better understanding of potential returns and the accompanying risks may lead to the participation of additional angel investors and the connection of more angels and entrepreneurs. This rise in entrepreneurs and their development of new enterprises can drive new economic growth.

Angel investing and leadership are closely connected. Leadership focuses on how one deals with change (Kotter, 2003). Given the volatility of the business world,

incremental improvements to existing processes or products do not generate the innovative capabilities necessary for success (Baumol, 2004). Increased change requires more leadership (Kotter). To create and implement change, entrepreneurship is required. Angel investing supplies much of the risk capital that funds entrepreneurship (Wiltbank, 2005).

Leadership drives the entrepreneurship that is largely responsible for driving the world economy to its highest performance in history in the last 10 years. New ventures have generated economic growth, and mature enterprises are adapting or acquiring entrepreneurial ideas to become more effective and profitable. Many of the new ventures have been founded by minorities, women, immigrants, and others who may not have had access to traditional careers or whose perspective gives them new insights into markets. Entrepreneurs help drive the renewal process that continually transforms societies and economies (Kuratko, 2007). Moving past the point of only having a good idea to having a company with a position in the market requires stewardship through all the intermediate steps. Entrepreneurs face hurdles, issues, and many other setbacks in the process of reaching acceptance and profitability (Umesh, Jessup, & Huynh, 2007). Angel investing can provide not only the funds to enable entrepreneurs to pursue those innovations but also the resources, expertise, and networks that can make the difference between entrepreneurial success and failure.

Nature of the Study

To understand the challenges facing angels, a case study research design was used. A case study is one form of ethnography and the focus is on a program, event or activity. One type of case study, an instrumental case, illustrates a particular issue. In an

instrumental case study, the issues are the focus of the study rather than the case itself (Stake, 1995). In this case, the issue was the effectiveness of angel investing. Angels invest for both economic and non-economic reasons (Mason & Harrison, 2002b). The use of a case study research design was appropriate because the focus is on the process and the returns rather than behaviors exhibited by individuals or groups (Yin, 1994). Focusing only on data such as internal rate of return cannot provide insight into the processes that angel groups use in attempts to earn above-market returns. An examination of the processes present in angel investing omits a measure of one of the fundamental reasons to invest in early stage ventures, the hope of earning above-market returns. Understanding the factors that motivate angels may lead to higher levels of involvement by angels, greater levels of entrepreneurship, and higher economic growth.

The returns component used investments and liquidity events to compute IRR for investments made by angels. IRR is the discount rate that equates the present value of the expected or actual cash outflows with the present value of the inflows of cash (Kaplan, 2003). The few existing studies of angel investment returns use IRR as a measurement of investment and portfolio return. IRR is widely accepted in the venture financing arena as a method for measuring the effectiveness of investments. The use of IRR provides the opportunity for comparison to other benchmarks (Aernoudt, 2005; Mason & Harrison, 2002b; Wiltbank, 2005; Wiltbank & Boeker, 2007). One issue with using IRR to track angel investments is that angels do not track IRR in a consistent manner, and many do not track return rates at all (Wiltbank, 2005).

In order to standardize IRR calculations, the data analyzed consisted of the date of investment, amount of investment, date of liquidity event or re-valuation of

investment, and value of the return. A liquidity event is defined as flow of cash or marketable security to the investor from the entity. Examples of liquidity events include initial public offerings (IPO) of company stock, dividends, other cash payments, or receipt of publicly tradable stock as the result of a merger or acquisition. Due to the relatively long holding period of early-stage investments, many investments may not have reached a liquidity event. In those cases, the IRR calculation used the value established at a subsequent investment such as a later funding round by other investors such as other angels, venture capitalists, or corporate entities. Companies that experienced bankruptcy received a value of zero on the date of that bankruptcy.

The current study compared returns to industry standard benchmarks such as the Standard and Poor's 500 (S&P 500) and the NASDAQ Composite Index. The S&P 500 covers approximately 75% of the publicly traded equities in the United States and is weighted by market capitalization. Companies in the S&P 500 need to have a market capitalization of at least $5 billion and more than 50% of the stock needs to be publicly available (Standard & Poor's, 2007). A second benchmark is the NASDAQ Composite Index which measures all NASDAQ domestic and international common stocks traded on the NASDAQ exchange. The NASDAQ Composite Index contains over 3,000 companies and covers many of the industries such as technology that are the focus of angel investing (NASDAQ, 2007). In addition to the wide use of these two indexes as benchmarks of market performance, mutual funds such as the Vanguard Index 500 and the Fidelity NASDAQ Composite Index Tracking Stock Fund represent opportunities for investors to buy an investment that mirrors the performance of those indexes (Fidelity Investments,

2007; Vanguard, 2007). Index funds such as these represent potential alternate investments that angels could make.

The case study focused on the investment process that angels and angel groups use. Part of the investment process involves screening potential deals. Angel groups are designed to use the collective intelligence of the group's members to make more effective choices. The current study collected information to analyze the effectiveness of eliminating bad investments and accepting good investments. The potential for errors such as company bankruptcies and failing to invest in a successful venture should be reduced using the collective mindshare of the group. The study examined the willingness and the ability of the angels to syndicate deals which potentially leads to better investments and increased returns.

Research Questions

The nature of the current study led to several questions involving angels, angel groups, entrepreneurs, and the investment process:

R^1: How do returns from angel investing differ from those that could be obtained from investing in a broadly diversified index fund?

R^2: What processes do angel groups utilize that may make the groups more effective at screening and selecting potential investments than early-stage investors in general?

The first research question examines one of the central motivations of angel investing. According to financial theories such as the Capital Asset Pricing Model (CAPM), risk and return should be proportional. More specially, CAPM holds that the market does not compensate investors for assuming non-systematic risk (Sharpe, 1964).

Angel investors assume non-systematic risk with the hope of earning higher returns. If angel investors cannot achieve higher returns than those that can be gained from investing in a lower risk, broad-based mutual fund, then angels may have been investing without any visibility as to potential returns. If returns are not better than market benchmarks, there may be other reasons such as the desire to help entrepreneurs or other social functions that influence the investment decisions.

The second research question could be restated to ask the following: if angels and angel groups do not always make good investments, do the groups at least enable angels to avoid making bad investments? Given the small number of investments that most angels make, a high degree of diversification to eliminate specific risk from the angel investments is not possible. If returns from angel investing match those of the broad market indices, can angel groups help angels avoid cases where the angels may lose their investments? Conversely, the mindshare of the angels in a group should enable the group to decide not to decline an investment in an enterprise that later becomes a great success. With the different backgrounds of angels in a group, can the collective mindshare of the group attract a diverse deal flow, defined as a collection of potential investments, and assess those deals so that some diversification can be obtained if desired?

As angel groups expand and interact with other groups in different geographies, it may be possible that more capital can be raised and that better deal flow can be achieved benefiting both the investors and the entrepreneurs. This concept contradicts the conventional wisdom that angels and other venture investors only invest in companies in local geographies. With the communications and information management technologies that exist today, this barrier may be overcome. The cooperation of angels in

geographically dispersed groups may also lead to better control and communication mechanisms.

Theoretical Framework

Research of angel investing is based on two theoretical areas, entrepreneurship and equity investing (Wiltbank, 2005). Equity investing, in turn, is based on a combination of financial theories. These areas include diversification and portfolio theory as developed by Markowitz, Tobin, Sharpe, and others (Markowitz, 1952; Markowitz, 2005; Sharpe, 1964; Tobin, 1958). Agency theory as defined by Jensen and Meckling (1976) helps guide not only investment decisions but also ownership criteria and incentives for entrepreneurs. Concepts concerning capital structure and liquidity have an impact on the amount of risk investors are willing to accept with the potential of earning higher returns.

The first theories about diversification in financial investments were constructed by Markowitz in the early 1950s (Markowitz, 1952). The saying about not putting all one's eggs in a single basket is the heart of diversification (Markowitz, 1999). Portfolio theory can be defined as a group of models that describe how investors make tradeoffs between risk and reward in constructing investment portfolios (Holton, 2004). Markowitz's work formed the foundation for investors to understand how risk and reward are related.

The concept that drives the questions raised in the current research is the Capital Asset Pricing Model (CAPM) as defined by William Sharpe (1964). Sharpe built on the work of Markowitz to show how investment risk is comprised of different components influenced by different forces. Since the initial development of the model, the CAPM has

become one of the guiding ideas for relating risk and return. The CAPM has two major ideas that should influence investment decisions. The first idea is that return from an asset should be proportional to the risk of holding that asset. The second is that two types of risk exist relative to the asset, market or systematic risk and non-market or specific risk. Market risk is the movement caused in the price of an asset caused by the movement of the market as a whole. Specific risk is the risk that is specific to the asset. In the case of angel investing, this would be the risk associated with the startup venture succeeding or failing. CAPM suggests that the market does not reward investors for assuming specific risk and that specific risk can be eliminated through appropriate levels of diversification. A primary example of the CAPM in action is the various index stock funds that seek to track performance of broad stock market indices at very low overheard cost to the investors.

The application of the CAPM faces several issues when one attempts to apply that theory to early-stage investments. The CAPM and many other theories assume the existence of perfect information, highly liquid markets, and low or zero transaction costs (Sharpe, 2007). In the markets for publicly traded securities, information is readily available and financial reporting is standardized. Information about the markets in which companies operate and the products those companies build and sell is also well known. Trades of publicly held securities can be made almost instantaneously with low brokerage fees. Such conditions do not exist for angels and their investments (Sohl, 2003a). Privately held securities are illiquid and markets for the securities may simply not exist. The nature of the investment in an early-stage company results in high transaction costs. Those costs come not only from the legal requirements of placing private securities but

also the time needed to source investments, perform due diligence, and negotiate valuations and deal structure. The basic assumptions of most financial theories are not valid for angel investing (Sohl, 2003b).

According to the CAPM, angels would not be rational investors. By investing in an early-stage company, angels are betting on the success of that company (Andersson, 2005). Betting on the success of that company is accepting non-systematic risk. The return on the investment in the startup is largely influenced by the performance of the startup. Given the nature of angel investing, one can question if any angel could make enough investments to diversify away specific risk. In essence, angels violate the CAPM by incurring specific risk with the hope of earning above market returns. One purpose of the current study was to examine the returns angels receive from assuming that specific risk.

Agency theory also contributes to the theoretical framework. Agency issues occur when the interests of the owners and those of the managers diverge (Jensen & Meckling, 1976). Angels frequently rely on relationships with the entrepreneur rather than contracts and legal requirements to monitor the investments. Asymmetric flows of information, potential misrepresentation of markets or capabilities, and potential for unnecessary operational risk are areas where agency issues may arise in young enterprises (Kelly & Hay, 2003). To monitor this risk, angels can assume roles that are more active and involved than investors in public companies. Investments are also structured so that the entrepreneur maintains a large stake in the enterprise (Wong, 2002). The active involvement of the angels and the alignment of incentives may contribute to the ability of angels to make better investments over time.

Research on entrepreneurship is an important part of the theoretical framework. In many cases, angels are entrepreneurs who have been successful and who want to continue to be involved in building new enterprises. They have both the wealth and the experience to help young businesses grow (Wright, Westhead, & Sohl, 1998). Angels need to have an entrepreneurial profile to continue to be successful in their investing. Being proactive, innovative, and willing to accept risk are characteristics of an entrepreneurial orientation that angels need to possess (Lindsay, 2004). Entrepreneurial firms are the focus of the investments of business angels. These firms have a vision and desire for growth as well as desire for innovation, a tolerance for risk-taking, and the ability to change (Sohl, 1999; Van Osnabrugge, 2000). Entrepreneurs consider insufficient capital a barrier to growth. Relatively little traditional venture capital goes to seed stage companies, and banks rarely lend to companies with little or no revenue and assets (Aernoudt & Erikson, 2002). Entrepreneurs will face hurdles, issues, and many other setbacks in the process of reaching acceptance and profitability (Umesh, Jessup, & Huynh, 2007). Like entrepreneurs, angels seek out arbitrage situations in which imperfect information and market opportunities exist. These situations provide for potentially high returns (Andersson, 2005).

Definition of Terms

Most terms used in this paper are familiar to those with a background in entrepreneurship, investing, or corporate finance. Detailed descriptions of some concepts are provided in the literature review chapter.

Accredited investor. Securities and Exchange Commission (SEC) Rule 501 of Regulation D defines an accredited investor as an individual who has a net worth of over

$1 million or whose expected income is over $200,000 for an individual or $300,000 for a household (Linde & Prasad, 2000; Wong, 2002). Accredited investors may also be referred to as high net-worth individuals.

Angel group. Organization of angel investors with varying degrees of structure and formality that combine expertise and funds (May, 2002).

Angel investor. High-net-worth individuals who make investments of time and money to help companies through their initial stages of growth (Lange, Leleux, & Surlemont, 2003).

Arbitrage. The practice of using a price or information differential between two markets to make a profit (Miller, 2003).

Asymmetric information. Situation where one side of a relationship or deal has more information about the situation than the other side. Often present in agency relationships or other instances when those closest to a subject have more information than observers (Barnes & Menzies, 2005).

Beta β. The term commonly used to define market or systematic risk. Beta is the covariance of an asset's return with the market return divided by the variance of the market return (Varian, 1993).

Deal. In this paper, this term is used to describe any investment or potential investment.

Diversification. The process of balancing risk and return by investing in different assets rather than a single asset (Markowitz, 1999).

Due diligence. The process of examining a potential investment to understand the risks and potential rewards from the investment (Mason & Harrison, 2002b).

Early-stage. Time in the history of a company where the company moves from concept to developing prototypes and products. Most early-stage companies have little revenue and few customers (Xu, 2004).

Entrepreneur. Individuals who create new wealth for society as well as economic growth. Compensation for the entrepreneur comes from the economic value that those efforts create (Montanye, 2006).

Entrepreneurial enterprise. Firms that have a vision and desire for growth as well as desire for innovation, a tolerance for risk-taking, and the ability to change. Entrepreneurial firms want to grow in terms of both sales and employees (Sohl, 1999).

Exit. Also called a *liquidity event.* An event or time at which an investor can receive a return on an investment through the receipt of cash, stock that can be publicly traded, or stock in a publicly traded acquiring company (Preston, 2007).

Exit strategy. A procedure and time when an investment is returned to the investor with some profit attached (Holaday, Meltzer, & McCormick, 2003).

Funding rounds. Stages in which a company receives cash from investors. Funding is usually tied to product development, sales growth, or other accomplishments. Rounds may take place over several years and usually increase in size (Xu, 2004).

Initial public offering (IPO). The process by which the stock of a company becomes widely traded in the market and a degree of liquidity is reached (Smith, 2003).

Internal rate of return (IRR). The discount rate that equates the present value of the expected or actual cash outflows with the present value of the inflows of cash (Kaplan, 2003).

Investment stage. State of a company when that company receives investment. As companies grow, the stages usually consist of seed stage, early stage, expansion stage, and later stage (Preston, 2007).

Later stage investment. An investment that follows previous investments typically with different terms and at a different stage of the company's growth (Preston, 2007).

Liquidity. The ability to exchange assets with low explicit and implicit transaction costs in markets in which buyers and sellers are readily available and completing transactions is relatively easy (Cumming, Fleming, & Schwienbacher, 2005).

Private company. A company whose securities are not registered with the Securities and Exchange Commission (SEC) and whose securities do not trade on an exchange (Preston, 2007).

Publicly traded company. A company whose securities have been through a process to register the securities with the SEC, whose financial reporting must follow SEC rules, and whose securities are traded on a stock exchange or the NASDAQ (Preston, 2007).

Risk. Exposure to a state in which the outcome is uncertain. Both exposure and uncertainly need to be present for an entity or situation to be at risk (Holton, 2004).

Round. Also called *investment round*. An investment made in a company by multiple investors at the same terms and at the same time. Investments made in equity are usually denoted by term series followed by a letter. For example, the first equity round would be denoted Series A, the second Series B, and so on. Rounds also set the value of the company (Preston, 2007).

Seed stage. Companies who have received their first round of capital. The source is often the entrepreneur, friends, or family members. Companies at this stage may have little more than an idea and do not have products or revenue (Preston, 2007).

Silicon Valley. An area centered on San Jose, California, extending up to south of San Francisco and Oakland encompassing most of the Santa Clara Valley and the San Francisco Peninsula. Silicon Valley is home to thousands of hardware and software companies as well as venture capitalists and others who form an ecosystem for innovation and development of new companies (PC Magazine, 2007).

Startup enterprise. An early stage or seed stage company (Preston, 2007).

Venture capital. Investments made in a new business that may have excellent growth possibilities but little access to capital markets. The business usually trades a significant equity stake for funding. The equity is usually in the form of unlisted, illiquid securities (Preston, 2007). Venture capital used in the context of this paper includes all forms of equity capital provided to startups, not just financing from a venture capital firm or fund.

Venture capital fund. A fund raised and professionally managed with the goal of financing new ventures in order to earn above market returns (Preston, 2007).

Assumptions

Assumptions exist in the current work concerning angels, investments, and the investing process. The first is that internal rate of return is a meaningful statistic for measuring returns and information is available to compute IRR. Venture capital firms use IRR as a measure to calculate returns. Information on venture fund performance is

generally available through sources such as the Money Tree Survey by Price Waterhouse Coopers and Dow Jones Venture Wire (Preston, 2007).

Because all angels in a group do not participate in all investments, IRR computations were performed weighting the IRR calculation by the amount of funding that the company received from the angel group. These calculations constructed a hypothetical portfolio of the angel group investments. To calculate the IRR of a group of investments, all the cash flows were combined as if the flows were made into and came from a single investment. Other studies have used a similar approach (Xu, 2004).

Some investments examined in the current research have not achieved liquidity. The time frame for holding an early stage investment typically ranges from four to seven years (Preston, 2007). In the case in which the investment has not yet achieved liquidity, the latest valuation that the company received is used. Similarly, for firms that have ceased to exist or who are bankrupt, the investment was assigned a value of zero on the date that the company ceased to function. For companies that achieved exit through merger or acquisition (M&A), the value of the acquisition on the date the event closed is used, even though the security or value may change subsequent to the M&A event.

The potential for researcher bias in the current research was limited. In most cases, the data used to compute IRR were subject to examination by an external auditor, lawyer, or similar group. Because the target of the research is the operating results and valuations of companies and not behaviors or characteristics of individuals, little researcher bias could be introduced into the returns portion. Qualitative studies contain some bias due to the structure of the work. Qualitative researchers may take a subjective

or reflexive approach where the structure and evaluative criteria are flexible and emerge as the research progresses (Yin, 1994).

Scope, Limitations, and Delimitations

The scope of the current study was angel investors in an organized angel group headquartered in Silicon Valley. To complete the research, angels in other geographies were consulted. However, those angels were limited to groups affiliated with the angel group in Silicon Valley. Similarly, the entrepreneurs and leaders of the companies in which angels have invested were included to provide missing information. Angels not belonging to organized groups and startups with no relationship to the angels or angel groups were not included.

The results in the current research depended on several factors. The most critical was the availability of data concerning angels and angel groups. Angels have historically not kept detailed records concerning their investments, and few take the time or effort to compute IRR for their investments (Wiltbank, 2005). Many private investors are sensitive about publicly reporting their investments and their returns, either good or bad. Angel groups also regard their results as proprietary information and release data only if they can not be identified with a particular investment or group. Because the elapsed time of the research was less than a decade and comparisons of returns were made using years as increments, not enough data were collected to use this work as a model to forecast or predict future returns.

Other general limitations may have been present. The current study was limited to subjects who agreed to participate voluntarily, to the number of subjects surveyed, to the amount of time available, and to the data made available by the angel investor group. The

validity of the results depended on the validity of the underlying data collected by the angel group.

Three factors can affect the generalizability of a study. The interaction of selection of participants and results can be countered by making participation in the research easy. The interaction of setting and results can be minimized by understanding the setting from which results are obtained. The interaction of history and results can be lessened by examining the issue over time rather than at a single point in time (Stake, 1995). Results of the current study can be generalized in several dimensions. By using an existing angel group and its data, the research did not depend on the cooperation of a large number of individuals. With respect to the setting, many of the issues present in investing in early stage ventures are similar regardless of the location, product, or market. Looking at the returns data in yearly slices over almost a decade reduces the impact of history. Additionally, most investment decisions are independent events, and the impact of one investment on others is usually minimal.

The current study was confined to angels in an accessible angel group. The data did not concern individuals but rather companies in which angels in the group have invested. Other than the privacy concerns previously indicated, there was nothing in the current study to connect the data to individuals. The focus is on company and investment performance and internal rate of return as the key return variable. Companies included in the research were those considered for investment by an angel group. Companies that approached the angel group but did not enter the screening and due diligence processes were not included.

Summary

Research on angels and their investments is needed to remove the information barriers that cause a mismatch between available funding and available opportunities that limit economic growth. Entrepreneurs financed by early stage capital develop and introduce new technologies, products, and services, which then lead to the creation of the majority of new jobs. In turn, economic growth increases through cost reduction or increased production (Proimos & Murray, 2006). The performance of early stage markets needs to be a concern to entrepreneurs, investors, and public officials. Economic growth depends on entrepreneurship and innovation. The fuel for this growth is the risk capital that is required for the formation and growth of new entrepreneurial ventures (Wetzel, 1987). Angel investors provide this risk capital that, in turn, propels the creation of new jobs (Morrisette, 2007).

The current study proposed to add to the body of knowledge about angel investing to help existing and potential angels and entrepreneurs better understand the risks and rewards and eliminate the mismatch that exists between the need of entrepreneurs for capital and the desire of angels to invest. To date, researchers have largely bypassed angels, angel investing, and the impact on entrepreneurship, leadership, and economic growth (Wiltbank, 2005). Better understanding of the angel investing ecosystem may lead to better returns and higher investment. This should result in higher levels of economic growth in the area in which the target companies are located and ultimately impact the entire national economy. Chapter 2, Literature Review, examines existing knowledge about angels, early stage investing, venture capital, and the appropriate financial and organizational theories on which this work is built.

CHAPTER 2: REVIEW OF THE LITERATURE

The foundation for angel investing draws on many different areas ranging from theories such as portfolio theory and risk management to the practical experience of venture investing and entrepreneurship. Investing in early-stage companies involves high degrees of risk. Angels may invest for non-economic reasons and may not be rational investors in economic terms. Angels have also been hard to research because many make only single investments or invest infrequently. Yet this same class of investors is the principal source of capital at the seed and startup stages of companies (Baty & Sommer, 2002). Estimates show that three times more capital is available to be invested than commitments made (Van Osnabrugge, 1998).

This case study focused on an angel investment groups in Silicon Valley to examine the returns from investing in high-risk ventures and the processes angel groups use to obtain those returns. The economic and non-economic factors were examined to answer several questions. The first question concerns the returns from angel investing. The rewards should be proportional to the risk according to theories such as the Capital Asset Pricing Model. However, few studies have been performed to examine those returns. The second question concerned the effectiveness of angel groups and the added value that groups bring to angels, entrepreneurs, and others in the investing ecosystem.

This chapter discusses the history of the theories that form the foundation for investing in early stage companies. Entrepreneurship drives the need for funding and angel investing. Theories on portfolio selection, diversification, and returns from investment provide the underlying ideas that the presence of higher risk should lead to higher returns. Agency theory considers how the interests of entrepreneurs should be

aligned. Work on capital structure and liquidity ties together uncertainty, risk aversion, and investor preference for liquidity. Behavioral finance considers the idea that investors do not always act rationally. A history of the venture capital environment and the different funding models available for early stage ventures provides insight into how private firms are funded.

Current findings begin with the current state of angel investing in the United States and the characteristics of angel investors. The process that angels use to make investments is developed followed by methods that angels use to manage risk. Angel investing and venture capital investing are then compared and contrasted. In the last decade, angel investment groups have appeared, and their influence in the market is presented. Angel investing is having an impact on economies outside the United States, and those impacts are then presented. Research on the barriers in angel investing is presented. Finally, the few studies that have researched the returns from angel investing are presented.

Information contained in the literature review was obtained from a variety of sources. The primary online sources used in the research were the EBSCOhost, ProQuest, and InfoTrac OneSource databases. Information on the theoretical concepts such as risk, portfolio theory, asset pricing, and entrepreneurship was found in journals focusing on finance and small business. Much of the information on investing, including angel investing, venture capital, and early stage investing, was found not only in journals but, in many cases, came from the management of angel groups or from organizations researching the field. These sources include the Angel Capital Association, the Ewing Marion Kauffman Foundation, the Center for Venture Research at the University of New

Hampshire, and the Atkinson Graduate School of Management at Willamette University. Key journals used in the research include Venture Capital, Financial Analysts Journal, Journal of Portfolio Management, Journal of Small Business Management, Journal of Private Equity, Journal of Finance, Journal of Developmental Entrepreneurship, and Entrepreneurial Theory and Practice. Conversations with the authors of selected research (Sharpe, 2007; Wiltbank, 2005) helped confirm the direction and scope of the literature review.

Research History

The germinal research on business angels was conducted by Wetzel (1983). This work is acknowledged by many as the first work to establish the existence of what is now called business angels, angel investors, or angels (Sohl, 1999). Wetzel made two important observations about the funding of early stage ventures. Prior to his research most researchers and practitioners assumed there was a gap in the funding of entrepreneurial ventures below the threshold at which venture capital firms would invest. In reality, the gap is filled by angel investors, and the amount of financing angels supply may be twice what more formal venture firms invest. The second is that financial theories assume the existence of efficient capital markets as well as perfect knowledge. In the angel investing segment, capital markets are highly inefficient and the flow of capital is impeded. Wetzel also divided the market for risk capital into three segments: the public equity market, the professional venture capital market, and the business angel (or informal risk capital) market (Wetzel, 1983).

Investing and Entrepreneurship

Entrepreneurship deals with promoting and creating change, especially economic change. Entrepreneurship was called "destruction of economic equilibrium" by Schumpeter, an originator of the concept (Erikson, 2007, p.3). Entrepreneurship can be defined as "the process by which individuals acquire ownership (property rights) in economic rents of their creation." (Montanye, 2006, p. 549). The idea of ownership of the change agent is at the heart of entrepreneurship.

A definition used by the Ewing Marion Kauffman Foundation of an entrepreneur is "one who takes advantage of knowledge and resources to identify and pursue opportunities that initiate change and create value in one's life and those of others." (Gatewood & West, 2005). Entrepreneurs are recognized as individuals who create new wealth for society as well as economic growth. Compensation for the entrepreneur comes from the economic value that those efforts create. The interest of consumers is served by entrepreneurs examining the status quo and searching for ways to make a profit by changing current conditions. Uncertainty and opportunity are the reasons entrepreneurs exist, as well as the source of their rewards (Montanye, 2006). Entrepreneurs perform several functions in an economy. They move an economy away from equilibrium by creating new knowledge, raising production and output to new economic levels, and seeking new innovations or combinations that drive economic change. In moving the economy to a new equilibrium, entrepreneurs also create arbitrage opportunities around inefficiencies in the market (Erikson, 2007). Entrepreneurs are viewed as catalysts that see opportunities instead of confusion and are responsible for driving change in society (Kuratko, 2007). Such movements generate risks as well as the potential for economic

growth. The increasing globalization of business and the corresponding opportunities that arise may cause entrepreneurs to accept higher risk thresholds (McGarvey, 2007).

Entrepreneurship and leadership are closely connected. Entrepreneurship is largely responsible for driving the world economy to its highest performance in history in the last 10 years. New ventures have generated economic growth, and more mature enterprises are adapting entrepreneurial ideas to become effective and profitable. Many of the new ventures have been founded by minorities, women, immigrants, and others who may not have had access to traditional careers or whose perspective gives them new insights into markets. Entrepreneurs help drive the renewal process that continually transforms societies and economies (Kuratko, 2007). Moving past the point of having a good idea to having a company with a position in the market requires stewardship through all the intermediate steps. Entrepreneurs will face hurdles, issues, and many other setbacks in the process of reaching acceptance and profitability (Umesh, Jessup, & Huynh, 2007).

Profit is the excess part of payment for a factor of production that remains after the payment for that factor is made. The objective of entrepreneurs is to own the profits of their work. An entrepreneur is not necessarily defined by what that person does. Actions one undertakes that do not generate economic benefits or that produce benefits that the individual does not own are not considered to be entrepreneurship. For example, a salaried employee at a corporation producing new goods and ideas is not an entrepreneur (Montanye, 2006).

Entrepreneurial companies are the focus of the investments of business angels. The individuals who lead these companies have a vision and desire for growth as well as

a desire for innovation, a tolerance for risk-taking, and an ability to change. Entrepreneurial organizations want to grow in terms of both sales and employees. In the US, these companies account for 4-10% of the nearly one million startups per year and for 70-75% of the new jobs (Sohl, 1999; Van Osnabrugge, 2000). One other aspect that defines entrepreneurial companies is that those firms tend to seek out price discrepancies in markets and to link participants in different markets. This linkage and integration of players in different markets can lead to higher returns (Andersson, 2005).

An important distinction should be drawn between entrepreneurial businesses and small businesses. New firms or small enterprises that do not provide potential for high returns are not candidates for angel funding. Funding to grow these businesses typically comes from bank debt, internally generated cash flow, or resources from the owner and close friends and family (Ou & Haynes, 2006). Most job and wealth creation comes from relatively few businesses that start small and grow quickly. These high-growth enterprises are the target for angel investments. Angels and the follow-on venture capitalists look for businesses that will generate a high enough return on investment to justify the risks inherent in early-stage investing (Sohl, 1999).

Many entrepreneurs are products of large enterprises where they learned about an industry and gained the experience and confidence needed to run companies. Large organizations additionally provide insight into opportunities and knowledge that is not available to those outside the industry. Potential entrepreneurs build social networks that will help them later in establishing and growing the new enterprise. This social network supplies potential customers, business partners, management teams, and employees.

These social ties lead to contacts with potential investors, especially at the early stage of a company (Audia & Rider, 2005).

Diversification, Portfolio Theory, and Investment Returns

The concept of diversification is not new. Evidence for the ideas of diversification dates back to the 16th century. The saying about not putting all one's eggs in a single basket is at the heart of diversification (Markowitz, 1999). The first theories about diversification in financial investments were constructed by Markowitz in the early 1950s (Markowitz, 1952). Portfolio theory can be defined as a group of models that describe how investors make tradeoffs between risk and reward in constructing investment portfolios (Holton, 2004). The basic idea behind Markowitz's theory is that for a given level of risk, investors will choose a selection of assets that provide the highest return. Over the next several decades, Markowitz developed and refined his ideas on portfolio theory and diversification for which he was awarded the Nobel Prize for Economics in 1990 (Markowitz, 1999). The initial work of Markowitz laid the foundation for the work of Modigliani and Miller concerning arbitrage in markets and risk in corporate valuation, the work of Tobin on risk and portfolios, and the development of the Capital Asset Pricing Model by Sharpe (Bernstein, 2002).

Markowitz defines an optimal portfolio, making assumptions that all investments and their associated risks are known. These theories propose that the selection criteria for investments are derived from the expected mean return and the variance of returns from potential investments. The volatility of the portfolio is indicated by the variance of the returns. Using mean and variance as a guide, one can select efficient and inefficient portfolios. An optimal portfolio could be defined by choosing the portfolio with the

highest return from all the portfolios with a given level of volatility. An alternate perspective is to look at all the portfolios with an expected return. The optimal portfolio will be the one with the lowest volatility. The set of efficient portfolios with the same combination of mean and variance has been called the efficient frontier (Varian, 1993).

In 1964, William Sharpe first published a work describing the Capital Asset Pricing Model (CAPM). For his work, he was awarded the 1990 Nobel Prize in Economics along with Harry Markowitz and Merton Miller ("Nobel Memorial Prize" 1991). CAPM divides the risk in an investment or investment portfolio into systematic or market risk and investment-specific risk. Market risk comes from the movements in the broad market and is defined as the risk that would come from holding a portfolio of every security or asset in a given market. Specific risk is the risk that is uniquely associated with a given investment or asset. The return on an investment comes from the return on both risk components. Return associated with the market risk is the return that comes from all the assets in the market. CAPM states that the marketplace provides a return for market risk but not for taking specific risk. With enough diversification, according to CAPM, the specific risk can be eliminated (Sharpe, 1964).

Beta, β, is the term commonly used to define market or systematic risk. CAPM states that the expected return is equal to the risk-free rate of return plus the beta of a portfolio multiplied by the expected additional return of the market portfolio. Beta is the covariance of an asset's return with the market return divided by the variance of the market return. If R_s is the return for a given investment, R_f is the risk-free return as defined by treasury bills or a similar investment, and R_m is the market return, then expected returns, E, can be defined as

$$E(R_s) = R_f + \beta[E(R_m) - R_f]$$

CAPM states that an investment's expected return depends on its beta and not items such as volatility. In theory, investors use this model to define the price of an investment or asset (Varian, 1993).

The CAPM makes assumptions that may not be applicable in the arena of early stage investing. CAPM assumes that transaction costs, taxes, and illiquidity have little impact on investment decisions. Another assumption is that all investors have the same predictions with respect to volatility, returns, and the relationships between investments. In most cases, these assumptions may have little impact on the ultimate outcome of how one selects a portfolio (Markowitz, 2005). Other factors such as market capitalization, earnings-to-price ratios, book value, and market value can also explain stock market returns. Total risk and diversifiable risk have an impact on market returns (Bali & Cakici, 2004). Many of these measures do not account for the value that early-stage investors provide, and they do not account for unrealized gains in securities that are not publicly traded (Mathonet & Monjanel, 2006).

In 1966, Sharpe introduced a measurement for the performance of mutual funds that he called the reward-to-variability ratio. Subsequently revised by Sharpe in 1975 and 1994, this measure has become more widely known as the Sharpe Ratio (Sharpe, 1994). The Sharpe ratio is "obtained by dividing (1) the portfolio's expected excess return over the riskless rate of interest by (2) the standard deviation of its excess return." (Sharpe, 2007, p. 101). This excess return, or risk premium, is computed as

$$S = \frac{E\lfloor R - R_f \rfloor}{\sigma} = \frac{E\lfloor R - R_f \rfloor}{\sqrt{\text{var}\lfloor R - R_f \rfloor}}$$

where R is the return of the asset, R_f is the return on an asset used as a benchmark such as the risk free rate of return, E is the expected value of the excess return, and σ is the standard deviation of the excess return. This ratio is used to assess how attractive an asset or a portfolio of assets could be given the risk involved in holding the portfolio (Sharpe, 2007).

Sharpe (1967) indicated that the question of choosing the proper investments for an investor could be considered to involve three tasks. The first, security analysis, provides estimates of the future returns for different assets and securities. One needs to understand both the outcome for individual assets and how that asset is related to others. Portfolio analysis, the second task, attempts to find selections of assets that provide the highest return for a given level of risk. The third step, portfolio selection, attempts to address the issue that multiple efficient portfolios may exist and the investor needs to make a choice of which portfolio to hold. In reality, different investors will hold different portfolios. Sharpe (1974) indicated that many of these differences may be due to the differences in predictions in expected outcomes and returns for the same assets.

Financial theories are based on the assumption that efficient markets exist. In efficient markets, buyers and sellers know all the facts and the transaction costs are low in terms of time and money. These financial theories usually concern publicly traded companies about which information is not only available but also standardized and regulated. One makes financial decisions by choosing from a variety of financial instruments and policies that govern those instruments. In the entrepreneurial world of young companies where an efficient market for a company's securities does not exist and information is scarce, some financial theories may not be relevant. This lack of relevancy

generates market inefficiencies. The first inefficiency is the gap between the capital needs of startups and the suppliers who are willing to provide capital. In an efficient market, funds flow freely. In the early stage market, such efficiencies do not exist. The second inefficiency concerns the lack of information that would match investors and entrepreneurs. In many cases, the entrepreneur and the investor have difficulties finding each other (Sohl, 2003a).

Petrakis (2004) established a model that joins risk premium with the premium that entrepreneurs expect. Information gaps that give rise to imperfect markets also give rise to the opportunities on which entrepreneurs capitalize to create new enterprises. Disequilibrium in markets is one of the forces that gives rise to entrepreneurial opportunities. Where perfect competition exists, entrepreneurs have little opportunity. Entrepreneurs and investors who finance these entrepreneurs are accepting non-market or non-systematic risk in order to gain higher returns. Non-systematic risk directly measures investment risk and cannot be reduced through diversification. This acceptance of non-systematic risk should lead to higher than market returns or could lead to higher losses.

Agency Theory

Agency theory deals with aligning the interests of parties in an economic relationship. First discussed by Jensen and Meckling (1976), an agency relationship exists when the owners or principals enter into an agreement with an agent to perform services in their stead. When this agreement is in place, some authority to make decisions is moved from the principals to the agents. Agency problems exist when agents make decisions that do not align with the interests of the principals. Jensen and Meckling combined theories on agency, property rights, and finance to develop a theory of

ownership structure for an enterprise. One of the primary principles behind the theory is that the financial structure of the firm can cause managers who are not owners to make decisions that would be different from those made by managers who are also the owners. As the percentage of equity of an owner-manager falls, that manager is more likely to demand perquisites from the resources of the corporation.

Several issues arise from agency problems. In theory, managers and entrepreneurs should know more about their companies and the markets in which they exist than outside participants. The results of the actions of a manager can only be evaluated by an outside party after some time lag. The core of agency issues is that investors or owners are at a disadvantage regarding the information they possess, compared to the managers within an organization. Sometimes the manager can have an incentive to pursue objectives that are different from the owners, creating a moral hazard. Agency issues can be minimized by proper monitoring and organization structures and by creating the proper incentives for managers and entrepreneurs (Jones, 2004).

Capital Structure and Liquidity

Tobin (1958) extended the work of Markowitz by adding a risk-free component to the market portfolio. Introducing the concept of leverage into a portfolio could enable that portfolio to outperform the market. Of greater concern to investors, Tobin tied together uncertainty, risk aversion, and an investor's preference for liquidity. Some investors who are risk lovers would accept lower expected return to have a chance at very high capital gains. Investors who are risk averse will only accept additional risk if they expect higher returns.

Tobin later extended his work to develop a theory of how enterprises and individuals decide which assets to hold and how much debt to incur. This theory, called portfolio selection theory, developed into a general theory of how real markets and financial markets interact. An essential part of this interaction is the way information is transmitted from the financial markets to households and firms, and the impact this information has on decisions to make investments and to spend. These decisions are ruled by examining risk and expected rate of return. While other researchers in this area were concerned primarily with making rational investment decisions, Tobin's research attempted to understand how people behave when they acquire goods and incur debt. For this work, Tobin was awarded the Nobel Prize in Economics in 1981 (Nobel Foundation, 1981).

One issue that exists in the beginning stage of enterprises is that gaps in funding or difficulties in obtaining capital can be created when inefficient markets exist. Many financial theories are based on the assumption that information about sources of funds and opportunities to invest those funds are openly and freely available both to entrepreneurs seeking funds and investors with funds to invest. In the segment of the capital market that interests angels, efficient markets do not exist. Asymmetric information and the inability in many cases to identify both sources and uses of funds make the angel segment of the capital markets inefficient (Wetzel, 1987).

Modigliani and Miller hold that the market value of an enterprise is independent of the financing decisions of that organization. Therefore, an optimal capital structure of the company does not exist (Modigliani & Miller, 1958). Modigliani and Miller assumed that both perfect financial markets and perfect information exist. In the state where the

capital markets are imperfect and asymmetric information flows exist, the cost of external finance is higher than using internally generated capital. Therefore, financing decisions under the latter state do have an impact on the value of the firm (Asada, 1999). If the suppliers of capital are uncertain about the future prospect of a firm, then the cost of capital from those external suppliers can impact the value of the firm leading to lower company valuation. Agency factors may also influence the cost of capital and the value of the firm. If a potential investor believes that the interests of the investor and the entrepreneur are misaligned, the company valuation could be lower or the deal could not happen (Pawlina & Renneboog, 2005). Cash flow problems and cash shortages can limit the financing options available to a firm. The timing of an investment and the funding of that investment can be constrained by friction in the capital markets (Gugler, Mueller, & Yurtoglu, 2004). Volatility in the cash flow of a firm increases the risk of funding shortfalls. Having cash enables a firm to take advantage of opportunities by reducing the cost of waiting and potentially missing a market opportunity (Boyle & Guthrie, 2003).

Firms that are not publicly traded have a small track record of market valuations, few public information disclosures, or little monitoring by analysts in securities firms. In addition, the liquidity of the equity of the firm is limited, and the amount of publicly available information about the firm is limited. Existing investors are constrained by their ability to trade equity, and new investors are limited by both their ability to find information on the firm as well as their ability to invest in securities that are not publicly traded. These factors help contribute to the possibility that the value of the firm is not properly established (Wiggenhorn & Madura, 2005).

Behavioral Finance

While many finance theories hold that investors and decisions are rational, one school of study deals with the idea that investors demonstrate irrational behaviors in spite of the information available. The field of behavioral finance has developed to research financial decisions using models that assume some of the participants do not act in a rational manner. Rationality implies that when one receives new information, one updates one's beliefs. Rational behavior also assumes that people make decisions that provide the highest degree of utility or usefulness. One or both these assumptions may not be present when some financial decisions are made (Barberis & Thaler, 2003).

Arnott (2005) examined many major financial theories of the past 60 years and noted that even the authors of some theories acknowledge that the theories are based on assumptions that may not be valid. While assumptions may not be entirely accurate, the theories do provide a reasonably good approximation as to how the areas they examine should work. There may be difficultly in determining the exact risk / reward amounts provided by the Capital Asset Pricing Model. Nevertheless, the basic idea that higher risk should be accompanied by higher return is still valid.

Psychology is a factor in decision making and financial decisions are not exempt from this influence. Reasons that irrationality finds its way into financial markets include overconfidence, optimism, wishful thinking, ignoring sample size, incorrect inferences, conservatism, holding onto beliefs for too long, establishing the wrong starting point, and existing biases. All these factors can influence the process by which investors and entrepreneurs view risk and make decisions that involve risk. An additional dimension involves probabilities. Many decisions assign probabilities to potential outcomes and use

some form of Bayesian calculations to predict the result. In reality, probabilities themselves are highly subjective and largely unknown (Barberis & Thaler, 2003).

The impact of this psychology leads to insufficient diversification of portfolios or to the use of relatively naïve methods in the attempt to diversify. One impact on investors concerning irrationality is the amount of trading, especially in public markets. If everyone had the same rational view of the value of an asset, potential sellers could not find buyers and vice versa (Barberis &Thaler, 2003). The impact of this behavior on angel investing has much to do with the initial valuations of deals and the downstream returns that angels expect or receive from the investments they do make.

Funding Models for Early-Stage Ventures

The venture capital industry in the United States started during the Great Depression when the president of MIT, Karl Compton, wanted to help MIT graduates find jobs. After World War II, Compton and the Dean of Harvard Business School invested funds from the endowments of MIT and Harvard in the first venture fund, American Research and Development (Preston, 2001). The focus of many of these firms was to exploit commercially the technologies developed for military use in World War II. The funds provided were called venture capital. The idea of providing money to start a new venture has a much longer history, even though the term venture capital was never used. An example is the relationship between Queen Isabella and Columbus (Varshney, 2003).

Most small and medium enterprises and entrepreneurs consider insufficient capital as a barrier to growth. Relatively little traditional venture capital goes to seed-stage companies and banks rarely lend to companies with little or no revenue and assets

(Aernoudt & Erikson, 2002). Most entrepreneurs prefer equity financing to debt financing when their personal assets are committed or exhausted. Besides the funding, entrepreneurs also search for additional value such as the network and experience of the investor (Paul, Whittam, & Wyper, 2007a). The need for angel investors has grown from the change that started in the late 1970s when the United States moved from a declining manufacturing and industrial base to an innovation and entrepreneurial based economy. From 1954-1979, the portion of the gross national product driven by Fortune 500 companies grew from 37% to 58% with employment from these companies reaching a peak in 1979 at 16,000,000 jobs. In 1996, the Fortune 500 represented only 10% of all jobs. From 1979 to 1996, the number of businesses created by the entrepreneurial economy increased 200%. These businesses, in turn, created 24 million new jobs (Sohl, 1999).

Entrepreneurial companies go through several stages of equity financing during their growth. To prove a concept or develop an idea, an investor provides small amounts of capital, called seed financing, in exchange for equity from the entrepreneur. Once the idea or concept is developed, investors provide startup financing to complete product development and conduct initial sales and marketing efforts. This stage takes a company up to about a year in age. Early-stage financing helps a company expand by delivering the company's products and services. The company may not be profitable at this time and is generally older than 1 year and less than 5 years old. Later-stage financing may be used for a major expansion of the company to increase sales or to prepare the company for an initial public offering (IPO) in the next 12 months. Occasionally additional rounds of funding are needed and that funding may be either equity or debt. These rounds fall under

the heading of later-stage funding (Sohl, 1999). Approximately two-thirds of the companies that reach an initial public offering (IPO) have received some form of funding from venture capitalists (Hwang, Quigley, & Woodward, 2005).

Current Findings

Angel Investing

Research into the financing models of entrepreneurial ventures is important. The companies started by entrepreneurs and funded by angel investors and venture capitalists provide a competitive edge for the United States. Even with the increasing globalization of the economy, the United States remains at the center of innovation (Harris, 2007). Business angels are the primary source of equity capital for young ventures. The capital and wisdom of angels are some of the most underutilized and the least understood economic resources (Freear, Sohl, & Wetzel, 2002). Providing funds to new enterprises has transaction costs, agency issues, asymmetric information problems, and risk relative to future returns. The characteristics of the party providing the funding can have a significant impact on the eventual outcome of the investment and on the company itself (Wall, 2007).

Business angels have historically posed problems for researchers. Many angels make only single investments and do not track the returns from their investments. Angels may invest for reasons other than solely economic gain and are not rational investors from the perspective of many economic theories (Baty & Sommer, 2002). The top reason is the potential for high capital appreciation and the expectation of higher-than-market returns. The second reason is the satisfaction that one feels from being involved in a startup business. The third reason is to establish future sources of income such as

dividends and fees. Secondary considerations are tax benefits or the support of new entrepreneurs. Most angels do not invest to support social causes or to attain recognition in the community. Angels see themselves as investors who play an active part in the company (Mason & Harrison, 2002a).

Estimates are that 400,000 angels are active in the United States. The angels invest in 50,000 ventures per year with a total investment of between $30 billion and $40 billion per year. Except for the years 1999-2000 in the dot-com boom, the amount of money invested by angels has exceeded that of venture capital firms (Cerullo & Sommer, 2002; Sohl, 2002). Some estimates indicate that angels have provided over 10 times more capital than venture capital firms (Baty & Sommer, 2002). Research performed by the European Commission in 1998 suggested the potential market for angel investments in Europe to be between 10 and 20 billion Euros. The total invested in seed and startup stages in 1999 was 3 million Euros (Aernoudt & Erikson, 2002).

Angel investors invest in situations where the capital is at risk. This risk is due to several factors. A high degree of uncertainty exists as to the future of the company. The ability and intentions of the entrepreneur asking for money can not be accurately measured. Extensive due diligence is constrained by the limited time and finances of the angel investors. The nature of the investments are illiquid and the ability to replace a failing entrepreneur may be limited (Kelly & Hay, 2003).

Angels may contribute both capital and expertise to startups. Business angels are the primary source of investment in entrepreneurial companies needing less than $500,000 in capital. Angel investing has increased in importance recently as the size of venture funds grows and venture firms turn towards more mature, later-stage companies

(Van Osnabrugge, 2000). Since 1995, the percentage of deals funded by venture capitalists in the seed and startup stage has never been greater than 10%, and the total funds invested has not been greater than 5% (Sohl, 2002). Venture funds invest primarily in later stages and the investments are larger (Sohl, 1999). The size of funds managed by venture capital (VC) firms has increased to the point which single investments under $2 million are not economically practical (Cerullo & Sommer, 2002). In 1998, there were four venture capital funds with over a billion dollars under management. In 1999, there were nine funds of that size, and in 2000, the number grew to 19. The 19 funds in 2000 invested more money than the entire venture capital industry in the years 1994 through 1996 in total (Sohl, 2002). Institutional investors typically make equity deals in the range of $25 million to $150 million (Cerullo & Sommer). Sohl (2003b) argues that two equity gaps exist as a result of the increase in size of venture funds. The first gap is the seed-stage gap between $100,000 and $2 million, and the second gap is between $2 million and $5 million. The second gap points to the need for angel groups and alliances and for co-investment of angels and venture firms. Angels fill these gaps by investing in deals that fall below the investment threshold of venture capital firms. Investments from individual angels can be as small as $25,000 or as high as $1 million with the range generally falling between $100,000 and $500,000. Groups of angels can raise the total investment to the $2 million to $5 million level. Minimum initial investment for a VC firm is typically in the $3 million to $10 million range (De Clerq, Fried, Lehtonen, & Sapienza, 2006; Lange, Leleux, & Surlemont, 2003; Linde & Prasad, 2000).

Characteristics of Angel Investors

Technically, an angel investor in the United States is an accredited investor according to the Securities and Exchange Commission. SEC Rule 501 of Regulation D defines an accredited investor as an individual who has a net worth of over $1 million or whose expected income is over $200,000 for an individual or $300,000 for a household. The number of angel investors in the United States is estimated to range from 250,000 to 400,000 while there may be over 6 million households that could be accredited investors (Linde & Prasad, 2000; Wong, 2002).

Morrisette (2007) synthesizes a profile of angel investors in the United States. Approximately 80% of angels are successful entrepreneurs who have invested in two or three companies with an average investment of $75,000. Approximately three quarters of the entrepreneurs provide some assistance to the startup in addition to the capital. The same percentage (70%-80%) invests primarily in new ventures in the area in which they live. Financial returns are important to the investor, and the angels enjoy the experience of building a new venture and helping the entrepreneurs.

Angels have different profiles from other types of investors. An angel investor is often an entrepreneur that has had a successful run in business and may have gained wealth through participation in an initial public offering (IPO), management buyout, merger, or other liquidity event. They have both the wealth and the experience to help young businesses grow (Wright, Westhead, & Sohl, 1998). Angels need to have an entrepreneurial profile to continue to be successful in their investing. Being proactive, innovative, and willing to accept risk are characteristics of an entrepreneurial orientation that angels need to possess (Lindsay, 2004).

Angel investors tend to share many characteristics. First, angels have experience working in enterprises where they gained both managerial and entrepreneurial experience. Angels range from 35 to 65 in age with the upper limit bounded by the time necessary to make an investment liquid. They have been part of a company with some liquidity event that provided the investment capital. Angels seek minority positions in the company in which they invest. Generally less than 25% of an angel's total assets are involved in early-stage investments. Angels still consider themselves to be entrepreneurs; and as such, they invest both money and time. Motivation comes from both financial returns as well as successfully building a business (Aernoudt, 1999; Erikson, 2007). The average angel has $335,000 invested in 4 companies (Wong, 2002). One disparity concerning angel investors concerns gender. Women in the US control approximately 51% of the wealth, and the number of women-owned firms in the US grew faster than the overall growth rate from 1997 to 2004. Women are not represented the same way in the angel ranks. Only 3%-7% of angels are women (Sohl & Hill, 2007).

Four trends stemming from the business and economic environments are driving angel investing. The emergence of new technologies and new markets presents opportunities for new entrepreneurs and the success of their companies. After a successful exit, some entrepreneurs become angels. The second trend comes from the strength in financial markets and increased availability of capital. The emergence of angels from the dark and the publicity they receive in the media have encouraged additional high net-worth individuals to become angels. Finally, the emergence of angel groups not only provides additional mindshare and a systematic process but also serves as training grounds for new angels (Linde & Prasad, 2000).

Some angels source deals through personal networks and referrals from friends, business contacts, and informal methods (Lange, Leleux, & Surlemont, 2003). Angel groups tend to have more organized and formal screening and sourcing methods (Cerullo & Sommer, 2002). Once an investment is made, angels open their personal networks to help the fledgling company. Those networks include other angel investors, professionals such as accountants and lawyers, scientists and academics, and other entrepreneurs (Holaday, Meltzer, & McCormick, 2003). In addition to money, business angels mentor their investments with expertise that is very valuable. This mentoring helps prepare the business for later stages of funding including traditional venture investments (Mackie, 2004). Providing the entrepreneur access to the angel's network of resources increases the chances of success for the startup. The angel provides additional expertise and access to resources that the entrepreneur may not be able to obtain at any price (Witt, 2004).

Angels prefer seed-stage and very early-stage startups. At these stages, angels can obtain better leverage with the limited funds they have to invest. Angels also contribute their expertise to help the company grow. This latter aspect contributes to the personal satisfaction of the angel. Individual angels tend to invest in industry segments in which they have expertise. Angels typically bring some functional expertise to the investment. This expertise is in senior management or in a functional area (Aernoudt & Erikson, 2002; De Clerq, Fried, Lehtonen, & Sapienza, 2006; Lange, Leleux, & Surlemont, 2003; Linde & Prasad, 2000). Early-stage investors can add value by supplying their portfolio companies not only cash but also help with strategy development, development of company culture, creation of a management team, access to potential customers, deal syndication, establishment of procedures, networking and support within an industry, and

preparation for exit (Pratch, 2005). Some companies are suitable for angel investments in that they may not be candidates for follow-on venture funding or may not require subsequent funding rounds (Mackie, 2004). Angels also bring contacts that come from experience in an industry. The connections between the social networks of the angels and the entrepreneurs provide access to resources that increase the chances of success for the startup enterprise. The connections in the network help provide access to both information and various forms of finance (Jenssen & Koenig, 2002).

Angels tend to spend time with the target company after making an investment. This time constraint often limits the number of deals in which an angel can invest. Many angels indicate that five or six companies are the limit with an average of 4 companies. Because of these time constraints, angels often limit their investments to the geographical area in which they live (Lange, Leleux, & Surlemont, 2003). Clustering investments in a geographic area also helps attract other investors and provide access to resources in the angel's networks (Preston, 2003a). The decision to invest only in local companies also serves as a substitute for many control mechanisms and a complement to the syndication and networking processes (Plant, 2007). Angels tend to depend on trust in the entrepreneur and management instead of formal control mechanisms (Wong, 2002). Injecting the expertise and influence of angels has a positive impact on the financial performance of the new organization. This impact comes from variety of influences such as participating on a board of directors or advisory board, acting as an advisor to management, making introductions to partners in the value chain, monitoring performance of the enterprise, and helping to address strategic issues (Nisar, 2005).

Angels want some exit strategy which is a procedure and time when an angel investment is returned with some profit attached (Holaday, Meltzer, & McCormick, 2003). From those exits, angels expect to make higher than market average returns. Very few studies have been performed that provided the actual returns from angel investing. The reported expected returns from angel investing range from 20% to 34%. This is in contrast to the S&P 500 with a 12% annual return and expected return from venture capital in the range of 35% to 45%. One should note that these are expected returns and not actual returns (Aernoudt, 1999; Morrisette, 2007). The length of time that an investment is held to liquidity can range from two to eight years with most expectations clustering around five years (Cumming, Fleming, & Schwienbacher, 2005; Morrisette, 2007). Other research showed that 1/3 of the angels expected to make less than 20% return, 1/3 expected to make 20 to 30%, and the 1/3 expected to make greater than 30%. In that same work, 84% expected to hold the investment seven years or less, with the majority in the range of 3-7 years (Feeney, Haines, & Riding, 1999).

Linde and Prasad (2000) characterize angels into four groups that have different roles in the building of companies. Each type adds different value and operates differently. Guardian angels play an active role by coaching and guiding the management team as the company grows. They invest both time and money. Guardian angels typically have both high relevant entrepreneurial experience and relevant industry experience. Operational angels have high industry experience but lower relevant entrepreneurial experience. This group of angels plays a key role in due diligence portion of the investment process, and they help new entrepreneurs through their networks in the industry in which the startup exists. Entrepreneur angels have startup experience but may

be investing outside their area of expertise. This group may depend on other angels for guidance, are seeking financial returns, and may wish to build their expertise in angel investing. Finance angels simply supply the funds for the investment and may also be investing outside their areas of expertise. This last group seeks only financial returns and does not wish to be involved in the operations of the startup. This last group tends only to participate in deals on an *ad hoc* basis and angels in that group are not systematic investors.

The assistance and knowledge that angels provide increase the chances of success of the new venture. Developing a network of resources, building the management team, raising capital, and preparing business plans are areas in which angels can provide resources. One important factor is the assistance maintained past the initial startup period and after the initial investment. The presence of post-investment assistance not only increases the chances of survival but also enhances the ability for the new venture to grow revenue and to create new employment. The knowledge that startup managers gain goes beyond operational knowledge. Managers gain a more strategic perspective of strategy and obtain better perspectives on how to exploit opportunities. Both lead to the determination of potential areas of competitive advantage in the areas of innovation and positioning within a market (Chrisman & McMullan, 2004). The selection criteria from the entrepreneur side should include the willingness of the investor to stay involved after the investment is made (Krell, 2005). Entrepreneurs should make a distinction between a simple investment and the desire for the angel to remain involved in the business, a situation that gives rise to the term smart money. This expertise may be more valuable than the investment and may be the key to attracting the angel (Holland, 2006).

The Investment Process

For a company to receive angel financing, the entrepreneurs starting the company need to make the company ready for funding. Such a decision is based on the entrepreneurs' perception of the growth of the market, entrenched competition, employment growth, and perceived potential customer needs and wants. Generally, outside investors do not seek out companies who are not actively searching for funding. The process to match early-stage enterprises and outside investors contains many steps each consisting of multiple decisions (Eckhardt, Shane, & Delmar, 2006).

Angels will source deals in industries that represent potential for growth, later stage investment (if necessary), and foreseeable exits. In 2005, the industries that attracted the largest angel investments were healthcare services and medical devices, software, and biotech. Other sectors attracting investment were electronics and hardware, media, industrial and energy, and information technology. In 2005, only 10% of the deals presented to angels received funding (Sohl, 2006). The selection of industries has remained consistent through the first half of 2007 with the top 3 industries the same. One noticeable shift is the increase in investments in the energy and environmental sector. One other change from 2005 to 2007 is that the yield rate on potential investments moved from 10% to 19% (Center for Venture Research, 2007).

The decision to make an investment by an angel investor consists of three stages. The first, deal screening, matches the nature of the venture to be funded with the investment criteria of the angel. The top criteria are often the quality of and trust in the entrepreneur by the potential investor. Other criteria include the stage of the business, the product area, underlying technology, and the place where the business is located. The

source of the deal also plays a factor in the screening of the deal. Angels are more likely to consider in a deal referred from a trusted source. The second stage, due diligence, evaluates the quality of the deal. Deal quality is based on management track record, business plan assumptions, quality of information about markets and products, growth prospects for the business, stage of development of the products, and exit strategy. The third part of the investment process is to negotiate a deal that is agreeable to both the entrepreneur and the investor. Terms that are typically negotiated are valuation or price, structure of the deal, composition of the board of directors, direct investor involvement, remuneration and other payments, veto rights, and information and representation rights (Linde & Prasad, 2000; Mason & Harrison, 2002a). Most angels perform the investment evaluation process themselves. A typical period for conducting the evaluation ranges from 21 to 60 days (Stedler & Peters, 2003). While this process may seem thought out and planned well, for most individual angels or informal groups of angels, the process may be anything but that in reality. Asking for additional information, dependence on other angels, understanding the other parties in the investment, and falling short of the amount needed for the investment may derail a deal at almost any time (Paul, Whittam, & Wyper, 2007b).

Potential investors examine different types of information during the due diligence process. The entrepreneur needs to communicate the future of the enterprise and the risks inherent in the new venture. Items such as expectations, milestones, opportunities, the environment, and the business model comprise this part of the process. A second major type of information establishes credibility. Information about the management team, plans for major functional areas, vulnerabilities and obstacles,

financial projections, and deal structure help the potential angel assess the ability of the management to succeed and bring the venture to an exit (Hindle & Mainprize, 2006).

Some angels place more importance on the entrepreneur in the selection of investments rather than any other factor. Factors such as the ability to manage, trustworthiness, leadership, charisma, and reliability are critical in the eyes of the angel (Aernoudt, 1999; Sudek, 2006). A strong management team with an average technology is more likely to succeed than an average management team with a first-rate product (Preston, 2001). Angel investors consider the amount of money the entrepreneur has invested and the part of the entrepreneur's net worth that investment represents in judging an entrepreneur and the new enterprise (Prasad, Bruton, & Vozikis, 2000). While confidence of the entrepreneur can be a positive sign, too much hubris and overconfidence can lead to the ultimate failure of the enterprise. Potential investors look beyond confidence and charisma to search for management and organizational development skills (Hayward, Shepherd, & Griffin, 2006).

Given that the entrepreneur is credible, a high probability exists that angels will invest in a company that has a competitive advantage, such as protected intellectual property or proprietary technology that can capture a large market. While these companies could be candidates for larger venture investments, angels may help build out the technology, the management team, and the board of directors. Angels may also help companies meet certain milestones that later stage VC funds require for funding (Linde & Prasad, 2000).

Reasons that angels accept opportunities include the track record of the management, realistic assessment of the opportunity by the management team, and

integrity and openness. Reasons related to the opportunity itself include the prospect for high financial gain, an exit strategy that is likely to occur, and the opportunity for involvement by the angel (Feeney, Haines, & Riding, 1999). Intangibles play an important role in the decision to invest. Besides the management team, factors such as core competencies, business knowledge, personality of the entrepreneur, and realistic expectations from the entrepreneur impact the final decision to invest. Tangibles such as industry, geographic location, and product may serve as the first filter to screen potential deals. As due diligence proceeds, the intangibles become more important and provide motivation to invest (De Leon & Guild, 2003).

The reasons that angels reject investments are not the converse of the reasons that they invest. Deals are most often rejected because of gaps or weaknesses in the management team and because of incomplete or flawed marketing plans. Marketing problems also arise in the attempt of a new company to enter a market with entrenched competition or where significant problems in the distribution channels are present. Other issues include unrealistic financial assumptions by the entrepreneur and the structure of the deal between the angel and the entrepreneur (Feeney, Haines, & Riding, 1999). Absence of a viable exit and lack of trust in the relationships with the founder and management team are also cited as reasons to reject investments (Sudek, 2006).

Risk Management

Risk comes from the early Italian word *risicare* meaning to dare. One of the implications of this origin is that risk has choice and not predetermined outcomes. Risk can be defined as exposure to a state where the outcome is uncertain. Risk has two components – uncertainty and exposure. Uncertainty exists when one does not know

whether a proposition is true or false. Uncertainly can also exist if one does not know about the proposition. In order for risk to exist, the uncertainty needs to be accompanied by some sort of exposure. That exposure also needs to have some degree of immediacy. Risk exists when both the outcome is uncertain and the outcome can have some impact on a person or other entity. In reality, risk, much like Einstein's definition of time and space, is relative and depends on one's state and perception (Holton, 2004).

Angels are faced with different types of risk: operating risk, market risk, and agency risk (Proimos & Murray, 2006; Wright, Westhead, & Sohl, 1998). At early stages, almost any predictions of organization performance are wrong. Business and financial forecasts and the ability to base investment decisions on those forecasts have little basis in reality. Investors and entrepreneurs usually have much different opinions on the readiness of the enterprise to receive investment (Proimos & Murray, 2006). Asymmetric information and uncertainty problems contribute to risk (Wong, 2002). One form of an agency problem in angel investing is that the entrepreneurs misrepresent their skills and abilities. A second form occurs when the entrepreneurs do not put the proper amount of effort into the task of running a company. The third form is that entrepreneurs take on more risk than is necessary because the money at risk is not theirs (Kelly & Hay, 2003). These agency issues can cause managers to either overspend too quickly due to lack of focus or to spend too little and miss potential investment opportunities. The presence of outside investors and other stakeholders helps moderate this risk (Pawlina & Renneboog, 2005).

Risk also has a time component that can be coupled with an opportunity component. Risks that could possibly close a new venture are present. In this case, the

angels and the entrepreneur have lost their investments. Such risks are usually relatively short term. A longer term risk arises when another investment or opportunity develops and the investor or new enterprise does not pursue what could be a more profitable opportunity. Most of the concern in managing risk is focused on the former situation. Many entrepreneurs and angels would consider the latter case part of the task of discovering and managing new opportunities (Das & Teng, 1997).

One component of risk, uncertainty, impacts the decision of an entrepreneur to enter a market or to create an enterprise. Real options theory suggests that uncertainty only has an influence on those decisions that can not be reversed. At the time entrepreneurs begin to commit both human and financial capital to the formation of an enterprise, many decisions become irreversible and risk is created. Entrepreneurs only create new ventures when the belief is present that the venture will create adequate compensation for those risks. Typical methods to reduce risk, such as diversification, are not available to most entrepreneurs. Factors that create investment risk are the target industry, location of the enterprise, and the characteristics of the entrepreneur. Investors need to manage timing as well as other factors that generate risk. The amount of funding provided by angels to entrepreneurs depends on several factors. If the angels are faced with large amounts of uncertainty, that uncertainty affects the average investment per investor, total funding, and number of investors in a deal. Uncertainty in the eyes of the investor comes from the makeup of the management team, the amount of revenue currently being generated, and the prior experience of the entrepreneur (O'Brien, Folta, & Johnson, 2003).

Risk in angel investments is managed in several ways. Angels reduce the possibility of possible agency issues by forcing entrepreneurs to hold larger investments in their own firm. This larger investment should serve as an incentive to align the interests of both the entrepreneur and the investors. Generally less than 25% of the equity of the firm is given up to angel investors by the entrepreneur (Wong, 2002). The proportion of an entrepreneur's net worth that is invested in a deal is a sign to the potential investor. Low investment by the entrepreneur may indicate that the entrepreneur has little faith in his own efforts (Prasad, Bruton, & Vozikis, 2000). During deal negotiation, the expected rate of return through the deal valuation is adjusted to compensate for the perceived risk. Instead of providing funding at the beginning of the deal, payment schedules, called tranches, will be established and dependent on the venture meeting specified milestones. Investor rights and obligations of the entrepreneur will be established in the deal structure. The deal also specifies methods of monitoring. Monitoring ranges from a seat on the board of directors to regular reporting schedules. Business angels tend to stay involved with the entrepreneur after the deal is completed (Kelly & Hay, 2003). One method of managing risk in early-stage investments is to make the investment or to release the funds in stages. In some cases, valuation of the deal is dependent on success in meeting established milestones (Herath & Park, 2002).

A form of agency risk emerges as the new venture begins to grow. In some cases, the founding entrepreneur becomes ineffective at managing size and growth beyond the initial focus of the organization. Both very high growth and low growth can lead to pressure from outside stakeholders for a change in top management. Those changes may be made by either supplementing the existing management team or replacing key

individuals such as the founders. The presence of outside investors, such as angels, increases the pressure for changes in management. The entrepreneur is effectively trading control of the company for funding and resources. While changes do not happen in all cases, outside investors do see management changes as a method to manage their investment risk (Boeker & Wiltbank, 2005).

Serial angels, defined as having made three or more investments, become less concerned with agency risks and more focused on market risks. One method of reducing market risk is for angels to focus on sectors in which they have experience and skills. This focus helps not only reduce risk with the deep knowledge of the sectors but also by uncovering more opportunities through their business and personal networks. Serial angels may also have greater access to funds through their ability to co-invest and to syndicate deals (Wright, Westhead, & Sohl, 1998). Angels who have made five or more investments are more likely to syndicate deals and join in groups to help look for opportunities and to reduce risk (Lindsay, 2004).

Venture Capital Investing vs. Angel Investing

Like angel investments, venture capital represents illiquid investment in private startups and other companies with high growth potential. Venture capitalists (VCs) also assume substantial risk in exchange for potentially high returns. Most VCs do not invest only in early-stage companies and may prefer investing in more mature companies. VCs invest in companies in stages based on product readiness, revenue growth, and market penetration. VCs provide several stages of funding and assist the companies to develop an exit strategy (Xu, 2004). Angels and VCs do form a complementary relationship that benefits both sets of investors. Angels provide both startup capital and expertise to the

point that the new company needs more than the angel can provide. At this point, the VC steps in to provide the additional capital and, in some cases, expertise that the firm needs (Wall, 2007). The reluctance of VCs to fund early-stage investments is more significant when one moves away from Silicon Valley and the West Coast. East Coast VC firms prefer more risk-averse investments and have less tolerance for failure than their West Coast counterparts, limiting the capital from VC firms available to startups (Marshall, 2007). The number of companies receiving venture investment is relatively small with the number peaking at 8,068 in 2000 at the height of the dot-com boom (Umesh, Jessup, & Huynh, 2007).

One important distinction between angels and venture capitalists is the source of funds. Angels are high-net worth individuals investing their own funds (Lange, Leleux, & Surlemont, 2003). Not only do angels invest their own funds, angels are also personally exposed to the risk in the investment including the risk of total failure (Lazzeretti, De Propris, & Storai, 2004). Venture capital firms do not sit at the beginning of the supply chain for investment capital. Instead, these firms act as intermediaries between people who supply capital and those seeking capital to create new ventures. Sources of capital include pension funds, banks, insurance companies, some high net-worth individuals, and other entities seeking potentially higher-than-market returns that are willing to assume the additional risk. These entities providing capital assume the role of limited partners in a fund. VC firms provide the limited partners expertise, help in sourcing and evaluating new enterprises, and provide opportunities to invest that the limited partners could not exploit on their own. For this work, VC firms are compensated by management fees as

well as proportionally larger share of the profits from the investments (Barnes & Menzies, 2005).

Venture capitalists rank high at managing the effects of asymmetric information and reducing agency issues. Like angels, VCs want to add value to the investments they make. Most VCs also prefer to invest in enterprises that are close to their locations. Unlike many angels, VC funds may be of sufficient size in terms of investment dollars and number of investments to achieve some degree of diversification. One issue that VCs face is the amount of time a VC can spend with a company. Like angels, the amount of time decreases as the number of investments increase. Increasing the number of investments also dilutes the potential impact of the return on the entire fund. These two forces have driven VC funds to increase the size of each individual investment that, in turn, limits the number of early stage investments the fund can make (Cumming, 2006).

Venture capitalists and business angels differ in the investment criteria and relationships with the companies they fund. One of the risks that exists in any organization is agency risk that the goals of the owners and the managers may diverge. Agency problems are caused by the lack of alignment of goals and verification of those goals as well as conflicts in sharing the risk between the investors and the managers. Venture capitalists tend to rely on the principal-agent approach to determine the optimal contract including control mechanisms between the owners and the agent. Business angels rely on the incomplete contracts approach to establish and modify controls after the investment. Much of this control comes from the active involvement of the angel in the new venture. Because much of what occurs in an early-stage venture cannot be

anticipated, a close relationship between the angels and the investors helps reduce agency issues (Van Osnabrugge, 2000).

Angels do not normally insist on the same level of control as a venture capitalist. Angels are sometimes active investors with board seats and provide help and direction in informal mentoring and counseling roles (Lange, Leleux, & Surlemont, 2003). As angels make more investments, the concerns of the angel investors move from agency risks to market risks. Serial investors tend to make investments in sectors in which they have some experience, and they tend to seek out other investors with similar goals and ideas. Serial investors also look for markets with less competition, become less involved in the management of the company, and loosen their geographic requirements (Prasad, Bruton, & Vozikis, 2000; Van Osnabrugge, 2000).

Angels do tend to be more flexible in their financing criteria than venture capitalists if they have some non-financial aspect to the investment they find appealing. The same non-financial factors will also drive the angel to take more risk than pure financial considerations would warrant (Lange, Leleux, & Surlemont, 2003). In some sectors, angels may have a personal reason for investing, such as investing in a biotech startup after losing a loved one to a disease with no known cure such as cancer or Alzheimer's (Holaday, Meltzer, & McCormick, 2003).

Venture investors tend to look at criteria such as markets, products, and the risk associated with those factors. Angels tend to place the entrepreneur at the center of the decision process. Venture investors tend to make decisions based almost entirely on financial returns (Aernoudt, 1999). Non-financial factors become more important to angels because many angels may lack the resources to perform the same level of analysis

as a VC firm. At the early stages of an enterprise, the few assets that exist are knowledge-based and intangible. This lack of assets shifts the focus of the angel back to the entrepreneur (Paul, Whittam, & Wyper, 2007b).

In some cases, VC firms do fund early-stage companies and supply not only funding but also expertise and infrastructure. In these cases, the VC firms assume the same role as angels. Evidence shows that this involvement has a positive impact on the performance of the funded firm. The funded firm benefits by receiving help from the VCs in setting strategy, negotiating legal concerns, uncovering customer and competitor information, and surviving crises (Flynn & Forman, 2001). Like angels, VCs at the early stage provide linkages to networks, moral support, advice to management, and other resources (Varshney, 2003). Entrepreneurs receiving funding, support, and access to resources at early stages find that their companies are more likely to grow faster and to have access to successful exits (Plant, 2007).

Angels should eventually help firms obtain venture financing (Lipper & Sommer, 2002; Sohl, 1999; Sorheim, 2005). Work by Madill, Haines, and Riding (2005) showed that 57% of the firms that received venture capital had earlier been funded by angels. Only 10% of the firms not funded by angels eventually received venture capital. Besides capital and expertise, angels also provide access to their networks and help perform a type of accreditation process for the later stage venture capitalists. Angels and VCs collaborate in other ways. Sometimes the two will co-invest in deals in addition to the sequential or staged investing in which the two groups are involved. Angels can also become limited partners in venture capital funds. Angels and VCs often refer deals to each other (Madill, Haines, & Riding, 2005). The availability of funding at later stages of

a company is important in that entrepreneurs almost always underestimate the amount of money needed to make the company successful (Prescott, 2001). One difference between angels and VCs is that angels do not typically invest in later rounds. As subsequent rounds of financing are closed, the proportion of the company that is owned by angels diminishes (Wong, 2002).

One difference between venture capitalists and angels is that angels may invest in deals that are not appropriate for venture capital funding. Some businesses may be good ventures but will never grow to the size to provide the returns necessary for a venture fund. Some companies, called lifestyle companies, support the founders with comfortable living and may generate cash. Some angels will invest in those lifestyle companies for the cash flow. These companies will not experience an exit that would be necessary for a venture fund (Linde & Prasad, 2000).

Another difference is that angels do not need to invest. Angels typically invest less than 30% of their net worth in early stage companies. Venture capitalists manage other people's money and are compensated for that activity. Venture funds need to invest all their money. Venture capitalists promote themselves for deal flow and investors. Angels who are outside angel investor groups typically do not promote themselves. Angels also typically have more operating experience than venture capitalists. Some VCs came to their positions directly from business school and do not have significant experience building and managing a company (Linde & Prasad, 2000). One issue that venture capital funds face in making small investments is the relatively high fixed costs relative to the size of the investment fund. The fixed costs reduce the return to fund

investors and force the VCs to search for deals where they can invest larger amounts (Murray, 1999).

Depending on the availability of liquidity events, the difference between angels and VCs may be less noticeable. Liquidity is the ability to exchange assets with low explicit and implicit transaction costs in relatively frictionless markets. When the financial markets provide more possibilities of exits, such as initial public offerings, VCs tend to invest more in later stage companies. Where the market has high liquidity risk and IPOs and other exits are not generally available, VCs tend to invest in projects earlier in their life cycle similar to the actions of angels. VCs also tend to syndicate deals less often when low liquidity risk is present in the financial markets (Cumming, Fleming, & Schwienbacher, 2005). Besides the stage of investment, the total amount of funding provided by VCs does not remain constant over time. Total investments follow the level of IPOs performed during the same period. When a company does finally go public, having a record of VC funding has some benefit. The median size of the proceeds from an initial public offering is higher for VC-backed firms than for firms not receiving VC funding (Jory, Madura, & Susnjara, 2007). VCs are not immune from making poor investment decisions, even with companies they know and understand. Bias and the unwillingness to process new information lead VCs to provide funding in subsequent stages to their portfolio companies who are headed for failure (Birmingham, Busenitz, & Arthurs, 2003).

After the dot-com bust and the events of 2001, venture capitalists virtually abandoned the seed-stage and early-stage funding sectors. VC firms raised large amounts of money in the years before 2002 (Jensen, 2002). The abundance of VC funds

exaggerated the dot-com boom and bust cycle. New ventures without the potential for sustainable growth and sufficient cash flow created business models that could not be sustained. These business models caused new ventures to rely heavily on venture firms for financing (Gittell & Sohl, 2005). During the same time, the IPO market almost completely shut down. VC firms encountered a situation in which their portfolio companies needed both additional funding and management attention. VC firms raised larger funds at that time than at any other time in history. Given the time and management constraints that the VC firms faced, the firms were required to invest larger amounts in each deal, forcing the investments to be later stage deals. During the same time, internal rates of return (IRR) declined, forcing venture capitalists to reduce risk and migrate towards later-stage deals with lower risk. Later-stage deals also put the VCs closer to liquidity events, which helped meet the concerns of the investors in the venture capital funds. This gap in funding opened up opportunities for angel investors (Jensen). Since that time, investors have expected higher financial standards from companies contemplating an IPO. Venture capital funding is now provided to companies that can demonstrate viable financial models, revenue streams, customers, and other fundamentals (Jory, Madura, & Susnjara, 2007).

One variation on the relationship between angel investors and later-stage venture investment involves the venture departments of large corporations. Some companies invest in new companies in order to obtain access to new technologies, patents, and intellectual property. These companies establish departments that act much like independent venture capital firms. Corporate venture capital (CVC) is the process of a larger company making a direct minority investment in a smaller, unlisted company for

strategic reasons, financial gains, or social responsibility. CVC is close to angel investing in that funding from corporations is often accompanied by expertise, introductions, and other non-financial assistance. Companies are motivated to engage in CVC to create synergies between their core business activities and the companies in their investment portfolio. These synergies come from developing candidates for later acquisition, tracking technology that may become threatening or disruptive, creating alliances with customers or suppliers, and having an influence on the codification of new technology standards. CVC may be used to enter new markets, to acquire new skills, or to develop emerging markets. Corporate venture capitalists usually invest along with venture capital funds (Aernoudt & San José, 2003; De Clerq, Fried, Lehtonen, & Sapienza, 2006; Markham, Gentry, Hume, Ramachandran, & Kingon, 2005).

Enterprises in industries characterized by weak intellectual protection are likely to have corporate venture arms. Firms in industries such as technology, in which the speed of product innovation and introduction coupled with the relatively short life span of a product, tend to have corporate venture programs. These firms also tend to have high cash flow and a culture that can easily absorb new ideas, products, and acquisitions (Dushnitsky & Lenox, 2005). Corporate venture funds may account for approximately 20% of all types of venture funds invested (Reffner, 2001). Government agencies also realize the potential of investing in early-stage ventures with both NASA and the Central Intelligence Agency starting corporate venture funds (Malakoff, 2004; Hutchinson, 2006).

In the United States, some states are recognizing the need for angels to fill the gap left by the exit of venture capital funds in the seed and early stage investment area. Some

states provide tax credits, support for angel groups, and other incentives. One concern of states that do not have high levels of venture investment is that entrepreneurs in those particular states will move to states with higher levels of support. Those states with lower levels of investment would like to have angels contribute to the economic development and use different incentives to have angel-supported entrepreneurs remain. Angel investing helps to promote innovation and economic development (Lipper & Sommer, 2002).

Emergence of Angel Investment Groups

Starting in the 1980s, primarily in Silicon Valley and Boston, angel investors began to become more organized and professional. Before the mid 1980s, entrepreneurs and angels met through informal networks, referrals from business people, lawyers, or professors. Angels making decisions as individuals had limited resources and opportunities. Due diligence of an investor acting alone tended to yield inconsistent results, especially when an angel engaged in an opportunity outside his area of expertise. The time and cost of crafting legal agreements were high because so few deals were done and there was little shared expertise. Driven by the technology industry, angels began to join in groups, many with a professional manager or staff (May, 2002). Silicon Valley contains a network of organizations such as venture capitalists and angel groups, investment banks, corporate groups, and legal firms whose sole function is to create other businesses. This network helps contribute to the dominant position of Silicon Valley in the world with respect to innovation and wealth creation (Adams, 2005). Angel organizations are forming at an increasing rate, and angels are more inclined to operate in the open as a part of those groups (Lipper & Sommer, 2002).

Angel investor groups provide benefits to both the angels and the entrepreneurs. The information barriers in the angel investment arena cause the market to operate inefficiently. These barriers limit the flow of capital among entrepreneurs and potential investors (Mason & Harrison, 2004; Yates, 2004). Investors come together in groups to help overcome the information inefficiencies involved the selection and evaluation process (Sorheim, 2003). Angels in groups have access to better deal flow, can share in due diligence, manage the investment process more effectively, receive better deal terms, and gain access to capital from other angels. Together, these factors contribute to effective learning, expansion of the angel's personal networks, and more productive investing (Yates, 2004). For the entrepreneur, angels are easier to locate, the deal cycle takes less resources to manage, and the entrepreneur has access to larger networks of resources (Sorheim, 2003; Yates, 2004).

Most angel groups have a formal investment process. Starting with online application processes, a committee covering a subject area then performs a preliminary screening. From the screening process, companies are selected to present to the entire group. If investors are interested, a due diligence process is performed and the members can view the results online. Term sheets are negotiated by the due diligence team (Payne & Macarty, 2002). Some angel groups invest as a group and could be considered as venture funds that target early-stage investments. In other groups, members collaborate on sourcing and due diligence, but investments are made by individuals (Wong, 2002). Many angels depend on the social aspects of the groups as much as the financial and market criteria to guide investment decisions (Sorheim, 2003).

A benefit of angel groups is to recruit and help train new angels in the investment process. Many angels bring expertise and capital to a group yet they lack a fundamental understanding of the investment process. Not only are these angels unable to locate and invest in potential opportunities, the resulting bad investments may discourage a new angel from making additional deals and could withdraw capital, resources, and expertise that is needed in the marketplace (Aernoudt & Erikson, 2002; San Jose, Roure, & Aernoudt, 2005).

The creation of networks can also help manage risk. The more formal networks can provide more resources to the investment process and to the startup after the investment made. Financial resources, management skills, and new opportunities may be more easily obtained through the networks that angel groups provide. Networks reduce the amount of time and effort needed to obtain resources, which, in turn, can reduce the risk involved in a startup (Das & Teng, 1997). Pooling funds and sharing due diligence and negotiating strategies is also a part of group investing (Lange, Leleux, & Surlemont, 2003). Groups also help angels attract better deals with the potential for generating higher returns. The volume of potential deals has increased in the past few years. Angel groups help potential investors effectively deal with the larger number of deals (Ewing Marion Kauffman Foundation, 2006).

When potential investments exceed $500,000, most angels find it difficult to fund the entire investment. By organizing into groups, deal syndication is easier and risk is lowered for the individual angels. Groups also help fill the role of providing expertise. An entrepreneur may have access to many different people with different skills (Lange, Leleux, & Surlemont, 2003; Pollock & Scheer, 2002). This syndication process is moving

beyond collaboration of local angels to angel groups in different locations, and even different countries for sourcing, evaluating, and funding new enterprises (Flanigan, 2007).

Research by the Ewing Marion Kauffman Foundation (2006) found that in 2005 the average angel group invested $1.45 million with an average of $266,000 per investment and $387,000 per company. 250 angel groups were functioning in the US in 2005 with the average length of time in existence being 4.3 years. The average angel group had 41 members and the average investment per angel was $33,236 with an average number of 5.46 investments in 4.49 companies.

Angel groups are also beginning to collaborate to share best practices and refine their internal business practices (Franks, Geshwiller, Hudson, & Preston, 2003). These best practices include managing member participation by encouraging involvement in the operation of the group, fostering participation, and developing programs to help new members. Best practices also involve the entrepreneur to create effective presentations, to set standards for investments, and to provide feedback for the entrepreneur. Angels find that groups also help to increase the effectiveness of communications with external stakeholders, to provide a haven for investors and entrepreneurs to discuss plans, and to develop valuations for investments that are realistic from the perspective of both the investor and the entrepreneur.

A 2004 study from the OECD recognized the potential of angel groups and recognized that the lack of capital after the dot-com bust was limiting economic growth. Providing better access to angel capital was one of the recommendations from the work. More specifically, creating linkages among local and regional angel groups, developing

national initiatives, and fostering connections between business incubators and angel groups were high-ranking recommendations. The report also recognized that the support services that angels and other advisors can provide enhance the investment appeal of new ventures (Baygan, 2004).

Angel Investing Outside the United States

In general, venture investing outside the United States is subject to different environmental factors ranging from governmental regulations to cultural norms. These factors create different investment patterns and results (Bruton, Fried, & Manigart, 2005). The first examination of angel investing in Great Britan was performed in the early 1990s, about a half a decade later than in the United States. In 1999, the first study of the German angel market was undertaken (Stedler & Peters, 2003). One issue with angel investing in the technology sector in Europe is the lack of angels with operational experience in the technology sector (Mason & Harrison, 2003). One common term used for more formal groups of angels in Europe is business angel networks (BAN). Most groups are regional, with some groups operating on a national basis in some European countries (Aernoudt & Erikson, 2002). Some European governments, such as the UK, are realizing that angel groups can help accelerate business and economic growth. Those governments are enacting fiscal and economic policies to make early-stage investing more attractive for angels (Clarke, 2005). In 1998, the European Commission took an active role in the creation and promotion of business angel networks. In early 2006, 282 networks existed in Europe with 101 of those groups located in the UK (Aernoudt, San Jose, & Roure, 2007). An interesting difference in investing comes from Germany where two measures other than return are used to measure the success of investment – job

growth by the firm and the ability of the firm to stay in business (Engel, 2004). In German-speaking countries, angels add little if any value in co-invested deals from the perspective of venture capitalists in those countries. VCs in Germany do not believe that business angels reduce risk regardless of the profile and background of the angel. Questions about the rates of return with and without angels also arise from VCs, leading to the idea that an unhealthy environment for angel investing exists in Germany (Heukamp, Liechtenstein, & Wakeling, 2007). Changes in both the economic environment in Sweden, along with the emergence of the Internet and other technologies, have driven the emergence of angels and additional investment opportunities in that country (Mansson & Landstrom, 2006). Early stage investing in Spain tends to flow toward later stage companies. The Spanish government has created public investment funds to provide capital to early-stage enterprises (Pintado, de Lema, & Van Auken, 2007).

Early-stage investing in Argentina is relatively new due to the recent economic developments in that country. Entrepreneurs in Argentina require higher levels of funding to start new businesses, and angels in Argentina help provide those higher levels of funding. Other than deal size, Argentinean angels mirror those in the U.S. and U.K. (Pereiro, 2001). The National Angel Organization in Canada recognized that Canada is lagging in the development of new enterprises and in the ability to scale those enterprises for long-term success. Canadian angels are attempting to help fill the gap in capital and expertise (Nixon, 2003). The Canadian government has recognized that securities regulations were limiting investments by angels, and in 2002 lifted many of the requirements and regulations (Robinson & Cottrell, 2007).

Angels are practically unknown in Japan (Nishizawa, 1999). Entrepreneurs are also not common in Japan due to the large stigma associated with failure in Japan (Preston, 2001). Singapore has a relatively large angel investment market. One factor in Singapore that guides angel investing is that the angel and entrepreneur are personally acquainted. Only 2% of angels surveyed invested in a business in which they did not know the entrepreneur. Another distinction is that the size of the individual investments made is small, less than $20,000. Only 10% of angels invested more than $100,000 (Wong & Ho, 2007). The rapid growth of business in China has given rise to the business angel movement in that country. The low cost of starting a new venture in China places financing targets within the range of angel investors. Angels in China have similar profiles to those in other countries. Foreign angels are taking interest in China due to the potentially high growth in that market. Unlike other countries such as the U.S. where angel capital exceeds venture capital, in 2004 angel capital was only 8% of the capital invested. Most angel capital in China is directed toward the technology sector (Tingchi & Chang, 2007).

Barriers in Angel Investing

Barriers to angel investment include business plans of poor quality, tax regulations in some countries, lack of transparency between investors and entrepreneurs, geography, regulatory and legal issues, and product areas (Aernoudt & Erikson, 2002). The fear of loss of control by entrepreneurs and the lack of willingness of the entrepreneur to work with the investors are also cited as reasons for the angel not to invest (Harrison, 2005). Angels report that the quality of investments they review is generally poor. This poor quality prevents angels from investing as much as they would

like (Mason & Harrison, 2001). Angels will reduce or reject investments based on lack of trust of the entrepreneur and the management team. Good ideas by themselves are not enough for an angel to fund the venture. Many ventures are not funded because the entrepreneur can not find or effectively communicate a viable potential exit strategy (Sudek, 2006). Many entrepreneurs are simply unaware of what angels require in presentations and due diligence. Entrepreneurs need to anticipate and understand the requirements of the angels before requesting funding from those angels (Mason & Harrison, 2003).

One challenge is that angels cannot make as many investments as they desire because of the difficulty entrepreneurs have in locating business angels. This invisible nature of angels causes an information problem which prevents the funds from reaching the entrepreneur. This information problem causes both the entrepreneur and the investor to incur high costs in searching for potential deals. Both parties can become discouraged and drop out of the market robbing an investor from making a potential deal and the entrepreneur from the desired capital (Mason & Harrison, 2002a).

Once an investment is made, angels spend time with the management of the company. Because angel investing for many is a part-time activity, the amount of time available to help portfolio companies is relatively small. The amount of angel investing performed may be limited more by time constraints than capital constraints (Mason & Harrison, 2002a).

Returns from Angel Investing

One standard for measuring financial return is internal rate of return (IRR), the discount rate that equates the present value of the expected cash outflows with the present

value of the inflows of cash (Kaplan, 2003). The few existing studies of angel investment returns use IRR as a measurement of investment and portfolio return (Aernoudt, 2005; Mason & Harrison, 2002b; Wiltbank, 2005). Studies define different independent variables that influence IRR including the number of investments made by an angel, investment experience, entrepreneurial experience, number of investments made at the early stage, amount of due diligence, relationships, number of co-investors, and amount of time spent with a company after the investment is made. One issue with using IRR to track angel investments is that angels do not track IRR in a consistent manner, and many do not track return rates at all (Wiltbank, 2005).

Few studies have been made to examine the returns from angel investing. Recent studies have been performed by Wiltbank (2005) in the U.S. and by Mason and Harrison (2002b) in the UK. The latter studied 127 angels who made 128 investments that had reached an exit. Their research indicated that the investment results were highly fragmented with 34% of the exits being a total loss of invested capital, 13% at a loss somewhere between total and 0, but 23% of the results with an IRR of 50% or better. Average holding time for the investments was 4 years. Wiltbank (2005) found that 2/3 of angel investments fail while 20% of the investments returned an IRR of over 100%. In Wiltbank's sample, successful investments returned 2.9 times cash in an average 5.8 year holding period. Aernoudt (2005) reported returns ranging from 25% to 80%. Aernoudt qualified the returns reported by indicating that the returns depend on future company revenues and do not reflect any actual cash payments during the life of the investment.

In November 2007, Wiltbank and Boeker (2007) released the results of a survey of 539 angels whose investments have provided 1,137 exits. That research found that the

average return on investment was 2.6 times with a holding period of 3.5 years resulting in an IRR of approximately 27%. Average IRR may be a misleading number when describing performance. Over half the investments surveyed returned less than the initial capital invested, and only 7% of the exits returned 10 times or more. That research also revealed three factors that have an effect on investment performance. First, the more time that angels spend doing due diligence, the greater the return from the investment. The more experience an angel has, the greater the return. Finally, angel activities such as mentoring, access to networks, coaching, and performance monitoring led to greater returns. The companies in which angels invested were early stage with 45% of the companies having no revenue stream at the time of the investment.

Conclusions

Angel investing may represent somewhat of an enigma for researchers in the finance field. Many of the well accepted theories concerning risk and return, portfolio selection, liquidity, and asset pricing seem not to hold at first glance (Arnott, 2005; Barberis & Thaler, 2003). Angels seem to take advantage of the imperfect markets and asymmetric information flows that exist in early stage investing in an attempt to earn higher than market returns (Sohl, 2003a). Angels take greater risks than later-stage investors yet expect lower returns (Aernoudt, 1999; Morrisette, 2007). In the recent past, angels have begun to form groups to make better investment decisions (Adams, 2005; Lipper & Sommer, 2002; May, 2002). Even with the large number of angels and the impact that angels have on economic growth and entrepreneurship, little research has been performed to understand the risk, returns, and processes that encompass the angel and angel groups ecosystem (Mason & Harrison, 2002b; Wiltbank, 2005; Wiltbank &

Boeker, 2007). With angels being one of the primary fuels that enable entrepreneurship and growth in the economy, research is needed to understand the actual risks and returns involved in angel investing.

Summary

For a phenomenon that is as widespread as angel investing, it may be surprising that so little research has been performed to date. The more organized and better researched venture capital firms and their participants and the accompanying fanfare and attention that venture firms receive may obscure the efforts of angels. This research focused on the people and processes that contribute so much to entrepreneurship and leadership.

A review of the literature revealed several key points. First, entrepreneurship is a key driver of new jobs and economic growth. One of the limits on that growth is the funding available to entrepreneurs, yet potential investors complain about the lack of potential deals. Next, many theories on investing, return, and portfolio theory make assumptions such as perfect information flow, low transaction costs, liquid markets, and symmetric knowledge. None of these assumptions are present in the area in which angels exist. Transaction costs are very high in terms of both time and money; the securities one receives are illiquid and unregistered; and information on markets, investments, and products may be either scarce or closely held. In effect, participants in early-stage investments from both the investor and entrepreneur sides are playing a game of information arbitrage. This information provides the chance that the assumption of specific or non-market risk will provide an additional premium above the returns that

could be obtained in the broad market. The remainder of the current study explores that question more closely.

By examining the track record of a Silicon Valley-based angel investor group, the current work may shed some light on the mysteries of angel investing. This case study analyzed returns from the angel group and examined the processes that angels use to make and syndicate investments. By understanding the dynamics of the angel process, the motivations of the angels and other participants in the early-stage investment ecosystem, and the returns from these endeavors, one can hopefully bring more success to the financing of entrepreneurial enterprises. That success can, in turn, drive the creation of economic wealth that can be shared by many.

CHAPTER 3: METHOD

The purpose of this case study was to determine the risk and returns present in early-stage investing using internal rate of return (IRR) on invested capital as the measurement and to research the manner in which the processes used by an angel group in Silicon Valley impact those returns. Angels invest in entrepreneurial enterprises for economic reasons and for reasons that are not directly connected to an economic return. In addition to the desire to earn higher returns than available from generally available investments, angels want to continue their work as entrepreneurs, gain satisfaction from building companies, and network with other angels and entrepreneurs (Mason & Harrison, 2002a). Examination of the research on the question also shows that the returns from angel investing are relatively unknown (Freear, Sohl, & Wetzel, 2002; Morrisette, 2007; Wall, 2007). As angels form groups, those groups are creating practices and networks that should enable angels to make better investment decisions, yet these practices and the effects of the networks are also largely unknown. To better understand the world in which the angels exist, a mix of both returns data and information on processes is needed. This chapter defines the research method and design and the components of the research performed in the current study.

Research Design

To understand the challenges facing angels, a case study research design was used. An instrumental case study is used to illustrate a specific issue (Stake, 1995). The data was collected on internal rate of return (IRR) and investment decisions to help understand the economic returns that angels have historically obtained. The case study obtained additional information that is more detailed than that which could be obtained

from considering the economic data alone. One step in this process was the collection of the returns data, the IRR from investments, and the data on company selection. Another step was to collect information concerning the investment processes in order to explain the returns that the angels have received or hope to receive. The information on the processes was needed to refine and extend the information obtained by examining the economic returns.

This research compared the returns from the angel portfolio as indicated by IRR to the broad market averages such as the S&P 500 and the NASDAQ. Besides computing the returns from the angel investments, the current study analyzed the effectiveness of the screening process used by the angels. The study analyzed the ability of the screening process to avoid Type I and Type II errors. A Type I error is defined as the angel declining to invest in a company and the company later provided unusually high returns. An example to illustrate this possibility would be the founders of Google coming to an angel in 1998 with the angel passing on the investment. A Type II error is defined for this purpose as a company in which angels invested and the investment was inappropriate because the company subsequently went out of business or entered bankruptcy. This would cause the investment to be written off, and the angels would lose their investment. This second set of data is designed to analyze the angel group investing processes.

A parallel component of the research focused on an angel investor group and its programs, events, and activities. This component illuminated the issue of how angel groups and their processes affect returns and the downstream impact on investment and entrepreneurship. The information obtained may have considerable merit and value to other angels, entrepreneurs, and others in the venture capital ecosystem.

Appropriateness of Design

This use of a case study design was appropriate for several reasons. Research shows that angels make investments for both economic and non-economic reasons (Mason & Harrison, 2002a). Other research indicates that angels may not be rational investors in an economic sense (Barberis & Thaler, 2003). Relying on either returns data or descriptions of the processes alone may not provide the necessary insight into the returns that angels receive or the processes the angels use to make their decisions. The returns data may explain some of the motivation for the angels while the process information may become a source of information to help other angels and angel groups.

Research Questions

The nature of the current study led to several questions involving angels, angel groups, entrepreneurs, and the investment process:

R^1: How do returns from angel investing differ from those that could be obtained from investing in a broadly diversified index fund?

R^2: What processes do angel groups utilize that may make the groups more effective at screening and selecting potential investments than investors in startups in general?

Population

The population in this work had two components. The first component consisted not of individual subjects but of companies and investments made in those companies by angels in a group located in Silicon Valley. The time frame for these investments was from 2000 to 2006. The number of investments is approximately 100. In researching the investment process, the angel group generally receives applications from approximately

50 companies a month from which 10 are selected for pre-screening and 4 or 5 then make presentations to the entire angel group. Over the past seven years, at least 7000 companies from different industries have applied to the target angel group. These populations are large enough to provide data to obtain meaningful results.

The second component examines the processes of the angel group. Rather than focus on individuals, the current study examined the processes and how the group related to other angel groups, entrepreneurs, and others in the venture ecosystem. When additional information was needed, that information was obtained from members of the angel group, the management of the angel group, and the entrepreneurs and managers of companies who have received funding from the angels. The only information needed from angels or company managers were the data points needed to compute IRR: date of original investment, date of liquidity event or valuation change, amount of original investment, and new valuation. This information was obtained either through email exchanges or brief telephone conversations. The research did not need to identify the members of the population by age, gender, race, ethnicity, or any other identifier. Such research is beyond the scope of this work.

Informed Consent and Confidentiality

Because the current research was based on the information about companies and organizations, obtaining permission to perform the work was relatively simple. Some information was held by the angel group. Missing information was obtained from the management of the companies funded by the angels. To perform the research, the consent of the management of the angel groups was needed and was received. As the research progressed, individuals from the angel group or entrepreneurs from the companies were

sourced for missing information. With over 600 members across the angel groups, the number of angels and entrepreneurs was large enough that finding cooperative individuals was not an issue. Appendix A provides the informed consent form for this study. Regulatory issues, ethical issues, or other barriers to impact access to subjects did not exist.

Angels and angel groups are sensitive to the confidentiality of their investments and the returns from their investments. Individual angels and individual investments are not identified. The aggregate returns are compared to the broad market averages such as the S&P 500 and the NASDAQ.

Sampling Frame

Due to the nature and availability of the data, the returns component of the research used the set of investments from the angel group. The research used data from all the investments made by the angel group subject to the availability of data. Impacting the IRR calculations was the availability of data on some of the individual investments. In the case where a company no longer exists due to closure or some other reason, the investment was written down to zero at the date that can be determined for the closure. Some investments that are recent have not received an exit or an event that triggers a new valuation. In this case, the IRR is set to zero for the investment. For companies that have been acquired by or merged with another company, the IRR calculations use the value and date of the M&A event. In attempting to locate Type I and Type II errors, some companies could not be located. In this case, the research does not include the company.

For the process component, members of the angel group involved in the investment decision process were sourced as needed. Because the decision processes are

well established and documented and the screening processes occur monthly, the researcher was able to participate in meetings and observe the process in action. During these meetings, members of the angel groups and entrepreneurs had frequent interaction with the researcher. Documentation from the angel group used in the investment decisions is included in the appendices.

Geographic Location

The geographic location of the angels and angel group, Keiretsu Forum, is centered on Silicon Valley. The angel group, Keiretsu Forum, is headquartered in Northern California with chapters around the San Francisco Bay Area, the Pacific Northwest, Southern California, Beijing, Barcelona, and London. Angels and entrepreneurs associated with Keiretsu Forum from other geographies were consulted as needed.

Instrumentation

No standardized instruments were used in this research. None are available nor were any needed. The return data came from the investment results obtained by angels. The data were available from angels, entrepreneurs, or the angel group management. The process information was collected from the documentation provided by the angel group, the angel group website, and participation in group meetings.

Data Collection

The data were collected from the records on investments made by angels and angel group. The primary source of the data is the record of investments maintained by the angel group management. For some investments, the data were missing from the angel group records. To complete the data, either the angel making the investment or the

company receiving investment was contacted by email or a short telephone call. Where the data were missing or could not be obtained, the investment and company in question was excluded from the research. When the initial investment information was obtained and it was determined that the company no longer operates, the investment was valued at zero on a date that estimates the company's closure.

Data and documentation for the process portion of the study were collected in cooperation with the management and members of the angel group. The first step in the data collection was to examine the existing documentation for the investment processes. These processes include initial deal applications, deal screening, presentation requirements, due diligence, and term sheet negotiation. The researcher also participated in meetings that demonstrated the processes in use. During those meetings, questions designed to clarify the processes and their use were asked. The meeting results were condensed into a description of the processes. No software was used to analyze the results of the interviews.

Data Analysis

The first set of data analyzed was the return on angel investment as indicated by internal rate of return (IRR). IRR is the discount rate that equates the present value of the expected or actual cash outflows with the present value of the inflows of cash (Kaplan, 2003). IRR is a special case of computing discounted cash flows in which the net present value of the cash flow is zero. Net present value (NPV) is calculated as

$$NPV = \sum_{i=1}^{n} \frac{value_i}{(1+rate)^i}$$

where values are the amount of the cash flows, n is the number of cash flows, and rate is the interest or discount rate. To calculate IRR, NPV is set to zero and rate is computed.

The result is the internal rate of return. A function in Excel, XIRR, performs this calculation for a series of cash flows that do not occur at regular intervals. The IRR on the portfolio was computed as if all the cash flows were combined into a single investment.

Comparing the results of the IRR calculation on the angel portfolio to the broad market averages using a standard statistical test presents challenges. Wiltbank (2005) showed that the returns of angels were not normally distributed. The lack of a normal distribution prevents the use of standard statistical formulae such as a *Z*-test or *t*-test. Cappuccio, Lubian, and Raggi (2006) showed that the returns from the S&P 500 and the NASDAQ are also not normally distributed. Another issue is the small number of resulting data points. When IRR for the angel portfolio is computed for each year, the resulting number of data points was less than 10. Kaserer and Diller (2004) define the most common parameters used in the literature to assess risk as mean, median, standard deviation, and actual IRR. Comparing returns of the angel portfolio for each year provides an indicator of the excess return over the industry indexes. Variances indicate the degree of variability of the investments and provide an indication of the risk. These variances can be used to compute risk premium measurements such as the Sharpe ratio (Sharpe, 2007).

Validity and Reliability

Reliability concerns the consistency and stability of the results of information collected in a study. Results should be consistent when examining similar sets of data. Validity concerns the ability of the study to generate meaningful conclusions from the data (Stake, 1995). The results of the study depended on the accuracy of the underlying

data. Previous studies that have attempted to measure returns from angel portfolios have encountered problems due to lax record keeping by angels (Wiltbank, 2005). The current study focuses on investments made by angels in organized groups in order to mitigate that issue. By focusing on financial results, the data for the current study has been subjected to some degree of validation such as an audit or examination by a board of directors.

Summary

This case study provides some insight into one of the least understood parts of the economic system in the United States today, angel investing (Wiltbank, 2005). Angels are important enablers of entrepreneurship and, in turn, economic growth (Morrisette, 2007). This case study gathered data that describes the processes concerning angel investing and the returns obtained from those processes. The research systematically described the facts and characteristics of a population of angel investors in Silicon Valley within the framework of entrepreneurship, risk, financial return, portfolio selection, and agency theory.

Combining both returns data and an explanation of the processes used to obtain those returns is appropriate for the current study because angels may not be rational investors in the economic sense and may invest for other reasons. Combining both types of information leads to better insight. The two principal questions addressed concern the returns from investing and the ability of angel groups to make better investments than the market at large. The target population of investments made by angels in Keiretsu Forum, an angel group in Silicon Valley, during the period of 2000-2006 yielded a large quantity

of data that generated a meaningful outcome. Data was collected from the angel group and the results triangulated with the literature review.

Chapter 4, Results, reports the results of the case study. The analysis of the findings of investment returns relative to the broad market indexes is presented. To supply context and additional insight, the processes that the angel groups use is described. The data collection and analysis procedures are discussed. This process should provide insight into how angels make investments and the returns that those investors expect.

CHAPTER 4: ANALYSIS

The subject of this case study is Keiretsu Forum, an angel investor group headquartered in Silicon Valley. This chapter presents an overview of the processes used by members of the group to make investments as well as an analysis of the returns obtained by the group from investments made from 2000 through 2006. The analysis of returns was performed by constructing a theoretical portfolio of investments and then computing the internal rate of return (IRR) of the portfolio. These returns were then compared to the returns that could have been obtained by investing in the S&P 500 and the NASDAQ Composite. Other measures of portfolio performance are also discussed.

Situation Assessment

Keiretsu Forum claims to be the world's largest angel investor network. The term Keiretsu is Japanese in origin and describes a group of companies working together with interlocking relationships and wide reach and influence. This angel group adopted the name to convey the similar idea of people and companies working together to provide financing and resources in order to increase the chances of success for startups. In early 2008, Keiretsu Forum had approximately 750 members in 16 chapters throughout the world ranging from its origins in the Silicon Valley area to Southern California, the Pacific Northwest, Denver and internationally in Beijing, Barcelona, and London. Since the founding of the group in 2000, angels in Keiretsu have invested over $180,000,000 in 200 companies. Keiretsu Forum also has a strong social component and supports a charitable foundation (Keiretsu Forum, 2008).

Keiretsu Forum differs from other Silicon Valley angel groups in that investments made by members of the group are not only in technology companies but also in

consumer products, health care, life sciences, real estate, and other areas. Keiretsu is also different in that it represents a network of angel groups now spread over North America, Asia, and Europe. Each chapter is limited to 150 members. According to the angel group management, this network enables access to more capital than typical angel investments and deals syndicated across chapters are not unusual occurrences. Besides more capital, the network of chapters also provides access to resources through the members' personal networks. Deal flow for members can also originate from geographies outside of the members' local area. The network of chapters also provides additional industry-specific knowledge and collaboration among members (Keiretsu Forum, 2008).

Keiretsu Forum management claims that investments typically range from $250,000 to $2,000,000 with individual contributions ranging from $25,000 to $200,000. Members collaborate on sourcing deals, performing initial screenings, due diligence, and negotiation of deal terms. Members make individual investments, and the group does not invest as a fund or create separate legal entities such as a limited liability company (LLC) as investment vehicles (Keiretsu Forum, 2008).

Key Factors

Several key factors were present during the data collection phase. In all cases, the subjects were aware of the researcher's presence and the purpose of the research. The first step was to collect data that was in possession of the angel group. Throughout the history of the angel group, management collected data on investments made by angels in the group and the returns from those investments. In a few cases, data were unclear or incomplete, and the clarifications were collected from the management of the portfolio companies or members of the group under the direction and with the approval of the

management of the angel group. The issues with the data arose from the relationship of the funded company to the angel group. Because Keiretsu members invest as individuals and the group has no stake in the target company, there was no incentive or reason for the company to report results or other news to angel group management. For companies that experienced management changes, the new management was unaware of Keiretsu involvement in some cases. The problematic data represented less than 4% of the total data.

Events

During the data collection, the researcher observed the events that comprise the Keiretsu investment process. This process is detailed in a later section. Beginning with the application and pre-screening through presentations, due diligence, and term negotiation, each of the steps in the process were observed. In some instances, a step in the process was observed multiple times. The meetings varied from telephone conference calls to an investment exposition with more than 400 entrepreneurs, investors, and other interested parties. Events were observed in multiple geographies: Silicon Valley, San Francisco, San Diego, and Seattle.

The Keiretsu Forum Investment Process

The process used by Keiretsu Forum members to analyze potential deals and to make investments is well structured and operates on a monthly cycle. Approximately 100-200 companies apply to present to Keiretsu Forum chapters each month. Figure 1 provides a graphical description of the investment process.

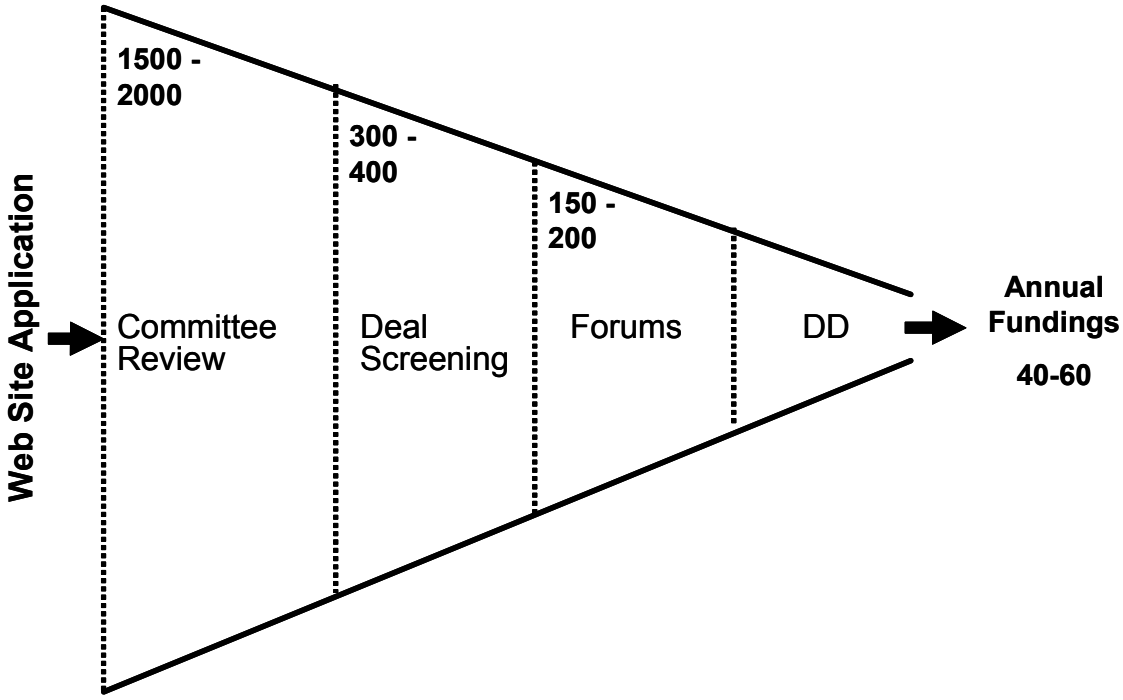

Figure 1. Keiretsu Forum Investment Process

Note: From Keiretsu Forum overview presentation, March 2008. Reprinted with permission.

Entrepreneurs seeking funding from Keiretsu Forum chapters first complete an application that is downloaded from the group website, www.keiretsuforum.com. The application is found in Appendix B. The application summarizes information about the company ranging from markets and products, to management team, boards of directors, and advisors, financials, and potential exit strategies.

Completed applications are referred to members of a committee for initial screening. Committees are organized by subject area. Committees in April 2008 included Software, Health Care and Life Sciences, Real Estate, Telecommunications, Media and Entertainment, Automation & Instrumentation, Food & Beverage, Social Investing, and Energy (Keiretsu Forum, 2008). Two to four members of the appropriate committee meet

with the applying entrepreneur via teleconference with the goal of completing the pre-screening checklist. Results from the prescreening are tabulated by the angel group staff, and the top 8 to 10 candidates then move to the deal screening phase. Appendix C contains the committee screening checklist.

In the deal screening phase, entrepreneurs meet face-to-face with approximately 20 members of the angel group that form an *ad hoc* deal screening committee for that particular month. During this meeting, the entrepreneurs have 15 minutes to present their ideas and companies. Each session is typically a 7 to 8 minute presentation followed by a question and answer session. Given the time limitation, the group suggests that entrepreneurs limit themselves to no more than 10 PowerPoint slides. Appendix D lists the suggested content for each slide. After all the entrepreneurs have given their presentations, the screening committee selects the 4 or 5 companies that will present to the entire group the following week.

Companies that are selected at the deal screening present to the entire chapter. Each chapter meeting in the four chapters surrounding Silicon Valley has an attendance of 70 to 150 people consisting of angel group members, other accredited investors, entrepreneurs, venture capitalists, and guests. Entrepreneurs present their potential investments in 20 minutes, equally divided between formal presentation and a question and answer session. After each presentation, a list is circulated where attendees who are potentially interested in making an investment express their interest. After all entrepreneurs have presented, those entrepreneurs leave the meeting and the group discusses the possibilities of each investment. The comments from the group are recorded and supplied to the entrepreneurs after the meeting.

From the interest list, a team to perform due diligence is formed. The due diligence team is specific to each investment and no standing due diligence committees exist. Angels on the due diligence team form sub-teams to analyze the investment from different perspectives. For example, angels with expertise in a specific technology may conduct due diligence on the technical aspects of an investment while the finance experts look at the company financials, deal structure, and other financial aspects. The due diligence process follows a structure developed and modified through experience. The results of the due diligence are then uploaded and stored on the Keiretsu Forum website. The due diligence questionnaire is Appendix E.

At the end of due diligence, deal terms are negotiated between the angel group and the entrepreneur. Deals may take a variety of forms ranging from equity to convertible notes to loans. The structure of the deal varies depending on the amount raised, the stage of the company, and the potential need for additional investment at some later time. The last factor has an impact on deal structure because investors at this stage may prefer some form of convertible note that sets the valuation of the deal at a later date. This is often done to protect the investment of the angels. Keiretsu Forum members negotiate terms as a group. However, investments are made as individuals with each angel deciding whether to invest and how much to invest independently.

While the process used by Keiretsu Forum members has the advantage of allowing flexibility in investment decisions and the potential for reducing transaction costs, the group loses its identity with the target company after the investment is made. Keiretsu Forum acts as a facilitator in the investing process but does not invest as a

group. This facet of the group structure limited the ability of the group to track the results of investments in the past.

Findings

The data selection process attempted to use all available data from the angel group investments. Keiretsu management claims that $180,000,000 has been invested in 200 companies (Keiretsu Forum, 2008). Investments made in 2007 or later were excluded from the returns survey. An initial sampling of the 2007 and 2008 investments indicated that the length of time that had passed since the initial investment was not sufficient for an external event to occur in order to drive a valuation change. Some data were excluded due to incompleteness. Because Keiretsu does not invest as a group, there was no motivation for the management of the portfolio companies to report financials or changes in the company to the angel group. Over time, management changes and attrition in the angel group caused the connection between the angel group and the company to be broken. This data, less than 4% of the portfolio companies, were excluded from the IRR calculations.

Early-stage investments are represented by securities that are not publicly traded, and no pricing for the securities is readily available. To track the changes in the value of the angel investments, external events that caused a change in the valuation were used. This method of determining the value of an investment is consistent with the International Private Equity and Venture Capital Valuation Guidelines as developed and propagated by the International Private Equity and Venture Capital Valuation Board (International Private Equity and Venture Capital Valuation Board [IPEVCVB], 2006). An exit such as an initial public offering (IPO), merger, or acquisition provides an

external event that provides a new value for the investment. Similarly, an investment in the startup through a later investment provides a market validation. In the event that a company ceases operation, this external event causes the value of the company to be zero. In these cases, the event changes the value of the investment, but the change cannot be realized by the investor due to the illiquid nature of the underlying security. In the absence of any external events, the value of the investment was recorded as no change.

To compute IRR for the investments, four pieces of information were required. The date of the initial investment and the date of the subsequent change provided the time span of the investment, and the amount invested and the new value provided the absolute returns. From these four data points, IRR for the individual investments was computed. For example, an initial investment of $100,000 made on January 1, 2003, that returns $400,000 on January 1, 2008, would have a return of four times the initial investment. The IRR is approximately 32% or as usually stated, the investment returned 32% per year for 5 years. In a few cases, the exact date of the investment could not be discerned. Dates approximating the investment period were used with the effect of potentially understating the IRR on that investment.

Investments were grouped by the year of the initial cash inflow, sometimes referred to as the vintage year. Grouping investments by year was done to form a basis for comparison to an external benchmark. All the cash flows from those groups were combined into a single cash flow stream. From this cash flow stream, an IRR for the year was computed. Several reasons guide this approach. The first is an assumption that an investor has multiple choices as to the timing and amount of those investments. For the purposes of the current study, the hypothetical investor is making a number of

investments and is interested in the total return from the resulting portfolio. The returns are staggered with different amounts and different dates making a simple average of returns meaningless. IRR serves the function of providing annualized rates of return (Johnstone, 2008). An example may help clarify this situation. The previous IRR example yielded an IRR of approximately 32%. If a second investment of $50,000 is made on July 1, 2003, and returns $150,000 on January 1, 2006, the IRR is approximately 55%. A simple arithmetic average provides a result of 43% but provides an invalid answer due to the different time periods of the investments. Combining the cash flows from the two investments provides a more realistic estimate of 37% by considering the timing of the cash flows.

Data for external indexes was obtained using closing values on specific days, generally the first trading day of the selected calendar year. To compute IRR for the market indexes, publicly traded index funds that track the S&P 500 and NASDAQ Composite indexes provided the underlying data. IRR for the indexes was computed using the differences in share prices in the index funds. The cutoff date for returns was selected as March 31, 2008, due to the timing of the research.

Members of Keiretsu Forum provided information concerning the investment process and the procedures used by the members to make investments. The data were obtained though emails and telephone calls focusing on investment data. Other information on the process and sample forms used in deal screening and due diligence came from the group's website. Additional insight into the process was obtained by participating in the deal screening, member meetings, due diligence, and deal term

negotiating sessions. The data were collected by conducting observations as a participant to gather field notes.

Investment Results

The highly structured nature of the Keiretsu Forum investment process leads to the question of the returns obtained from employing the process. Using the assumptions described previously, over 120 investments in approximately 100 companies were analyzed. This analysis of the investments made by Keiretsu Forum angels yields the following results.

Table 1 provides the IRR on investments made in years 2000 through 2006. Investments made in 2007 or later were excluded from the analysis based on the assumption that too little time had passed between the time of the investment and the time of the analysis to realize significant changes in the investments.

Table 1

Internal Rate of Return of Keiretsu Forum Investments

Year of Initial Investment	IRR
2000	-2.01%
2001	17.25%
2002	13.28%
2003	8.49%
2004	16.99%
2005	12.25%
2006	20.13%

These returns represent a hypothetical portfolio consisting of Keiretsu Forum investments made in the years 2000 through 2006. The returns include investments returned to investors through initial public offerings, mergers, acquisitions, and other exits as well as unrealized returns from new valuation events such as later stage investments that either increased or decreased the value of the original investments. Included in the results are also any closures or bankruptcies where the value of the original investments were written down to zero. These returns are hypothetical because no single investor participated in all these investments.

Comparisons

Comparing the results in Table 1 to those that could have been obtained in the major market indexes produces Table 2. Two widely available index funds were used as proxies for the market indexes. The Vanguard S&P Index 500 Fund (VFINX) was used in place of the S&P 500 index and the PowerShares QQQ fund (QQQQ) was used for the NASDAQ Composite 100 index. The returns for the mutual funds assume that an investment was made on January 1 of each year and the investment was redeemed on March 31, 2008.

Table 2

Comparison of Keiretsu Forum Returns to Major Market Indices

Year	Keiretsu Forum	S&P 500	NASDAQ Composite
2000	-2.01%	.61%	-8.77%
2001	17.25	2.37%	-3.51%
2002	13.28%	4.42%	2.19%
2003	8.49%	10.17%	12.34%
2004	16.99%	7.03%	5.13%
2005	12.25%	6.05%	3.54%
2006	20.13%	5.47%	4.36%

Initial observations show that the Keiretsu Forum angels would have outpaced the S&P 500 in 5 of 7 years and the NASDAQ Composite in 6 of the 7 years under study. Some additional analysis of the individual investments indicates that the highest IRR obtained was 300% with the lowest as -100%, a shutdown in which the investor lost the entire investment.

The Sharpe Ratio is used to assess how attractive an asset or a portfolio of assets could be given the risk involved in holding the portfolio (Sharpe, 2007). A Sharpe Ratio greater than 1 is generally considered to be an indication of an effective risk premium (Fulks, 2001). Computing the Sharpe Ratio for the hypothetical Keiretsu Forum portfolio yields a result of 1.26. By comparison the Sharpe Ratio for the same period on the S&P

500 and the NASDAQ Composite using the proxies previous described are 0.13 and -0.12 respectively.

While the comparisons of a hypothetical portfolio to the market indices are interesting, some additional analysis provides more useful and actionable information. As indicated earlier, two types of investing errors are possible. The first error is the possibility that the angel declined to invest in a company and the company later provided unusually high returns. A second type of error is defined as a company in which angels invested and the investment was inappropriate because the company subsequently went out of business or entered bankruptcy. This would cause the investment to be written off and the angels would lose their investment.

The failure rate of new business has been estimated to range from 24% to 34% after two years, approximately 50% after four years, and approximately 60% after six years (Headd, 2003). The overall closure rate in the Keiretsu portfolio for the period 2000-2006 is approximately 20%. Table 3 provides the closure rate by vintage year of Keiretsu investments.

Table 3

Closure Rate of Keiretsu Funded Companies by Vintage Year

Year	Failure Rate
2000	40%
2001	37%
2002	25%
2003	25%
2004	19%
2005	23%
2006	8%

The failure rate of Keiretsu companies is lower than the overall failure rates for startups in general. These results indicate that the screening processes and due diligence are potentially effective in reducing the number of potentially bad investments. Because not all angels participated in all the Keiretsu deals, the lower failure rate shows that a Keiretsu member has a better chance at not investing in a potential failure than those investments made in general.

An analysis was also performed on the companies that successfully passed the deal screening process, made presentations, and perhaps entered due diligence to examine the ability of the Keiretsu process to not pass on eventual winners. In the period 2000-2007, approximately 22% of the Keiretsu funded companies had a successful exit in terms of an IPO, acquisition, merger, or similar liquidity event. Less than 5% of the

companies that passed through the Keiretsu process that did not receive funding had similar liquidity events. While it could be said that not receiving funding from Keiretsu could cause a self-fulfilling prophecy to occur, the presence of over a dozen other angel groups in Silicon Valley would indicate that if the investments were appropriate, the entrepreneur should have found funding from sources other than Keiretsu. The Keiretsu investment process has the effect of not only identifying potentially bad investments but also not bypassing potential successes.

One unusual aspect of Keiretsu Forum arises as a result of the multi-chapter aspect of the group. Research contends that angels only invest locally (Lange, Leleux, & Surlemont, 2003). Keiretsu Forum violates that commonly held belief by providing entrepreneurs the possibility to present to many chapters and by sharing screening and due diligence information among chapters. Over 30% of the investments made by Keiretsu members have come from members in different chapters and geographies. The result of this sharing is the availability of more capital for the entrepreneurs and the lowering of transaction costs for the angels.

Analysis of the amounts of funding obtained by entrepreneurs also provides some insight into the evolution from a single angel into a group and then a network of groups. Previous research indicates that investments from individual angels can be as small as $25,000 or as high as $1 million with the range generally falling between $100,000 and $500,000. Groups of angels can raise the total investment to the $2 million to $5 million level with the lower end of the range more common. (De Clerq, Fried, Lehtonen, & Sapienza, 2006; Lange, Leleux, & Surlemont, 2003; Linde & Prasad, 2000). Investments made by Keiretsu Forum angels are consistent with this research with the notable

exception of deals that are sourced from multiple geographies tend to be on the higher end of the range. Several investments are over $2 million with a few in the $8 million to $10 million range and the highest investment over $11 million.

Enlightenment Offered by Key Players

Several useful, if not significant, observations emerge from the research and from discussions with Keiretsu Forum members and staff and the entrepreneurs who engage with Keiretsu Forum. Interaction within the group confirms that angels do invest for reasons other than economic. Keiretsu meetings serve partly as a social function, and it is not unusual for members to meet in social settings outside of the investment meetings as often as monthly. Keiretsu also has a charitable foundation that has generated over $1,000,000 for 90 charitable organizations.

During the final stages of the analysis for the current study, the research methodology as well as the insights gained were discussed with investors and Keiretsu Forum management. Agreement was reached that the underlying assumptions are correct and that the analysis performed yields reasonable results. This is significant due to the depth of the investing experience in the group and the validation obtained.

Observations at group meetings confirmed that entrepreneurs seek more from angels than financing. Entrepreneurs also seek resources and access to the Keiretsu members' personal networks. In many of the cases observed, the investors were willing to provide both.

One of the most significant insights into the process and the results is the continuing focus on information gathering and sharing as well as continuous learning. Keiretsu regularly presents classes on different aspects of investing as well as classes for

portfolio company management. As new aspects of the investment process emerge, those aspects are incorporated into the group processes. The sharing of information among members and across chapters represents a shift in angel investing. These shifts should help make more capital available and decrease transaction costs.

Summary

Analysis of the activities of Keiretsu Forum shows that the process and returns are inexorably linked. Constructing a portfolio from the Keiretsu investments indicated that the returns were significantly higher than those that would be obtained from the broad market averages during the time that Keiretsu has been in operation. These returns and the accompanying risk premium as indicated by the Sharpe Ratio generate a theoretical rather than actual case because no one angel has invested in every Keiretsu investment.

The Keiretsu Forum research confirms several existing ideas about angel investing and points the way to new trends. Keiretsu members, like many other angels, do participate for both economic and non-economic reasons. Besides the expectation of higher than market returns, Keiretsu angels participate in the charitable and social aspects of the group. Where Keiretsu breaks from accepted wisdom centers on geography. Unlike other angels or groups of angels, the network of groups, now international, has the potential to increase the availability of capital, to increase the amount of information in deal sourcing and screening, and to decrease transaction costs.

Perhaps the most significant finding is the validation of the Keiretsu Forum investing process. The number of companies that have failed after being funded by Keiretsu members is more than half what one would expect. At the same time, the number of companies not funded by the members of the group that had achieved

successful exits was one-quarter of rate of companies receiving funding. What potential and existing angels and entrepreneurs can learn from these findings is that the information collected and processed through the Keiretsu investment cycle has benefits to all in the process.

CHAPTER 5: CONCLUSIONS AND RECOMMENDATIONS

A case study is an examination of a "contemporary phenomenon in its real-life context, especially when the boundaries between phenomenon and context are not clearly evident." (Yin, 1994, p. 59). This study examined the phenomenon of angel investing. This case study of an angel investor group, Keiretsu Forum, proposed two research questions:

R^1: How do returns from angel investing differ from those that could be obtained from investing in a broadly diversified index fund?

R^2: What processes do angel groups utilize that may make the groups more effective at screening and selecting potential investments than investors in general?

Conclusions

Examining the review of the literature, the methodology, and results of the data analysis, the following conclusions are proposed. This section interprets and evaluates the importance and meaning of the research for investors, entrepreneurs, angel group management, and other constituents. The broader social significance of the research is also addressed.

Angel Returns vs. Index Funds

The first research question asked whether or not angel investing provided returns that are different from the returns provided by index funds. Given the increased risk associated with angel investing, a corresponding level of return should be present. Constructing a theoretical portfolio from the investments made by Keiretsu Forum members in the period 2000 through 2006 showed that the possibility of higher returns exist. In the period from 2000 through 2006, the theoretical Keiretsu Forum portfolio

outperformed the S&P and NASDAQ index funds in 6 of the 7 years. Using the Sharpe Ratio to measure risk premium, the Keiretsu portfolio returns provided a risk premium higher than the index funds as well.

Effectiveness of Angel Group Processes

This case study revealed that the methods and practices used by angels and in angel investing are evolving. It was previously thought that angels invest alone or in small groups, but one can now see the emergence of larger groups of angels and networks of groups that are international in scope. The existence of larger groups and networks of groups is now enabling angels to invest outside of their home geographies. Previous research indicates that angels are difficult to find, and angels invest alone or in small groups (Baty & Sommer, 2002). The introduction of a formal screening process and the collaboration among angels in the investment process enable better connections between angels and entrepreneurs.

Two areas in which angel group processes have potential high impact are information flow and transaction costs. The CAPM and many other theories assume the existence of perfect information, highly liquid markets, and low or zero transaction costs (Sharpe, 2007). Such conditions have not existed for angels and their investments (Sohl, 2003a). Transaction costs in angel investing have been much higher than investing in publicly traded securities through a brokerage firm. While it is highly unlikely that the cost of angel investing will ever be close to those levels, angel groups and angel networks do substantially reduce the cost of investing. Established deal screening procedures, regularly scheduled presentations, a commonly understood due diligence process, and standard term negotiation help reduce the cost of investing at early stages.

Information flow in early stage investments has been characterized as imperfect and asymmetrical compared to the public markets (Sohl, 2003a). Formalized angel groups and their processes create better information flow. Rather than an individual investor attempting to make an investment in isolation, many investors can work together to source deals, perform due diligence, and create the best terms for investors and entrepreneurs. The emergence of angel networks and the use of Internet collaboration tools open the possibilities that these parties may not be in the same local area or even the same continent.

The impact of better information flow can be found in the results obtained by Keiretsu members. The percentage of bankruptcies and closures in the Keiretsu portfolio is lower than usually found in startups by almost 60%. At the same time, Keiretsu members became fairly effective at not missing opportunities due to overly constrictive investment selection criteria.

Impact on Stakeholders

The impact of potentially higher returns coupled with increased information flow and decreased transaction costs is potentially significant. To generate economic growth and to drive innovation, investment in early-stage companies is required (Baumol, 2004; Proimos & Murray, 2006; Wetzel, 1987). Today, most of the funding at this level is provided by angel investors (Morrisette, 2007). Increasing the effectiveness of the investment process should increase the number of angels and the amount of funding. As funding increases and the ease of angels and entrepreneurs working together increases, the constraints surrounding startup capital and expertise should diminish.

Information will be the key to this increased innovation. Better deal flow and more effective due diligence should increase the success rate. Networks of angels can generate more information faster and at less cost than individuals and smaller bands working independently. Networks can also provide access to more capital and make that access more efficient with respect to both time and money. Networks of angels have the potential to provide a greater level of support for young companies than individuals further increasing the chances of success for startups.

Another potential impact of the emergence of angel networks is a change in the relationship between angel investors and venture capital firms. Angel networks can have an impact on the venture ecosystem. In many areas, especially technology, the cost of launching a new venture has decreased dramatically from the years of the dot-com boom in 1999-2001. Rather than angel investing being viewed as the preparation and precursor to venture investing, some entrepreneurs may find that a company may become financially self-sustaining without the need for venture investment. The lower cost structure of angel investing may also provide greater returns to the investors. The diminished need for venture capital may provide the opportunity for entrepreneurs to retain more control over their companies as well as more equity. The need for the large investments that venture capital firms can provide will not disappear. The venture firms may choose to focus on those larger investments that can provide significant returns to their investors.

Impact of Study Limitations on Interpretation of Results

This study of one angel group shows the benefits of the processes used by the group to screen and select investments. The processes help increase the chances of

making successful investments for angel in the groups. Other angel groups have different processes and different structures. Keiretsu Forum members ultimately make individual decisions and individual investments. In some other groups, members invest as a group and all members participate in all investments. One should not conclude that even though the Keiretsu processes are effective, those processes and the related investment methods are the best that could be obtained. A study comparing the Keiretsu results to those obtained by other angel groups would be needed to understand any differences that may potentially exist.

One issue that plagues the study of angel investing is the lax record keeping by angels of their investments and their returns (Baty & Sommer, 2002). While the focus of this study on an angel group helped facilitate the collection of data on investment returns, the study still faced the problem of missing or incomplete data. Additional data may have shown other successful exits that would have increased the level of returns in the portfolio. Most of the bankruptcies, closures, and rounds with reduced valuations were identified.

Because this study focused solely on IRR as a measurement of success or failure, information was not gathered about the entrepreneurs, angels, or characteristics of the industries or environments in which the investments were made. There may be common characteristics about angels or entrepreneurs that increase the likelihood for success. While the processes used by Keiretsu were shown to have benefit, they do not by themselves lead to guaranteed investment success.

Implications of the Findings

Investment decisions are usually based on imperfect information and, as a result, those decisions involve some level of risk. If one accepts the definition of risk as a combination of uncertainty and exposure (Holton, 2004), then the processes examined in this case study can help reduce both components of risk. Uncertainty is reduced by the collaboration of the angels in the group and the use of the defined and implemented processes to generate information. The information generated in the steps of the process, especially due diligence, focuses not only on the company and its products but also on the entrepreneurs and the industry in which the company exists. These processes increase the amount of information generated and reduce the information asymmetry that exists between investors and company managers. A potential investor can further manage the amount of risk by adjusting the investment exposure based on the information generated in the investment process.

Recommendations for Future Research

Several areas for research arise from the current study. The first is continued longitudinal analysis of the Keiretsu portfolio companies. If most early-stage investments have an expected maturity of five to seven years, many of the Keiretsu companies are starting to reach that maturation period or may not enter that period for another 2 to 3 years. A second area would contrast the results from the Keiretsu chapters and network to other groups to understand the full impact of the network effect of Keiretsu. Understanding the impact of geography on the investment results could provide insight into the impact of the Silicon Valley ecosystem on angel investing. Conventional wisdom in Silicon Valley holds that the attitudes and abilities of investors and entrepreneurs in the

area are not found in any other area in the US or in the world. The question of the transferability of Keiretsu processes and ideas to other areas and groups would be useful in the creation of angel groups and networks outside of Silicon Valley. For example, the international chapters of Keiretsu opened in 2007 and have not had time to create significant deal flow or any exits. Understanding the performance of those chapters in 2010 or 2015 could demonstrate how universal and useful these processes could become.

The returns obtained from the theoretical Keiretsu Forum portfolio indicate that angel investing may have a broader role in the construction of investment portfolios with the idea of increased diversification reduces portfolio risk. A preliminary analysis of the correlation between the Keiretsu Forum returns and the broad market averages indicates that there may be little, if any, correlation. With additional data, one may find that angel investing may provide diversification and risk reduction possibilities in the same manner that international equities have provided in the past, for example.

Several implications arise from the attempts to generalize the results of the current study. The first is that the returns are based on a portfolio that did not exist in reality. The second is the time frame of the research. Looking at returns starting from the beginning of the bust of the dot-com era may have limited applicability if one attempts to project those returns into the future. More applicable are the lessons learned from the processes used by the angel groups and their impact on the ability to select potential investments.

Suggested Questions

In the current study, no attempt was made to look at subsets of the investments by industry. The majority of the investments made were in companies on the West Coast of the United States. One question for future research could be the impact of angel investing

on different industry segments. Angel investing in Silicon Valley has been primarily focused on the technology industry. Other industries would benefit from angel involvement and many Keiretsu investments point to that trend. Understanding the need for angel involvement, and the chances for success in other industries could help drive economic growth in those industries.

Much has been written about the characteristics of angels themselves. The current study did not probe the demographics or mindsets of angels. Examining the backgrounds and motivations of angels, especially outside of the risk taking environment of Silicon Valley, would provide additional insight. This insight may help encourage the spread of organized angel investing to other groups and geographies.

Summary

Stake (1995) defines an instrumental case study as research into a specific situation as a method to gain a general understanding of a broader issue. The study examines the investment process used by members of Keiretsu Forum and the results obtained from those processes. The study provides insight into the processes from the overview into the details of processes including the actual questions used in steps ranging from deal screening to due diligence. The study also provides insight into the area of angel investing for those that may not be familiar with this segment of the investment field. Besides providing guidance into the angel investing arena, the study can help other angel investors, angel groups, or potential angels increase the effectiveness and returns from their investments. The ability to generalize the lessons learned from the current study is in the process of being proven on a regular basis by Keiretsu Forum members. Had these processes not been effective, practical, and sustainable, Keiretsu Forum could

not have broken the conventional wisdom that angel investing is done alone or locally. By propagating the processes under research to 17 chapters across the United States, United Kingdom, Spain, France, and China, the group is showing that these concepts can be generalized. The concept underlying these processes that information can be increased and transaction costs reduced by utilizing angel groups and angel networks can be generalized for use by other investors and groups. What the members of Keiretsu Forum have learned may be on the vanguard of helping reshape the early-stage investing arena.

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APPENDIX A: INFORMED CONSENT FORM

Dear Angel Investor,

I am a student at the University of Phoenix working on a Doctor of Business Administration degree. I am conducting a research study entitled Angel Investing: A Case Study of the Processes, Risk, and Internal Rate Of Return. The purpose of the research study is to examine the returns that one obtains from angel investing and the processes that angels and angel groups use to make investment decisions.

Your participation will involve sharing information that you know about early stage investments and the processes that one uses to make and monitor those investments. Your participation in this study is voluntary. If you choose not to participate or to withdraw from the study at any time, you can do so without penalty or loss of benefit to yourself. The results of the research study may be published but your name will not be used and your information will be maintained in confidence.

In this research, there are no foreseeable risks to you.

Although there may be no direct benefit to you, the possible benefit of your participation is to encourage other individuals to participate in early stage investing in order to drive economic growth. Your participation may also help existing angels and entrepreneurs make decisions that result in more positive outcomes for all parties involved.

I thank you for your participation and help.

Sincerely,

_____

Geoff Roach

By signing this form I acknowledge that I understand the nature of the study, the potential risks to me as a participant, and the means by which my identity will be kept confidential. My signature on this form also indicates that I am 18 years old or older and that I give my permission to voluntarily serve as a participant in the study described.

Name _____

Address _____

Date _____

APPENDIX B: KEIRETSU FORUM APPLICATION FORM

Identifying Information

1. Interested in presenting to (please check):

Northern California (San Francisco, Silicon Valley, North Bay, and East Bay chapters)

Pacific Northwest (Seattle, Belleview, Portland, and Boise chapters)

Southern California (Los Angeles, Westlake Village, San Diego and Orange Co. chapters)

Denver/Rockies

China, Beijing Chapter

UK, London Chapter

Spain, Barcelona Chapter

2. Industry (please check all that apply):

Clean Technology
Consumer Product
Energy
Financing
Food & Beverage
Healthcare/Life sciences
Internet related
Real Estate
Service Business
Social Venture
Software
Telecommunications
Other:

3. How did you hear about Keiretsu Forum?

Keiretsu Forum Application

Company Name:
Address:

Date Founded:
Number of employees:
Full-time Part-time

Presenter's Name:
Title:
Office#:
Cell#:
E-Mail:
Web Site:

Brief company description:

Have you attended a Keiretsu Forum meeting? (If so when and where?)

Please describe your company's characteristics in terms of the following:

1- Marketing/ Space *Clear problem? Clear pain? Barriers to entry? Competition?*

2- Execution Plan Defensible IP? Solid revenue driver? Scalability

3- Traction Customer satisfaction? Sales Approach? Sales Cycle? Sales Pipeline?

4- Revenue Potential Pricing Model? Pricing changes over Time?

5 - Profitability *Current burn rate per month?* $

Revenue

Year / Description	2005 Actual	2006 Actual	2007 forecast	2008 forecast	2009 forecast
Revenue					
COGS					
Gross Pf'					
Expenses					
EBITDA					

6- Management Team Relevant experience? Track record? Complete team?

7- Board &Advisors Relevant experience

8-ROI Potential Risk and Opportunities?

9- Investment Required
Round?
Keiretsu Forum Allocation?

Proposed Deal Structure?

10 –Valuation Information

What is the aggregate dollar amount of capital invested into the Company to date?

Funding History

Source of capital	Date of investment	Series	Number of equity shares issued	Class of equity shares issued	Number of shares outstanding	Post-money valuation for each funding

Are previous investors participating in this round?

Use of the funds raised in this round:

Pre-Money Valuation: $

1. The basis and empirical data (if any) that is supportive of the pre-money valuation; i.e., show market data, financial models, calculations that are the basis for the value just prior to the latest capital investment.
2. Describe similar companies that you used as benchmarks for the liquidity event that you present to Keiretsu investors that demonstrates their multiple of return or internal rate of return ("IRR") on their investment in your Company at this funding round.

3. Show the market stock price or acquisition multiples for each company described in number 2.

4. In addition to the multiple (such as 3 times revenue or 7 times EBITDA), show the dollar amount of the earnings and revenue for each of the benchmark companies at the time they were priced in the market. For acquisitions, the form of payment (description of the consideration; cash, stock, debt, etc.) paid by the buyer to the sellers in exchange for the target company must be detailed.

5. If financial models (such as a discounted cash flow analysis) were used to value your Company for the Keiretsu funding round, all underlying revenue growth, profit margins, projected working capital needs, capital expenditure expectations, and the basis for discount rate used to present value future cash flow streams must be shown, with a meaningful explanation. An unfounded assertion pertaining to an input to the model will not be considered fulfillment of this requirement because Keiretsu Forum investors must

receive a comprehensive rationale from presenters to make informed investment decisions.

11- Exit Strategy:

12 - Resources Needed Beyond Capital: Introductions to customers, distribution channels …

APPENDIX C: PRESCREENING CHECKLIST

Keiretsu Committee Pre-Screening Score Sheet

Characteristics	**Score** *0=weak* *1=medium* *2=strong*	**Comments**
1- Marketing/ Space *Clear problem? Clear pain?* *Barrier to entry? Competition?*		
2- Execution Plan *Defensible IP?* *Solid revenue Driver? Scalability?*		
3- Management *Team complete?* *Relevant experience? Track record*		
4- Board &Advisors *Relevant experience?*		
5-Existing Investors *Friends and Family? Angles? VC?* *Unique Capital Terms?*		
6- Investment Required *Current Investment State?* *Proposed Deal?*		
7- Traction *Customer satisfaction?* Sales Approach? *Sales Cycle?*		
8- Revenue Potential *Pricing Model?* *Pricing Changes Over Time?*		
9- Profitability *Current Revenue?* *Current Burn Rate?*		
10-ROI Potential *Risk and Opportunities?*		
TOTAL	0	To re-compute the TOTAL put your cursor on the TOTAL CELL and push F9. A TOTAL Score of 15-20 = Best of *Breed*
Member Recommendation *INVITE? DELAY? DENY?*		**If '*Delay*' state the milestone to be accomplished:**

APPENDIX D: SUGGESTED CONTENT FOR SCREENING PRESENTATION

The deal screening meeting is typically the first event at which entrepreneurs and angels meet face-to-face. Before this time, a screening by telephone with one or more members of a Keiretsu Forum committee takes place. Presentations are limited to 15 minutes. In that time, potential investors are searching for specific information. Below is a suggested list of slides and topics that are usually required.

Customer situation (1-2 slides)

Current State

Seriousness of Current State

Desired Future State

Benefits to the Customer

Product or solution (1-2 slides)

Key features and benefits

Product roadmap and anticipated enhancements

Installation, support, and scalability issues if appropriate

Core technology, patents, or defensible intellectual property

Value Proposition for the Customer (1 slide)

Value of benefit of future state vs. seriousness of current state

Cost of solution vs. value received

Initial Target Market Segment (1 slide)

Description of initial target market and size in dollars

Description of total market and size in dollars

Name of market category

Competitive Summary (1 slide)

Company strengths

Competitive differentiation

Situations with important competitor if appropriate

Changes over time

Marketing Strategy (0-1 slides)

Communicate priorities

Launch plans

Go to market strategy

Branding and promotion

Sales Strategy (0-1 slides)

Communicate priorities and distribution approach

Product Strategy (0-1 slides)

Product roadmap

Future versions

Patents, if applicable

Management and Board of Directors (1 slide)

Team qualifications and experience

Future needs

Financials – Current and Projections (1 slide)

Milestones

Cash flow

Projections to cash flow positive and profitability

Investment Overview (1 slide)

Investment required

Capital structure

Deal

Exit Strategy

Recap (1 slide)

APPENDIX E: DUE DILIGENCE CHECKLIST

“GREAT ASSOCIATION WITH QUALITY DEAL FLOW”

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Due Diligence Check List

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"Great Association with Quality Deal Flow"

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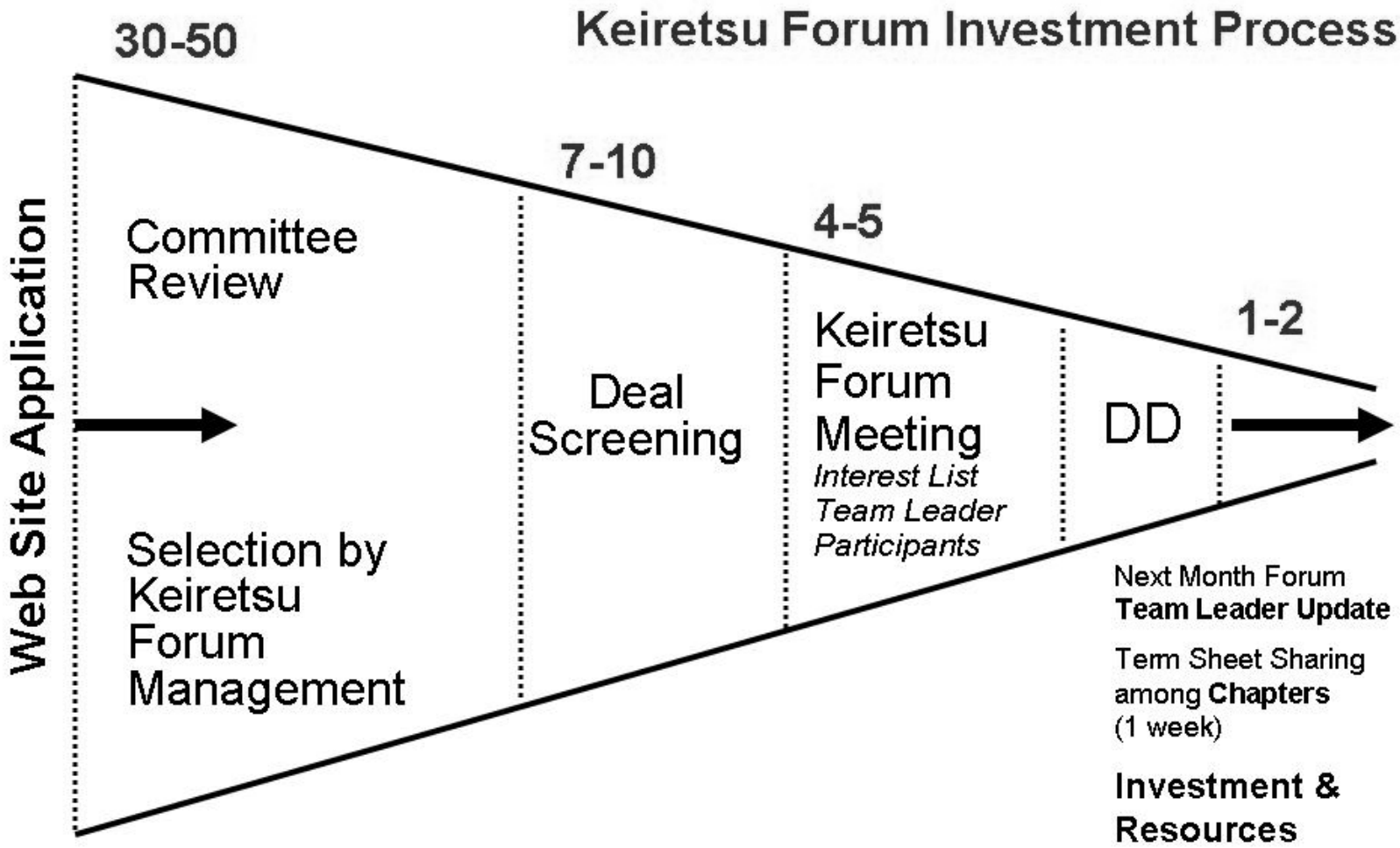

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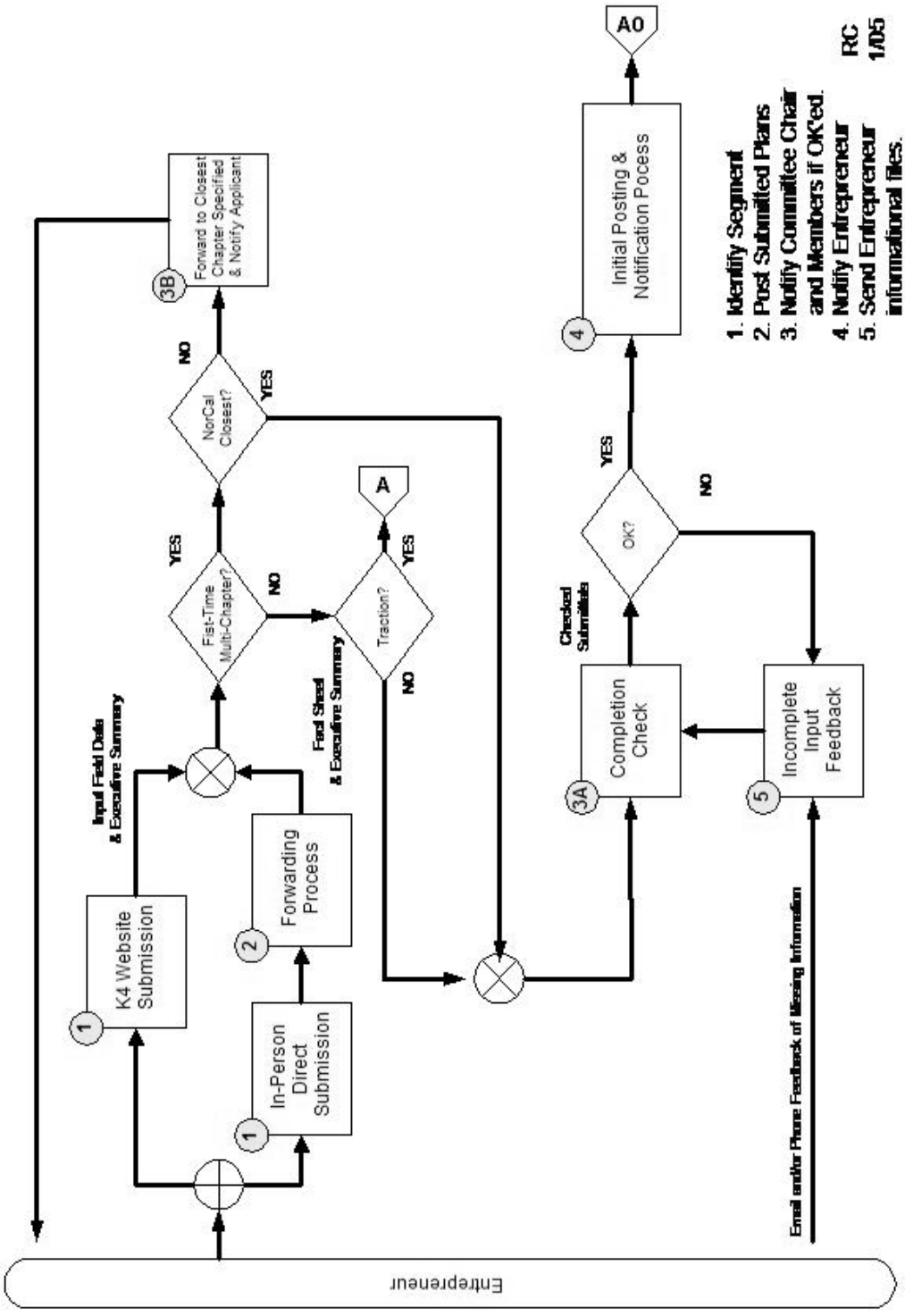
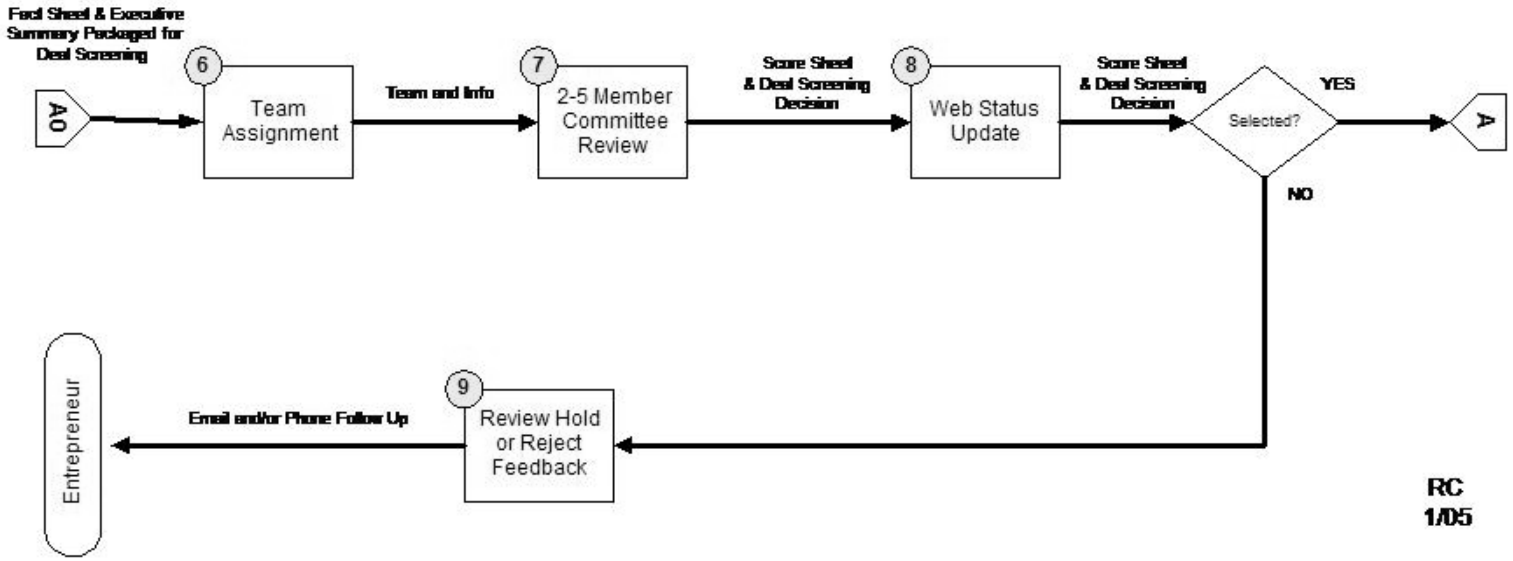
ENTREPRENEUR APPLICATION
[PROCESS STAGE I]



PRE-SCREEN COMMITTEE REVIEW
[PROCESS STAGE II]



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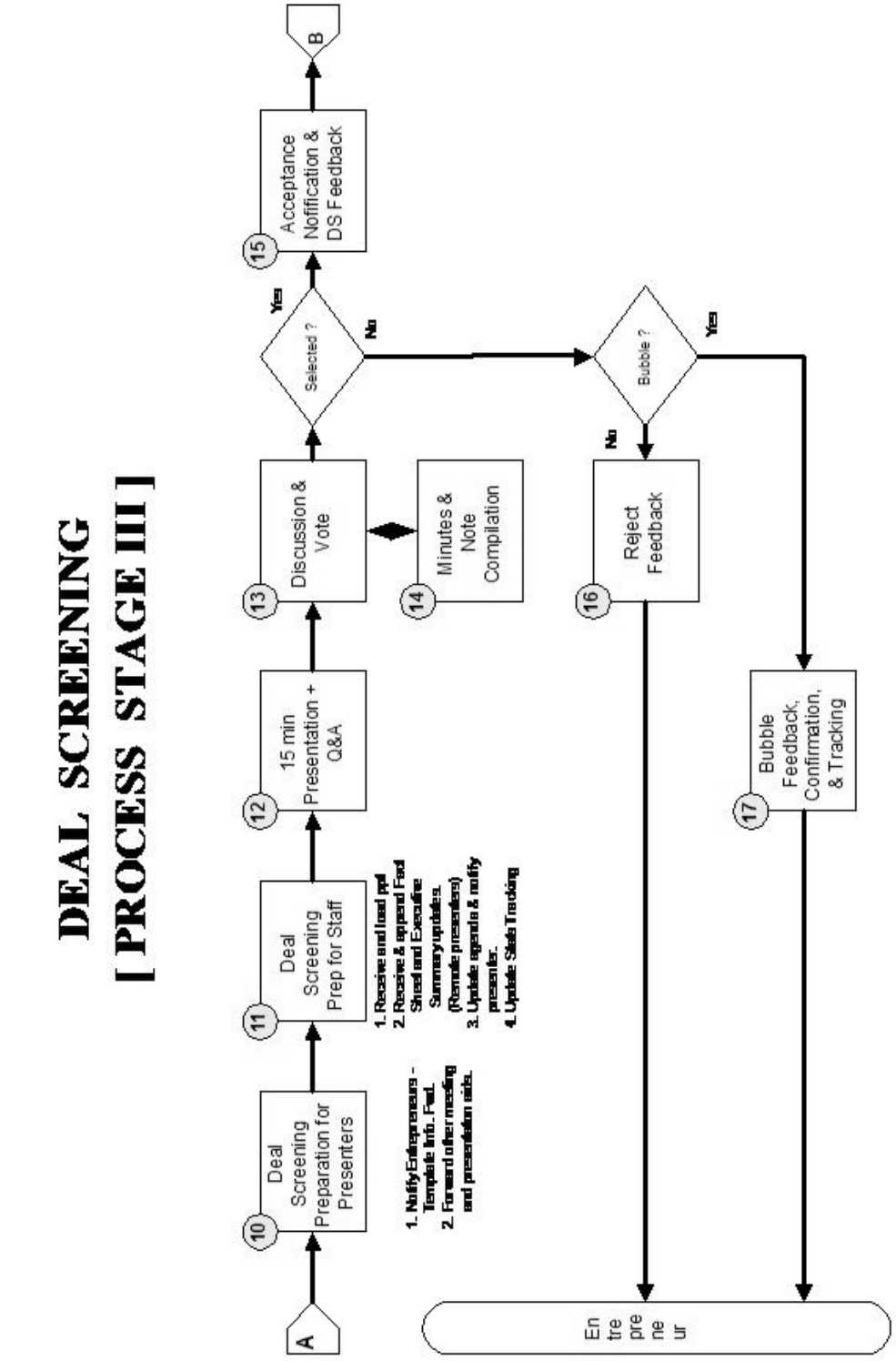
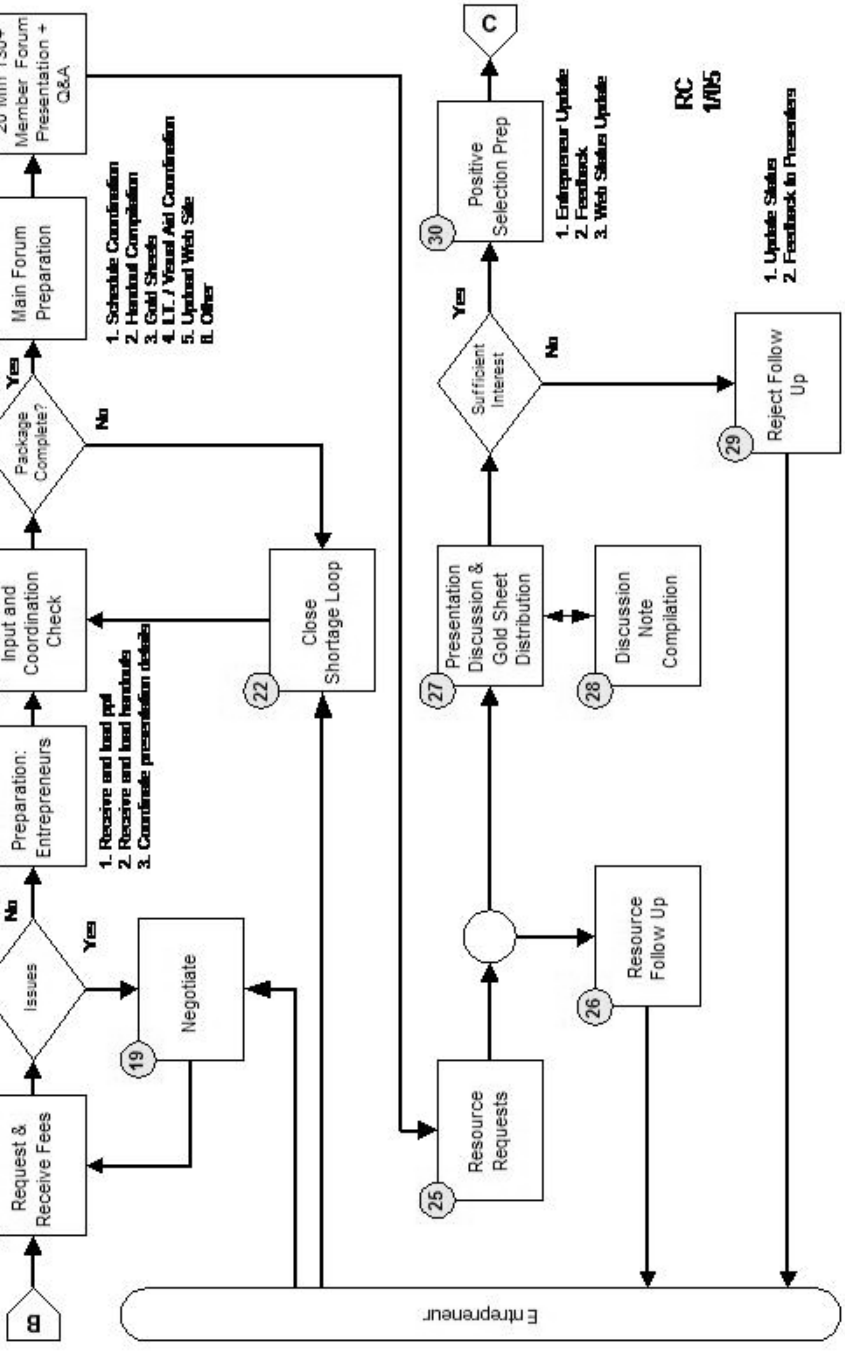
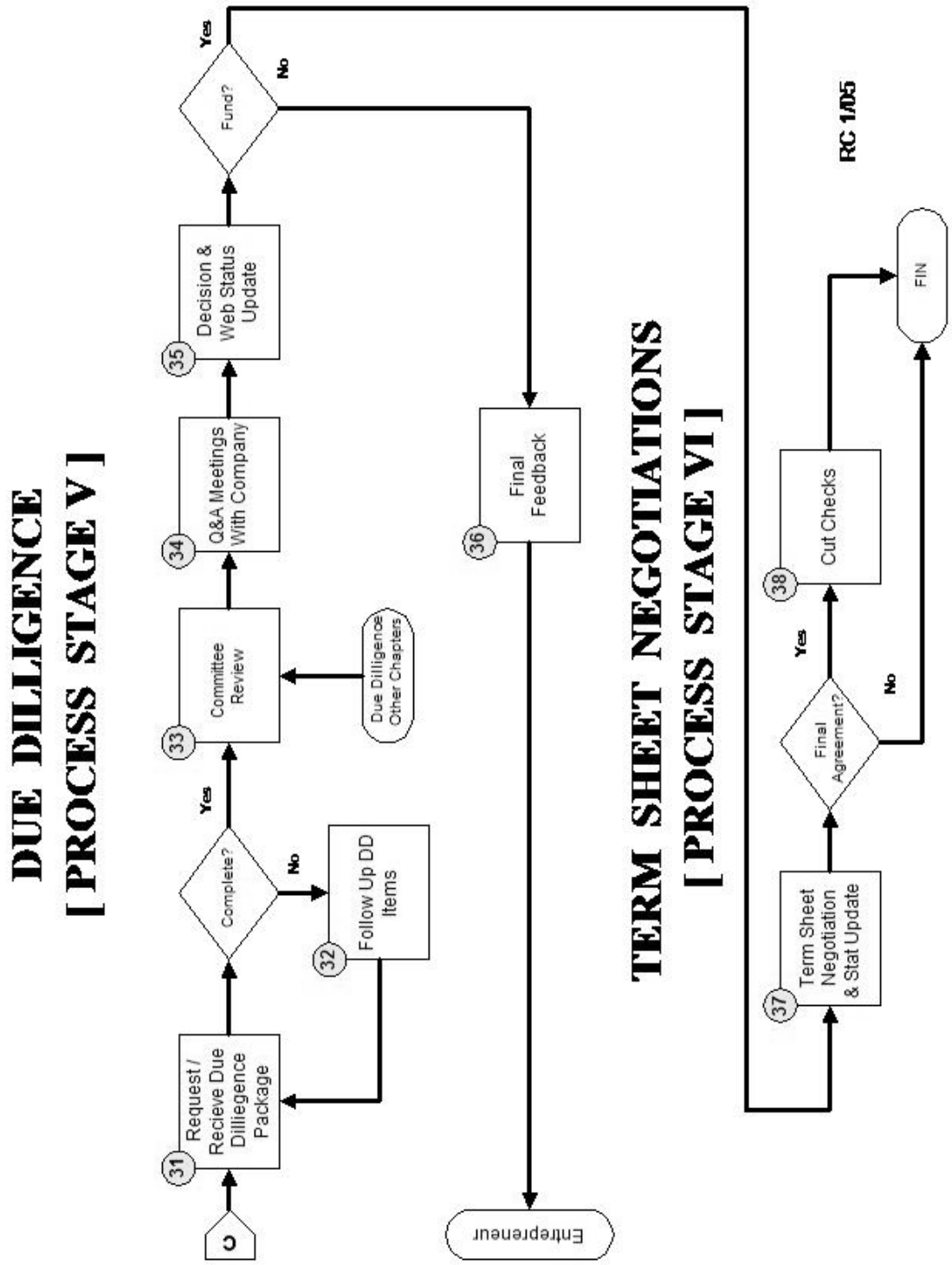
DEAL SCREENING
[PROCESS STAGE III]



KEIRETSU FORUM MEETING
[PROCESS STAGE IV]




DUE DILIGENCE
[PROCESS STAGE V]
C
31
Request / Recieve Due Dilligence Package
Complete?
Yes
No
32
Follow Up DD Items
33
Committee Review
Due Dilligence Other Chapters
34
Q&A Meetings With Company
35
Decision & Web Status Update
Fund?
Yes
No
36
Final Feedback
Entrepreneur
TERM SHEET NEGOTIATIONS
[PROCESS STAGE VI]
37
Term Sheet Negotiation & Stat Update
Final Agreement?
Yes
No
38
Cut Checks
FIN
RC 1/05

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"Great Association with Quality Deal Flow"

Keiretsu Forum Due Diligence Guidelines

Entrepreneurs present at the large Keiretsu Forum meetings following the deal screening selection the previous week.

Interest List is circulated after each presentation. Interested members and accredited investor guests sign in their name, e-mail and telephone number.

In the member only discussion at the end of the meeting a team leader emerges that will lead the due diligence communication between the company that presented to the Forum and the persons that signed on the interest list.

The Interest List is sent out in electronic form to the company, due diligence team leader and interested investors. Keiretsu Forum staff qualifies the guests that signed in and makes sure they are accredited.

It is company's ultimate responsibility to organize the due diligence efforts. The team leader is there to support these efforts.

The company should coordinate with the team leader and interested members to schedule a follow up meeting within 7-10 days after they presented to the Forum. The meeting should be held in the company's office or at location convenient for everybody. Alternative is a recorded conference call.

The team leader needs to:
Communicate with the interested members and gather a list of questions that need to be addressed in more detail by the company.
Provide the company with the list of questions before the meeting / conference call.
Give a progress report update on the following Keiretsu Forum(s).

Note: In case a team leader does not emerge, the company needs to communicate with interested members directly.

Goal: Complete the due diligence and negotiate the terms in max 2-3 months. Provide resources to the company beyond capital.

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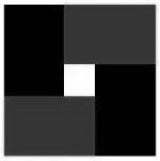
Interest List – March 25,2004

If you are an **accredited investor** and are interested in investing in **(CompanyName)** *and having them* contact you for that purpose, please fill in the following information.

Please be prepared to have a meeting/conference call with the company in the next 7-10 days

	Name	Email	Phone	K4 Member Yes/No	Interested in participating in the due diligence?
1.					
2.					
3.					
4.					
5.					
6.					
7.					
8.					
9.					
10.					

KEIRETSU



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Keiretsu Forum Deal Status Reporting

Keiretsu Forum Due Diligence Check List

As a regular item on the agenda of the monthly Keiretsu Forum meetings, we will provide an opportunity for the team leaders of deals in process to give 30-second “speed updates” on the status of the deal. Ten minutes should provide adequate time to update 4-5 months of deal flow, covering all open investment opportunities before the group.

Items the speed update may include:

1. Number of Keiretsu Forum members involved
2. Level of funding soft-circled
3. Source and amount of other investment in the round
4. Significant information discovered in due diligence
5. Significant business milestones achieved by the presenting company
6. Valuation and deal terms negotiated

The speed update will provide value to the Keiretsu Forum membership in the following ways:

1. Keep interested investors apprised of the progress of due diligence
2. Offer an opportunity for members to participate in investments presented at a meeting they may have missed
3. Offer an opportunity for members to participate in investments whose terms have significantly improved since the original presentation
4. Potentially increase the aggregate investment by bringing in additional members, thereby increasing the Forum’s leverage in negotiating the deal
5. Expose more members to the due diligence process, helping us improve our due diligence best practices and encouraging new team leaders to step forward
6. Enable members to get an overview of the overall deal flow

The speed update will also help the presenting companies in several ways:

1. Keep their deal before the membership
2. Ensure that any positive changes in the deal or the company’s circumstances are communicated broadly
3. Maximize the aggregate investment by Forum members

Keiretsu Forum Due Diligence Check List

Proposed Due Diligence Time Frame

Goal: Complete the due diligence and negotiate the terms in max 2-3 months. Provide resources to the company beyond capital.

Week 1
The company sends e-mail to everyone on the list thanking them for the interest and telling them that they will be forwarding applicable information within 3 days.

The entrepreneur provides the following information: *(Details that need to be addressed for each item are included in the Due Diligence Check List)*
1. Report addressing the specific questions
2. Business Plan Drill Down (Executive Summary, Business Plan, Investor Presentation)
3. Corporate/Structure Organization
4. Funding/Ownership
5. Proposed Deal
6. Financial Structure
7. Financial Model
8. Product/Service
9. Customers
10. Suppliers
11. Marketing

This information is posted on the on-line Keiretsu Forum due diligence site by either the team leader or Keiretsu Forum staff.

If a team leader did not emerge at the Forum, Team leader is selected at this time.

Team leader recruits a minimum of three people from the "interest list" to assist with the DD process. The main categories of the DD indicated below shall be assigned to the DD team.

Categories shall include:
a. Business strategy/ over all market/ competition
b. Financial model/ projections/ best and worse case scenarios
c. IP position
d. Marketing strategy/ Customer validation/ supplier
e. Entrepreneur back ground

Once the team is formed, emails are sent to the group informing them about the formation of the DD team and their respective roles. Everyone is encouraged to read the DD material and email their questions to the DD team leader.

Week 2
Everyone on the DD team starts their respective DD research.
The team leader receives questions from interested investors
The team leader summarizes the questions and sends them to the entrepreneur
The entrepreneur addresses the questions
The team leader works with the entrepreneur and interested investors on scheduling a conference call or on-site visit that will take place in Week 3

Keiretsu Forum Due Diligence Check List

Week 3&4
Site visit or conference call
Following the conf. call, team leader inquires from the “interest list” if there is a need for a follow on conference call without the presence of the entrepreneur.
Team leader asks the DD team to finish their respective DD work within two weeks.

Week 5
Start of the compilation of reports from each person on the DD team.
Send completed DD report to everyone on the “interest list”
Schedule a conference call for the “interest list” to discuss any and all questions that may arise after reading the DD report.

Week 6
Attain the answers to the follow on questions as a result of the second conf. call
Schedule a final conf. call with the “interest list”
Start the soft circle process

Week 7
Start negotiating the terms
3-min update at the following Keiretsu Forum by the team leader
The company may present to another chapter based on overall traction

Week 8
First draft of the negotiated term sheet
Legal Council
Hard circle the financial commitment
Typically, the company should have a term sheet to start (in contrast to a VC deal, where typically, the VC's create the term sheet) and then the lead of the investor group and the company negotiate specific terms. The investor group can go out and get an attorney to review the term sheet if they wish and they should pay for it. In a lot of cases, especially for early stage, "simple" companies, and standard term sheets, legal review may not be necessary.

Week 9
Finalize the term sheet, forward to all interested parties.
Funding is due by the end of the 9th week.

If the investment is being done individually, then each investor needs to sign a term sheet and get their own copy. One thing to consider, especially when we have many investors involved (say more than 10), is the creation of an LLP which then makes the investment in the company. Eases administrative burdens on the company, binds the investors together.

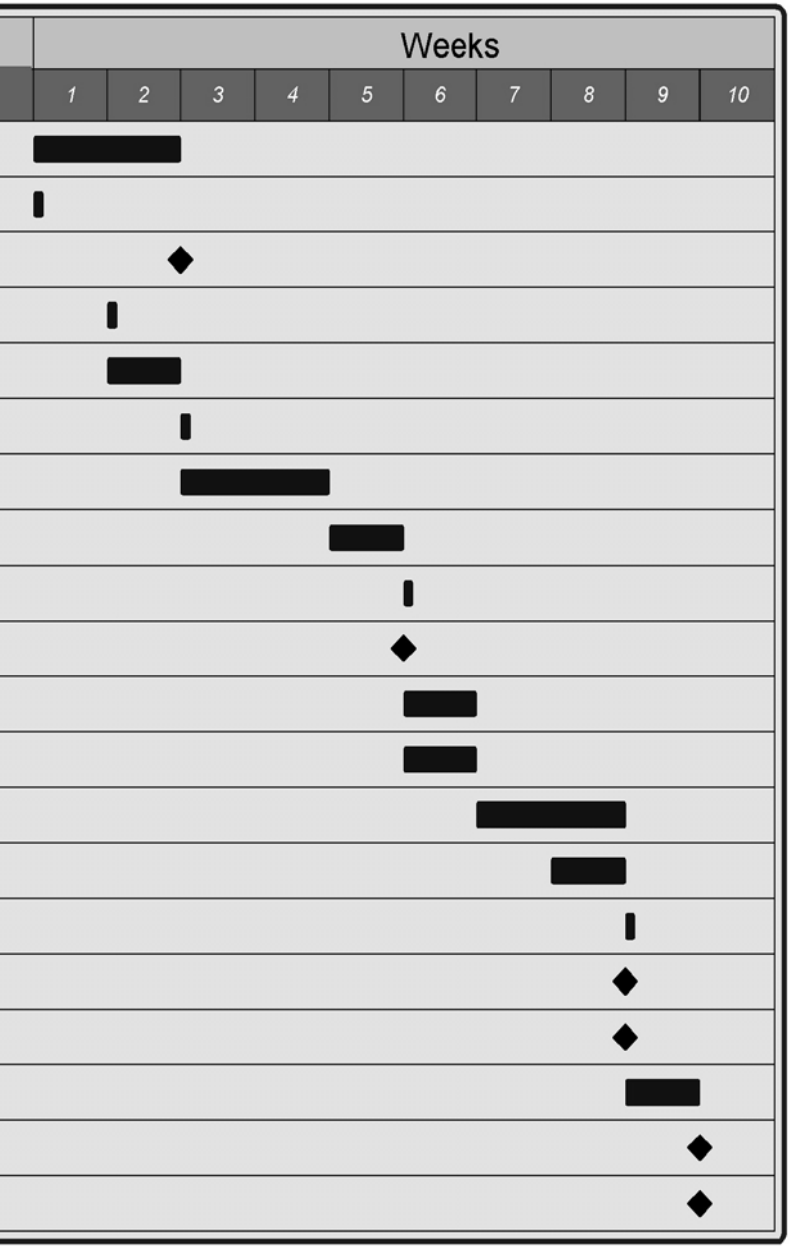
Investors sent checks individually to the company. Each individual investor has to get a signed term sheet back and stock certificate and forms for exercising options (if there are any in the deal).

Keiretsu Forum Due Diligence Check List

This process is illustrated in the chart below.

Keiretsu Forum Due Diligence Check List

ID	Task Name	Duration	Resource Name
1	Compile Due Dilligence Package	2d	Entrepreneur
2	Timing and Schedule Confirmations	1h	Committee Chair
3	DD Package Complete & Start DD Eval Process	0d	
4	Assemble DD Team	1h	Team Lead
5	Initial Q&A (Team lead as point person)	1d	Entrepreneur, Team Lead
6	Site Visit or Conference Call	1h	Team
7	Due Dilligence Research & Analysis	2d	
8	Final DD Q&A	1d	Entrepreneur, Team Lead
9	FInal DD Report	1h	
10	DD Research Complete	0d	
11	Follow On Q&A Conference Calls	1d	Entrepreneur, Team Lead
12	Soft Circle Process	1d	Team
13	Term Sheet Negotiations	2d	Team
14	Term Sheet Draft	1d	Team
15	Legal Council	1h	Attorneys
16	Negotiated Term Sheet Draft Complete	0d	
17	Hard Circle Financial Committment	0d	
18	Finalize and Distribute Term Sheet	1d	All
19	Term Sheet Finalized & Distributed	0d	
20	Funding Due	0d	



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"Great Association with Quality Deal Flow"

Due Diligence Checklist

The Keiretsu Forum Checklist has 8 sections (A-H). Each section can and should be viewed as a separate document. The Checklist should be used in conjunction with the Due Diligence Guideline for Investment Process.

Name	Completed by	Step in the Process
A. Application with Executive Summary	Entrepreneur	On-line application www.keiretsuforum.com
B. Fact Sheet for Deal Screening	Entrepreneur	This form is handed out as part of the Deal Screening. Presenting companies bring 35-40 copies of the completed Fact Sheet.
C. Forum Information Sheet	Entrepreneur With help from the K4 Due Diligence Team Leader	Current practice is carrying-over up-dated Fact Sheet used for Deal Screening to the Forum. Some additional information should become available quickly to the members who have shown interest.
D. Business Plan and Collateral Information	Entrepreneur	Assuming a K4 member confirms interest, then this packet of information would be sent to the member.
E. Demonstration and Site Visit	Due Diligence Committee	This section would be completed as part of the visit to the company facilities
F. Due Diligence Document Binder	Entrepreneur	This is a binder of information that needs to be assembled BUT NOT SEND TO THE MEMBERS. It would be available for any member to read at the company's facility.
G. Industry-Specific Questions	K4 Subgroup industry experts	The section is to be completed by a K4 industry expert member(s) after talking to the company management and reviewing other industry specific information sources
H. Reference Checks	Due Diligence Committee	This section to be completed after talking to the references

Keiretsu Forum Due Diligence Check List

A. Company's Executive Summary

B. Fact Sheet for Deal Screening

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Instructions for Completing the Keiretsu Forum Fact Sheet

Please answer the following questions carefully as specified. It is necessary to LIMIT your responses to keep the Fact Sheet to ONLY 2 PAGES. Please do not use smaller than Times New Roman 11-point font.

Company Name:
Address, City, State, Zip Code:
Web Address:

Presenter's name, Title:
Telephone Number:
E-mail Address:

Round: *i.e. Seed, Series A, B, Bridge, Note to A, etc.*

Funding History and Use of Funds:

Keiretsu Forum Allocation: *How much are you looking for from Keiretsu Forum Members?*

Use of Proceeds: *List use of the Keiretsu Forum allocation i.e. marketing, sales, etc.*

Pre-Money Valuation: *What is your company worth before any investment in this round? Please do not simply state that valuation = number of outstanding shares x price per share.*

Post-Money Valuation: *This will indicate the total size of the round.*

Revenue Forecast: *Indicate whether Year1 is 2003 or 2004 etc.*
Year1
Year2
Year3

Competitive Advantages:

Company Description:

Market Size:

Keiretsu Forum Due Diligence Check List

Market Share: *Current and projected market share in the next 3 years*

Problem Definition: *Explain the problem that you see as opportunity for your company.*

Solution: *Give your company's solution to this problem.*

Competitors:

Current Customers:

Financial model: *How do you make money? For example, 80% subscriptions / 20% advertising and/or licensing, channel partners, etc.*

Future Milestones: *Investors want to know what you must achieve to get to the next funding event. For example, 100 customers or $1,000,000 in annual revenue.*

Exit Strategy: *How will investors get liquid and when?*

Resources Needed: *List resources needed beyond capital. Example, customer acquisition, distribution channels, etc. (Please see Keiretsu Forum Sponsors and Forum Resources)*

Management Team: *List the key management team in the following order:*
Name, position in the company
E-mail address
Background (for example Investment Banking, Connectivity, Software, Biotechnology etc.)

Keiretsu Forum Due Diligence Check List

C. Forum Information Sheet

Company Name: _____ Date: Industry: _____

1. **Management**	Name	Domain Experience	Domain Success	Employee	Contractor/ Advisor
□ CEO	_____	□	□	□	□
□ CTO	_____	□	□	□	□
□ CMO	_____	□	□	□	□
□ CFO	_____	□	□	□	□

Total # EE : _____ Board Members: _____

Comments: _____

2. **General** How did the Company Start? □ Entrepreneurs □ Spin-Out □ Purchased Technology

Brief Company History (50 words) _____

What is the Product or Service? _____

What Stage? □ Conceptual □ Prototype □ Beta Customers □ 1st year of revenues □ 2-5 years of revenues

What problem does the Company solve? _____

Keiretsu Forum Due Diligence Check List

3. **Market** Market Focus _____ Market Size _____ Market Growth Rate _____

Comments: _____

4. **Technology** Is Technology Proven? _____ Time to Prototypes_____ Time to first ship_____

Describe Technology (50 words) _____

Comments: _____

5. **Intellectual Property**

Patents Granted

Patent #	***Description***
_____	_____
_____	_____
_____	_____

Patents applied for: _____ Scope and strength of Patents _____

Licenses owned: _____ Other Proprietary Positions: _____

Comments: _____

6. **Marketing**

What is Approach/Strategy? _____

What makes this different? _____

Competitors / Major Players _____

Does the Market exist? (Is this a missionary sell): _____

Is the Message clear? _____

Can Management execute the strategy? _____

Competitive advantages: □ Price □ New Features □ Patent □ Skilled personnel □ Lead time □ Customer Ownership

Barriers to Entry: _____

7. **Sales Approach** □Inside Sales □Brokers □Distributors □Strategic Partners □Third Parties/VARs

Pricing: _____ Gross Profit: _____ Avg. Time of Sales Cycle: _____

Sales Forecast: This year: _____ Year2 _____ Year3: _____ Year4: _____ Year 5: _____

8. **Customers:** How many? _____ How often do they buy? _____ Any Annuitized Revenues (supplies, maintenance, support, etc.)? _____

Top 3 Customers:

_____

Top Prospects:

_____

9. Financial Status

Current Cash Burn Rate _____Cash On Hand _____

Qtrs. To B/E

_____

Financials	*Historical*			*Forecast*		
	YR ____	YR ____	YR ___	YR _____	YR _____	YR _____
Sales	$_____	_____	_____	$_____	_____	____
Gross Profit	_____	_____	_____	_____	_____	____
EBITDA	_____	_____	_____	_____	_____	____
Net Income <loss>	_____	_____	_____	_____	_____	____

10. **Capital Structure**

Current Investors Are: □ Entrepreneurs □ Friends/Family □ Angels □ Strategic □ VCs

Date of last round _____ Price of last round _____

Loans outstanding_____ Anyone with preferential rights: _____

Investors to Date	*Shares outstanding*	*Amount Invested*	*Major Shareholder*
Common Stock	_____	$_____	_____
Series A	_____	_____	_____

	_____	_____	_____
Series B	_____	_____	_____
Series C	_____	_____	_____
Options	_____	_____	_____
Other	_____	_____	_____
Total:		$	

11. **Proposed Deal**

Amount requested_____ Amount of this Round raised to date: _____

Pre-Investment Valuation_____ Are prior Investors participating? _____

Who?

_____

Terms: _____

12. **What does this company need?**

□ Revise Strategy

□ Revamp Business Model

□ Replace Top Management

□ Augment Management

□ Refine Market

_____

_____

_____

_____

D. Business Plan and Collateral Information

Basic questions to be answered by entrepreneur in writing. Company to provide copies of relevant documents and forms as appropriate.

Step 1 – Company Presentation

Step 2 – Business Plan Drill Down

1. **Executive Summary**
2. **Business Plan**
3. **Investor Presentation**
4. **Sales Presentation**

Corporate Structure/Organization

1. **Founding information: date, founder(s)**
2. **Legal structure: type of corporation, certificate(s) of incorporation, list of states/countries in which (Company) is authorized to do business**
3. **Current By-laws (including all amendments)**
4. **Agreements related to any significant acquisition(s)or disposition(s)made by (Company) during the last 3 years.**
5. **Company organization: Organization chart, FTEs; consultants/service providers (including legal); outsourced functions and relevant contracts**

Funding/Ownership

6. **Funding raised: Capitalization table including capital raised to date, form/structure(s) including bridge loan(s) valuation, funding sources and relationship/commitments to (Company), contact information**

Proposed Deal

7. **Current round of funding: amount expected, timeframe, expected use of funds, expected milestones, shortfall contingency plan**
8. **Planned next round of funding: targeted capital sources, amount required, expected use of funds, expected milestones**
9. **Company valuation: current valuation, basis for valuation, industry comparables**

Financial Structure

10. **Historical financial statements for last 3 years: Balance Sheet, Income Statement and Cashflow (audited versions if available)**
11. **Schedule of all liens and encumbrances against assets/stock**
12. **Schedule of all (Company)'s investments**

13. Copies of all federal, state, local and foreign tax returns for the current year and past three years

Financial Model

14. Historical and current financial model: debt, cash flow, burn rate, income, balance sheet
15. Margin (s): gross, operating and net margins for each product/service marketed and expected trend over time and product cycle
16. Projected financials: cash-flow and income projections for next 3-5 years
17. Assumptions driving projected financials: market share/penetration; price; revenue model; sale and payment cycles; cost of goods/services; overhead; …etc.

Product/Service

18. Expected time frame and milestones to reach commercialization
19. Copy of all product marketing materials, including product list(s), pricing list(s), customer list(s) and all marketing collateral
20. Status of product(s)/service(s) development cycle (pre-α, α, β, commercial trial, commercial launch…)

Customers

21. Existing customer(s) and nature of relationship: names, contacts and their position; targeted sales volumes and revenues for top 10 customers
22. Customers' pipeline
23. Letter(s) of intent from potential customer(s)

Suppliers

24. List all suppliers critical to the development, procurement, deployment and servicing of product(s)/service(s)

Marketing

25. Copies of most relevant and recent press releases and/or coverage related to (Company), targeted market, competitors and customers

E. Demonstration & Site Visit

A. Product(s)/Service(s)

1. Workflow or process map showing how product(s)/service(s) marketed by (Company) fit in targeted customer(s)' business environment: ease of introduction in existing processes; impact on adjacent processes;
2. Explain customer need and urgency for product(s)/service(s) marketed by (Company) and how it can change over time as influenced by internal or external factors (customer's priorities, budgets, results; regulatory changes; market and/or economic shifts; …etc.)
3. Management contingency plan in event that product development and/or deployment is delayed: planned mitigation of development/deployment cost overrun and delay in revenue generation.

B. Marketing/Pricing

4. Sales approach: evaluation of management's approach to reach targeted distribution channels for realism (cycle time, resources, cost, incentive/compensation …etc.)
5. Sales cycle: discuss concerns about potential delay in sales closures and management's plan to mitigate such.
6. Pricing strategy: discuss realism and basis for price/value proposition; is there a ROI case to present to the customer? Is it a tactical/short-term ROI play versus a long term-strategic one and what are the implications on pricing and expected sales?
7. Planned pricing adjustments at various steps of (Company)'s lifecycle: trial, launch, growth, maturity; test for realism and safety margin accounted by management.

C. Roll-Out Plan

8. Management Roll-out plan from product development to break-even: milestones; resources required (cash, human, technology …etc.); sales targets; infrastructure implications and how (Company) will address them.
9. Management specific experience in rolling out similar product(s)/service(s)
10. Management's plan to mitigate missed and/or delayed milestones in term of revised roll-out plan (accelerating other phases?), resources requirements (cash, human, technology) and business viability.

D. Revenue Assumptions

11. Management's evaluation of risk of not reaching revenues built into financial projections: probable cause(s); influencing parties/factors;
12. Potential impact of predatory pricing from new market entrant or existing competitor(s) on (Company)'s projected revenues and management's plan to mitigate such (cost reduction, defense of pricing through superior value and/or quality …etc.).

E. Organization

13. Management compensation plans and agreements including bonus and deferred compensation agreements: discuss basis for such; review changes expected by management in near and mid-term future; ensure plan is adequate to incent key management to stay and to attract other required executives.

14. Schedule of employment, consulting and advisory contracts: ensure that all contracts are in place and adequate.
15. List of employees including wages/salaries/retirement plans and job description: ensure adequacy relative to job market conditions, (Company)'s situation and needs.

F. Competition

16. Name of competitors in targeted and adjacent markets; explain their positioning relative to (Company) covering their respective strengths and weaknesses; market share / revenues (actual or estimates); funding/backing; Opportunity and/or threat they each represent for (Company).
17. (Company)'s product positioning vs. competition: attributes and value / price comparison including projected shift along product/market maturity cycle.
18. Explain and demonstrate effectiveness of relative barriers to entry.
19. Explain and demonstrate "unfair competitive advantage" on competition.

G. Risk and Opportunities

20. Management's views or risks it faces in implementing the proposed business plan and plan on how to mitigate such risk.
21. Management's assessment of additional opportunities (other markets, adjacent products/services, additional sales or improvement of pricing environment/mechanism that can be seized and potential impact on (Company)'s results and strength.

H. Finance

22. Financial projections sensitivity analysis: impact of change in assumed costs, prices, sale volumes and revenues on projected financial results; has management provided enough safety margin to achieve projected results?
23. Management plan to control costs and maintain costs them within projected range: product(s)/service(s) cost structure; overhead; sales and marketing expenditures.
24. Schedule of any material commitment or any material off-balance sheet liabilities that are considered likely to give rise to any liabilities.

I. Demonstration and Site Visit Questions

Demos and other due diligence items requiring an on site visit are often industry specific. Nevertheless, there are observations a K4 due diligence member can make that may affect an investor's interest in the company. These include:

1. What is Company Culture?

2. List employees attending Due Diligence Meeting.

3. Describe the work environment.

4. Does the office space, the office furniture, the computers and other assets look appropriate for the size and capitalization of the company?

5. Demonstration of product(s)/service(s) in either simulation or real environment in presence of technology expert. Does it do what (Company says) it is supposed to do? Does it work consistently (several trials)? What factor(s) influence the proper functioning and are they likely to prevent successful deployment?

6. Level of security deployed by (Company) to protect information and intellectual property (access policy, redundancy of systems, ……. etc.)

F. Due Diligence Document Binder

Following are the tabs for documents to be provided for the Due Diligence Coordinator

Corporate

1. Certificate of Incorporation and all related documents:

1.1.1.	**Articles of Incorporation**	**□ NA □ Provided**
1.1.2.	**By Laws**	**□ NA □ Provided**
1.1.3.	**Shareholder Agreement**	**□ NA □ Provided**

2. Schedule of all bus. entities, which comprise, or are affiliated with the Company.

□ NA □ Provided

3. Stockholder Agreements **□ NA □ Provided**

4. Options Plan, rights of first refusal. **□ NA □ Provided**

5. Voting trust Agreements. **□ NA □ Provided**

6. Warrants Agreements. **□ NA □ Provided**

7. Any other agreements with respect to ownership of the Company or relating to rights to purchase the capital stock and/or assets of the Company. **□ NA □ Provided**

8. Agreements, documents or closing volumes related to any significant acquisitions or dispositions made by the company during the last three years or which are currently proposed.
□ NA □ Provided

9. List of current officers and directors of the company and all employees and consultants of the company.

□ NA □ Provided

10. Internal operation manuals, all policy manuals, including those related to hiring, regulatory compliance, internal controls and internal policy statements of the company.
□ NA □ Provided

11. Closing volumes and any other agreements or documents relating to any secured or unsecured borrowings of the company, including any debt instruments, debt/equity exchanges, letters of credit, sale and leaseback transactions, guarantees, pledges, security agreements and any other documents relating to liens and security interests.

□ NA □ Provided

12. Bonds or other government financing programs. □ NA □ Provided

13. All material correspondence with lenders including correspondence related to refinancing of any the company debt. Need to review and summarize any loan agreements

Finance

1. A summary of any loans, guarantees, performance bonds, and/or cash infusions of any officer, director or stockholder of the company or any other related party and amounts and terms of such loans or transactions. □ NA □ Provided

2. Financing for specific facilities of the company, including documents and agreements evidencing equipment and vehicle financing arrangements. □ NA □ Provided

3. Schedule of all liens and encumbrances against any of the Company's assets or stock . □ NA □ Provided

4. Any correspondence with creditors or Companies during the last two years not in the ordinary course of business. □ NA □ Provided

5. Schedule and documents supporting loans and loan guarantees. □ NA □ Provided

6. Schedule of all investments related to the business of the company. □ NA □ Provided

7. Schedule of all bank accounts and safe deposit boxes of the company. □ NA□ Provided

8. Audited financial statements for the past three years. □ NA □ Provided

9. List of all current inventories including location of inventory. □ NA □ Provided

10. Detail list of all tangible property and equipment including location. □ NA □ Provided

11. Detail list of current Accounts Payable and Accounts Receivable aging. □ NA □ Provided

12. List of all products and services offered and their pricing. □ NA □ Provided

13. Description of financial and management information systems and related contracts with outside vendors if applicable. □ NA □ Provided

14. Current and future years Budget and strategic plans. □ NA □ Provided

Taxes

1. Copies of all federal, state, local and foreign tax returns for the current year and past three years.

□ NA □ Provided

2. Copies of memoranda and other documentation relating to the company's income or other tax liability or prepared in connection with any tax problems affecting the business of the company since inception or which may rise in the future. □ NA □ Provided

3. Copies of all state sales and use tax reports and returns of the company for the current and past three years. □ NA □ Provided

4. A schedule describing any ongoing tax disputes with copies of documentation with respect to pending federal, state, local or foreign tax proceedings with regard to open items.

□ NA □ Provided

Employee Relations

1. Management compensation plans and agreements including bonus and deferred compensation agreements. □ NA □ Provided

2. Employment, consulting and advisory contracts. □ NA □ Provided

3. Summary of employees including wages/salaries and job description. □ NA □ Provided

4. Employee background investigations and degree verification documents. □ NA □ Provided

5. Pension and retirement plans and all related plan documents. □ NA □ Provided

6. Management & consulting agreements, agreements not to compete, agent agreements, confidentiality agreements with employees, & agreements with employees covering inventions. □ NA □ Provided

7. Key man life insurance plans or other death benefits. □ NA □ Provided

8. All correspondence and documents received from and filed in the last three years with relevant employee relations, occupational safety and civil rights organizations.
□ NA □ Provided

9. Schedule and brief description of all pending legal or arbitration proceedings.
□ NA □ Provided

10. All employee manuals, handbooks, policy statements, payroll practices and personnel practices. **□ NA □ Provided**

11. Acquisition or divestiture agreements affecting any Qualified Plans. **□ NA □ Provided**

12. Any other material agreements or documents relating to employees, consultants or agents of the company. **□ NA □ Provided**

13. Insurance Policies including product liability, E & O, D & O, liability limits etc.
□ NA □ Provided

Name of broker_____

Contracts And Commitments

1. Material &/or long-term contracts and purchase orders w/customers & suppliers.

□ NA □ Provided

2. All government contracts. **□ NA □ Provided**

3. Material and/or long-term equipment, automobile or other leasing contracts.

□ NA □ Provided

4. All management or service contracts for the sale of services related to the business of the company. **□ NA □ Provided**

5. Agreements requiring the company to indemnify or hold harmless any other person.
□ NA □ Provided

6. Agreements related to waste disposal and environmental services. **□ NA □ Provided**

7. Any other material and/or long-term contract related to the products, services or business of the company. **□ NA □ Provided**

8. Information services and data processing agreements, including lists of software and licensing status. **□ NA □ Provided**
9. All requirements or take-or-pay contracts. **□ NA □ Provided**

10. All warranties and service contracts. □ **NA** □ **Provided**

11. All license agreements. □ **NA** □ **Provided**

12. All distribution and distributorship agreements. □ **NA** □ **Provided**

Property

1. Deeds held by the company and options to sell or purchase real property. □ **NA** □ **Provided**

2. Original real property leases and all amendments thereto. □ **NA** □ **Provided**

3. Easements, licenses and restrictions on use relating to real property related to the business of the company. □ **NA** □ **Provided**

4. Title insurance policies & surveys relating to real property related to the company. □ **NA** □ **Provided**

5. Maps and blueprints of all buildings and property of the company. □ **NA** □ **Provided**

6. Appraisals on any owned real property. □ **NA** □ **Provided**

7. Schedule of material personal property owned & related to the business of the company. **NA** □ **Provided**

Governmental Licenses, Permits and Filing

1. Federal licenses, permits or clearances related to the business of the company if applicable. □ **NA** □ **Provided**

2. State, county, and city licenses, certificate of occupancy, and environmental-related permits related to the business of the company. □ **NA** □ **Provided**

3. All other licenses, certificates and letters of accreditation. □ **NA** □ **Provided**

4. Policies related to the treatment, storage and disposal of hazardous waste and other waste products. □ **NA** □ **Provided**

Intellectual Property

1. Schedule of patents, trademarks, service-marks, trade-names, copyrights and other agreements used or held in the name of the company. □ NA □ Provided

2. Documents regarding any claim of infringement of the intellectual property rights of Companies and any claims against the company alleging any such infringement. □ NA □ Provided

3. Any other material intellectual property rights or claims. □ NA □ Provided

Insurance

1. Schedule and description of all insurance policies currently in effect. □ NA □ Provided

2. Copies of all insurance policies in effect and certificates of insurance for each of such policies. □ NA □ Provided

3. Loss and/or claims history for all such insurance coverage's maintained for the company for the past 5 years. □ NA □ Provided

Litigation And Regulatory Compliance

1. Copies of all material correspondence or notices concerning compliance with occupational safety, civil rights, labor or environmental laws. □ NA □ Provided

2. Consent decrees, judgments, settlement agreements and other agreements to which the company is bound, requiring, regulating or prohibiting any future activities. □ NA □ Provided

3. Schedule and brief description of all pending legal or arbitration proceedings to which the company is a party and the names of the court or agency in which the proceedings are pending. □ NA □ Provided

4. Schedule of potential or threatened government investigations and legal proceedings and any other contingent liabilities of the company. □ NA □ Provided

5. All material correspondence with respect to any administrative or regulatory body which regulates the business of the company. □ NA □ Provided

6. Audit response letters from all outside legal counsel to the company for the past three years. □ NA □ Provided

G. Industry-Specific Questions

These questions relate to specific industries/products/services and are provided to the K4 Due Diligence Coordinator for use as it may apply to the Company being evaluated for investment. Contact should be established with K4 members with specific knowledge and experience in these areas in order to built a list of specific questions most appropriate to the Company.

Software

1. What is/are the platform(s) on which the (Company)'s application(s) are being written? How current is it and how much of a future does it have compared to others?

2. Does the company have the adequate licensing arrangements in place for use of coding language(s) or other proprietary platform tool? Are there any expected changes in these arrangements in the foreseeable future and how would they impact the (Company)'s product(s) and its viability?

3. How has the application(s) been tested so far? Results of such tests? Resulting action plans (debugging, streamlining, re-coding, etc.)?

4. What is/are the next testing milestones and when do they expect to be reached?

5. Is management team experienced in testing and launch of software applications? Describe specific experiences and how they apply to the particular application being launched?

6. How compatible is the application with the platform commonly used by targeted customers? Has compatibility been tested? If yes, what were the findings and resulting action plans?

7. What is the functionality of each application release version and how does it compare with expected requirements from targeted customers?

8. How easy is it to customize the application to meet specific and/or changing customer needs? Is customization required by targeted customers and to what level?

9. What would it take for competitor (existing or new) to develop a similar application in terms of specific expertise and resources (human, capital, time) required?

Hardware

1. What is/are the technology(ies) used in the design and manufacturing of each hardware component marketed by (Company)?

2. Has (Company) made the proper arrangement for use of others' technology(ies) in its product(s)? How are these arrangements expect to change and how would these changes impact the (Company)'s viability?

3. How has the hardware component(s) been tested so far? Results of such tests? Resulting action plans (re-design, improvements, etc.)?

4. What is/are the next testing milestones and when do they expect to be reached?

5. Is management team experienced in testing and launch of hardware applications? Describe specific experiences and how they apply to the particular hardware application being launched?

6. How compatible is the hardware with the platform(s) or hardware commonly used by targeted customers? Has compatibility been tested? If yes, what were the findings and resulting action plans?

7. What is the functionality of each historic and planned hardware release and how does it compare with expected requirements from targeted customers?

8. How easy is it to customize the hardware component(s) to meet specific and/or changing customer needs? Is customization required by targeted customers and to what level?

9. What would it take for competitor (existing or new) to develop a similar application in terms of specific expertise and resources (human, capital, time) required?

Life Sciences-Biotechnology

1. Meet at (Company) to review facilities for laboratory and manufacturing work (if applicable) and assess adequacy for product(s) developed and/or being launched.

2. What is the status of product/application testing? What is the (Company)'s planned testing plan and are resources adequately planned for each phase (human, materials, capital, time)?

3. If required, what is management team's experience with clinical trials and FDA approval process and how does it apply to this specific trial?

4. If (Company) has already started and/or completed clinical trial(s), what is/are the protocol(s) and result(s) to date? What is/are the next set of expected result(s)?

5. What is the (Company)'s vendor qualification policy and process and how does it tie to the quality and consistency of the (Company)'s product(s)?

Telecommunication – Wireless

1. What is/are the platform(s) on which the (Company)'s product(s) are being developed and how does it work with the prominent platform(s) used by targeted customers?

2. What is the status of product/application testing? What is the (Company)'s planned testing plan and are resources adequately planned for each phase (human, materials, capital, time)?

3. What are the hardware and software implications for targeted customers (upgrade, switch to other platform, …etc.)?

4. Are they any anticipated interference with customers' existing infrastructure that may prevent or slow down (Company)'s product launch and adoption (IR interferences with POS infrastructure for ex.)? How has (Company) evaluated this risk and how does it plan to mitigate it?

5. If consumers' adoption is critical to (Company)'s product(s)' success, has there been any focus group or similar research to quantify consumers' interests and obtain consumers' concerns? Results of such and resulting action plan?

6. What is the status of (Company)'s relationship(s) with required partners: wireless carriers, phone/hardware manufacturer, retailers, others. What is the (Company)'s exposure if one such relationship does not materialize or changes in a significant manner?

Real Estate

1. **What is/are the history of the property(ies) being acquired and/or marketed by (Company)? Ownership, classification, work/development performed, previous use for similar or other activities, historic utilization and rates…etc.**

2. **What the environmental status of the property? Any clean-up required before permit for planned use van be issued and, if yes, what is the anticipated cost and timeframe for such clean-up? Is risk-based clean-up an accepted option for the property and its intended use?**

3. **Who will manage the property during development and commercialization phases and what is their respective experience in doing so?**

4. **What is the status of all permits required for intended use of property?**

5. **What are the terms (rates, term, significant provisions) of lease(s) with existing tenant(s) and how likely are renewals (and at what terms)?**

6. **What are the expected running costs for property and how does it compare with other similar property(ies) also run by (Company)? How does it compare with industry standards with similar property(ies)?**

H. Reference Check

1. **How long have you known _____ _?**

2. **In what capacity did you interact with them and they interact with you?**

3. **What relevant skills and experiences does _____ bring to this position, which allows them to: Shape the work environment and culture of this company; set strategy; allocate resources; develop managers; build an organization; oversee operations?**
_____

4. **Does _____ have a clear picture of the emerging markets and the competitive landscape in which this company operates?**
_____

5. **Does _____ have a track record of demonstrated accomplishments and results in this industry, which leads you to believe he/she can be successful in this venture?**
_____

6. **Does _____ build good relationships with peers and subordinates?**
_____

7. **Is _____ honest, dependable and take responsibility for his/her actions _____**