VENTURE CAPITALISTS' INVESTMENT CRITERIA IN TECHNOLOGY-BASED NEW VENTURES

by

Jagdeep Singh Bachher

A thesis
presented to the University of Waterloo
in fulfillment of the
thesis requirement for the degree of
Doctor of Philosophy
in
Management Sciences

Waterloo, Ontario, Canada, 2000

© Jagdeep Singh Bachher, 2000

National Library of Canada
Bibliothèque nationale du Canada

Acquisitions and Bibliographic Services
Acquisitions et services bibliographiques

395 Wellington Street
Ottawa ON K1A 0N4
Canada

395, rue Wellington
Ottawa ON K1A 0N4
Canada

Your file Votre référence

Our file Notre référence

The author has granted a non-exclusive licence allowing the National Library of Canada to reproduce, loan, distribute or sell copies of this thesis in microform, paper or electronic formats.

L'auteur a accordé une licence non exclusive permettant à la Bibliothèque nationale du Canada de reproduire, prêter, distribuer ou vendre des copies de cette thèse sous la forme de microfiche/film, de reproduction sur papier ou sur format électronique.

The author retains ownership of the copyright in this thesis. Neither the thesis nor substantial extracts from it may be printed or otherwise reproduced without the author's permission.

L'auteur conserve la propriété du droit d'auteur qui protège cette thèse. Ni la thèse ni des extraits substantiels de celle-ci ne doivent être imprimés ou autrement reproduits sans son autorisation.

0-612-51177-4

Canada

The University of Waterloo requires the signatures of all persons using or photocopying this thesis. Please sign below, and give address and date.

ABSTRACT

The objective of this multi-stage study is to explore and identify the salient investment criteria used by venture capitalists (VCs) in technology-based new ventures, at the evaluation stage. In Stage # 1, the author established a network of VCs and found that they are approachable, and the VCs were willing to co-operate in this study. In Stage # 2, the author conducted a case study in the form of participant observation on a technology-based new venture developing Internet electronic commerce software. The results include the process and set of investment criteria used by two venture capital firms that invested at the early stages of this venture. In Stage # 3, using semi-structured interviews, the author further explored the process and investment criteria used by a sample of 18 VCs in Silicon Valley (California) and Boston (Massachusetts) for technology-based new ventures. The criteria from Stages # 2 and # 3 were content analyzed and resulted in the development of the web-based surveys in Stage # 4 (www.venturecapital2000.com).

All the salient findings from Stages # 2 and # 3 were summarized into six categories (and are presented here in order of decreasing importance to the VCs): Characteristics of the new venture's 1) management team, 2) target market, 3) offering (product or service), 4) competitive positioning within its environment, 5) capital payback projections, and 6) business plan. In Stage # 4, the author identified the salient investment criteria used by 100 VCs (50% response rate) and the degree of tangibility of the criteria from 12 Canadian VCs (100% response rate). Of the six categories, "the management team" generated the highest number of important criteria (means ≥ 5.5), a total of 30 (and were mostly tangible in nature, mean tangibility ≥ 4.5). This total approaches 60% of all the important criteria. The remaining account for 21 of the criteria (all tangible in nature), and the most salient among them is "venture offering is driven by market demand" (mean = 6.23). The majority of salient criteria are related to management team and market, and is customer focused. The only intangible criterion was, "the ability to effectively manage change within the new venture" (mean tangibility = 3.17). The most frequent source of deal origination is "referral by a trustworthy source to the VC" (64%).

Most entrepreneurs have difficulty in raising venture capital; VCs claim that there are very few good deals to invest in; there is a limited amount of venture capital available for new ventures at the early-stages; and there are more failures of technology-based new ventures than successes. One way of increasing the likelihood for an entrepreneur of a technology-based new venture to raise venture capital is to understand the investment criteria used by VCs and their investment preferences. Previous studies have expressed the importance of the management team to the investment decision of the VC. This study has explored the criteria that are of importance to VCs within the management team. This study also provides insight into how VCs and some of their peers make investment decisions in the California and Massachusetts areas, where VCs are considered to set the trends for the venture capital industry.

ACKNOWLEDGEMENTS

I would like to begin by thanking my academic mentor and supervisor, Paul D. Guild who believed in and encouraged my passion to complete this thesis. I have enjoyed every single discussion and dream that we have shared together. He taught me that pursuing my intellectual curiosity in a scientific form is an adventure. In addition, this thesis would not have been possible without the generous support, co-operation, patience, and insights from the 130 venture capitalists who participated in this study. Though behind the scenes, they are the ones who fuel the new economy with risk capital. I also would like to extend my appreciation for the guidance provided to me by my committee members, Gary Griffin, Niall Fraser, and Tom Astebro, as well as all my teachers during my academic studies. In particular, I will never forget Joseph Salami and Mike Yovanovich for sharing their knowledge of and enthusiasm for Mathematics.

While writing this thesis, I was fortunate to have developed a circle of friends who have shaped my ideas. Malcolm Gissing backed my entrepreneurial ideas as my business mentor. Patrick Lavelle helped me to keep my sense of humor while pursuing my dreams. Kent Plumley invested in my early adventures. Graham Mitchell mentored me endlessly. Rob Ryan taught me the Silicon Valley Way. Ryan Little ignited my flame for the Internet. Dave Black and I enjoyed business over squash games. Doug Bierer contributed to my business concepts. My academic life has also been filled with the joy of establishing life long friendships with Paul Frechette, Stan Ali, Phil Nguyen, Tarunraj Singh, Harmeet Ahuja, Jaspreet Ahuja, Dimple Lakhani, Michelle Kay, Amanda Sanghera, Satinder Sanghera, Rajinder Singh, and Marion Reid. Fawzia Hussain deserves special recognition for her endless support of all my work. Finally, Enrique Diaz De Leon was my best office mate ever, and I thank him for staying up long hours helping me crystallize my ideas.

My special appreciation to Harbans Noor, Aban Noor, Amarjeet Chadha, and the Sabherwals, for their love, support and encouragement. I will always cherish the memories of my grandparents and my dearest uncles and aunts who did not live to see this day. They have made my pursuit of knowledge a joy. Having the support of family is a very valuable

asset and one I have truly treasured. Finally, I would never have embarked on this Ph.D. journey if it were not for the most important people in my life. My dad, Kuldip, and mom, Harbhajan, made countless sacrifices so that I could complete this thesis. My sister, Aradhana, and brother, Amar, supported me endlessly. Together, you have been the academic and business angels in my life. I know that your investment in me has been one of high risk, but with the knowledge gained, I am confident that it will yield high returns.

DEDICATION

To

Harbhajan, Kuldip, and Aradhana Bachher

Late Sant Kaur

Late Dave Black

TABLE OF CONTENTS

ABSTRACT ..... (iv)
ACKNOWLEDGEMENTS ..... (vi)
DEDICATION ..... (viii)
TABLE OF CONTENTS ..... (ix)
LIST OF TABLES ..... (xii)
LIST OF FIGURES ..... (xiv)

CHAPTER 1 INTRODUCTION 1

1.1 MOTIVATION 2
1.2 BACKGROUND 6
1.3 TYPES OF VCS 7
1.4 EARLY-STAGES OF FINANCING 8
1.5 GEOGRAPHIC SITES 10
1.6 THESIS ORGANIZATION 11

CHAPTER 2 LITERATURE REVIEW 12

2.1 DECISION-MAKING RESEARCH 12
2.2 VCS INVESTMENT PROCESS RESEARCH 15
2.2.1 Screening *17*
2.2.2 Evaluation *18*
2.3 RESEARCH QUESTION 24

CHAPTER 3 METHOD 26

3.1 STAGE # 1 – NETWORK CREATION 27
3.2 STAGE # 2 – CASE STUDY 30
3.2.1 Case Study Research *30*
3.2.2 Participant Observation *31*
3.2.3 Data Collection *31*
3.3 STAGE # 3 - INTERVIEWS 36
3.3.1 Sample *36*

3.3.2 Data Collection *37*
3.4 STAGE # 4 – WEB-BASED SURVEYS 38
3.4.1 Pilot Study *40*
3.4.2 Sample Identification *42*
3.4.3 Data Collection *45*
3.4.4 Survey # 2 – Tangibility of Investment Criteria *49*
CHAPTER 4 RESULTS 51
4.1 STAGE # 1 – NETWORK CREATION 51
4.2 STAGE # 2 – CASE STUDY 51
4.2.1 Background *51*
4.2.2 Flexibility With Strategy *53*
4.2.3 Credible Board of Directors *61*
4.2.4 Summary *65*
4.3 STAGE # 3 - INTERVIEWS 65
4.4 STAGE # 4 – WEB-BASED SURVEYS 77
4.4.1 Summary of Analysis *79*
4.4.2 Categories of Investment Criteria *82*
4.4.3 Investment Criteria *92*
4.4.4 Importance of Investment Criteria *93*
4.4.5 Tangibility of Investment Criteria *95*
4.4.6 Investment Criteria Reduction *99*
4.4.7 Top Two Categories – Management Team and Target Market *102*
4.4.8 Importance of Management Team *103*
4.4.9 Investment Preferences of VC *113*
CHAPTER 5 DISCUSSION 116
5.1 CATEGORIES OF INVESTMENT CRITERIA 118
5.1.1 Management Team *119*
5.1.2 Target Market *123*
5.1.3 Venture Offering *124*
5.1.4 Competitive Positioning *125*

5.1.5 Capital Payback Projections *126*
5.1.6 Business Plan *127*
5.2 LIMITATIONS 127
5.3 CONCLUSIONS 129
5.4 FUTURE RESEARCH 130
5.5 CONTRIBUTIONS 132

CHAPTER 6 REFERENCES 135

CHAPTER 7 APPENDICES 141

7.1 VC'S INVESTMENT CRITERIA 141
7.2 SURVEY # 1 - DECISION-MAKING CRITERIA USED BY VCS 147
7.3 TELEPHONE SCRIPT FOR SURVEY RECRUITING 163
7.4 SURVEY EMAIL LETTER 164
7.5 FOLLOW UP THANK YOU CARD 165
7.6 SURVEY # 2 – TANGIBILITY OF INVESTMENT CRITERIA 166
7.7 INVESTMENT TECHNOLOGY NETWORK INC. 182
7.8 SALIENT INVESTMENT CRITERIA BASED ON STAGE # 2 187

LIST OF TABLES

TABLE 2-1 VCS INVESTMENT PROCESS 16
TABLE 3-1 SUMMARY OF RESEARCH STRATEGY 26
TABLE 4-1 CATEGORIES OF INVESTMENT CRITERIA 67
TABLE 4-2 SUB-CATEGORIES OF INVESTMENT CRITERIA 68
TABLE 4-3 TYPE OF NEW VENTURE 78
TABLE 4-4 DEAL SCREENING AND EVALUATION STAGES 79
TABLE 4-5 CATEGORIES OF INVESTMENT CRITERIA (N = 100) 83
TABLE 4-6 CATEGORIES OF INVESTMENT CRITERIA (N = 12) 85
TABLE 4-7 TYPE OF NEW VENTURE – CATEGORIES OF INVESTMENT CRITERIA 86
TABLE 4-8 LOCATION OF VC – CATEGORIES OF INVESTMENT CRITERIA 86
TABLE 4-9 DEVIATION FROM PRESENTED ORDER OF CATEGORIES 88
TABLE 4-10 PAIRWISE t-TEST FOR INTERNET VENTURES 89
TABLE 4-11 PAIRWISE t-TEST FOR OTHER TECHNOLOGY-BASED VENTURES 90
TABLE 4-12 PAIRWISE t-TEST FOR VCS IN CA AND MA 91
TABLE 4-13 PAIRWISE t-TEST FOR VCS IN OTHER PARTS OF US AND CANADA 92
TABLE 4-14 RELIABILITY 93
TABLE 4-15 ABILITIES OF MANAGEMENT TEAM 96
TABLE 4-16 BACKGROUND AND EXPERIENCE OF MANAGEMENT TEAM 96
TABLE 4-17 SKILLS OF MANAGEMENT TEAM 97
TABLE 4-18 TARGET MARKET 97
TABLE 4-19 VENTURE OFFERING (PRODUCT OR SERVICE) 97
TABLE 4-20 VENTURE'S POSITIONING WITHIN ITS COMPETITIVE ENVIRONMENT 97
TABLE 4-21 VENTURE CAPITAL PAYBACK PROJECTIONS 98
TABLE 4-22 BUSINESS PLAN 98
TABLE 4-23 ABILITIES OF MANAGEMENT TEAM 100
TABLE 4-24 BACKGROUND AND EXPERIENCE OF MANAGEMENT TEAM 101
TABLE 4-25 SKILLS OF MANAGEMENT TEAM 102
TABLE 4-26 COMPOSITION OF MANAGEMENT TEAM 104
TABLE 4-27 TARGET MARKET 107

TABLE 4-28 VENTURE OFFERING 108
TABLE 4-29 VENTURE POSITIONING WITHIN ITS COMPETITIVE ENVIRONMENT 110
TABLE 4-30 VENTURE CAPITAL PAYBACK PROJECTIONS 111
TABLE 4-31 BUSINESS PLAN 112
TABLE 4-32 INVESTMENT PREFERENCES OF VCS 113
TABLE 4-33 INVESTMENT PROCESS OF VCS 115

LIST OF FIGURES

FIGURE 4-1 SUMMARY OF DATA ANALYSIS FOR 100 VCS SAMPLE 80
FIGURE 4-2 SUMMARY OF DATA ANALYSIS FOR 12 VCS SAMPLE 81
FIGURE 5-1 MOST SALIENT INVESTMENT CRITERIA USED BY VCS 117

CHAPTER 1
INTRODUCTION

The objective of this research and thesis is to explore the investment process and identify the investment criteria used by VCs when deciding to invest in technology-based new ventures. In this thesis, when the term "venture" is used as the unit of analysis, it will refer to companies, which are new and small, as opposed to established and large. We focus here on technology-based ventures as a subset of small companies. We define technology-based ventures as those companies intending to commercialize a technology for the first time and thereby expecting to derive a significant source of sustainable competitive advantage from the technology. Examples include the Internet, software, and biotechnology companies (Bachher and Guild, 1996).

Professional venture capital is defined as funding provided by firms of full-time professionals, known as venture capitalists (VCs), who invest alongside management in young, rapidly growing or changing ventures that have the potential to develop into significant competitors in large, rapidly growing markets (NVCA, 1999). The invested capital, which is called equity, includes the cash invested by founders plus any retained earnings generated by the venture. It is the intent of the VCs to develop the venture to the point where they can exit their investment through an initial public offering (IPO). Their investments are expected to be relatively long-term (three to eight years). Professionally managed venture capital firms generally are private partnerships or closely held corporations funded by limited partners that include private and public pension funds, endowment funds, foundations, corporations, wealthy individuals, foreign investors and the VCs themselves (Fenn, Liang and Prowse, 1995).

Entrepreneurs who are just starting out typically have very different needs than those who are well established and ready to expand their ventures. Many VCs have found that their own skills are better suited to helping one type of venture rather than another. The early-stages include seed, research and development, start-up and first stage financing (Pratt's Guide to Venture Capital Sources, 1995). At these stages, the technology-based ventures have a high

proportion of intangible or knowledge-based assets. As a result, VCs find it challenging to make investment decisions and estimate the potential return and risk. This lack of concrete data or assets could explain the difficulty faced by early-stage technology-based ventures in obtaining financing from VCs (Groupe Secor, 1998).

Our working assumption is that while there may be no shortage of ideas or capital, there is a shortage of people (entrepreneurs and VCs) with the know-how to build technology-based new ventures into successful companies (Bygrave and Timmons, 1992). Our research objective is to identify the investment criteria used by VCs (within the context of a process) with the know-how to invest in (at the early-stages) and build these companies into successful technology-based ventures.

1.1 Motivation

Small businesses are making a significant contribution to the global "new economy." In Canada, small businesses (firms with fewer than 50 employees) account for 97% of all businesses (Pohlmann, 1998), and in the United States (US), 94% of all technology-based ventures are small businesses (firms with fewer than 500 employees). Small US businesses contribute 47% of all sales, are responsible for 51% of the private gross domestic product, produce 55% of all innovations, and obtain more patents per sales dollar than large US firms (SBA, 1997).

The core of the "new economy" is formed by small technology-based ventures whose key assets are intangible (Beck, 1992). Some of the factors for the increase in the number of these ventures include (Stewart, 1995):

1. The information age is changing the way in which businesses operate and function.
2. Computers and telecommunications are freeing businesses from the constraints of geographic location and firm size.
3. Globalization is breaking down barriers to doing business across borders.
4. Technology is driving the creation of new products and services.

5. The commercial acceptance of the Internet is creating a new platform for communications and a medium for transacting business through electronic commerce.

Knowledge-based (KB) businesses (as a subset of small businesses) are considered major wealth creators in the new economy (Groupe Secor, 1998). The development, possession and application of knowledge are central to the production of particular goods and services in KB businesses. A large portion of KB businesses are heavily dependent on knowledge derived from innovative science and technology for their core products, and most important, they demonstrate high growth potential. These small KB businesses, generally referred to as technology-based ventures, are the focus of this research. We consider technology-based ventures to be a subset of KB businesses.

Today, the commercialization of ideas is the key to the management of technological innovation, our area of research. We refer to the causal chain of innovation as the process which moves from the development of ideas through learning, scholarship, and knowledge, to the creation of entrepreneurial technology-based ventures and infusion of venture capital to grow these ventures, to the commercialization of products or services in new industries and enhance others (Abernathy and Clark, 1985). This thesis focuses on part of the causal chain of innovation: the investment criteria and process used to infuse venture capital into technology-based new ventures.

The decision to invest in a technology-based venture continues to become more difficult because of the intangible nature of the assets of these ventures. Evaluating intangible assets presents real challenges to people who allocate resources, particularly VCs. Capital is more likely to be dedicated to physical assets than to intangible assets whose returns are more difficult to measure (Porter, 1992). As a result, new sets of measures for evaluating technology-based ventures are beginning to emerge in the new economy.

Often, technology-based new ventures start out with little more than a personal computer. Many more begin with only the entrepreneur's knowledge and passion as inventory (Roberts, 1990). The intangible assets in technology-based ventures may literally "walk out at the end

of the day" (Stewart, 1995). These ventures have little or no history or track record, and no tangible assets ("brick and mortar," real property, plant and machinery). Examples of intangible assets owned by a venture may include corporate culture, competencies, information (customer information, current forecasts), goodwill, and applied knowledge (patents, proprietary know-how, software), intellectual property rights, trade secrets, contracts and licenses, databases, personnel and organizational networks, and the "know-how" of employees and managers (Hall, 1993). Consequently, competitive advantage relies on the skills and experience of employees, knowledge bases, and the expertise of others (suppliers, distributors, lawyers, accountants, advertising agents) (Hall, 1992). The reputation of the company, customers' product loyalty, and brand reputation all have value in projecting the future sales of the company (Hall, 1992; Harvey and Lusch, 1995).

The author explored the investment criteria used by Canadian VCs to screen and evaluate technology-based new ventures in an earlier study (Bachher, 1994). The VCs indicated the degree of importance they assigned to a set of 95 investment criteria derived from the academic literature in the areas of venture capital and management of technology research. Some of the salient observations made from the study include:

1. Canadian VCs identify the Silicon Valley and Boston as geographic areas in which a high proportion of their peers invest primarily in early-stage technology-based ventures and have the know-how we are seeking to study.
2. Canadian VCs attribute the "art" of their decision-making to "intuition," "gut feel" and experience.
3. Despite acknowledging their decision-making to be like "flipping a coin," they clearly use a common set of important investment criteria.
4. VCs network in order to share costs, uncertainties, and risks associated with these ventures.
5. Proximity of the venture's location to the VC is crucial to nurturing the early stage of a new innovative venture (DeBresson and Amesse, 1991).

VCs need to be able to identify and understand the intangible aspects of these new ventures that are nonetheless of importance to them when making a decision to invest. One of the

most successful VCs is Arthur Rock, the lead investor in Apple Computer, Fairchild Semiconductor, Teledyne Corporation, Intel, and Scientific Data Systems (Fox, 1997). He clearly identifies what is important: new concepts for products or services that will change the way people live and work. He also stresses the importance of the management team: "If you can find good people, they can always change the product. Nearly every mistake I've made has been in picking the wrong people, not the wrong idea...Most entrepreneurs have no problem coming up with a good strategy, but they usually need all the help they can get in developing and implementing the tactics that will make them successful in the long run" (Rock, 1987). During a conversation with the author, Rock explained that people are no longer enough:

> *When I make decisions to invest, I focused on the people. Today, it is as important for VCs to understand the overall business model of the venture in addition to the people. It is not enough to simply focus on the management team. The investment process and criteria have become more complex in the current venture capital industry (Rock, 1999).*

The venture capital industry's celebrity VC, John Doerr of the most famous venture capital firm in the US, Kleiner Perkins Caufield and Byers (hereafter referred to as KPCB) identifies four key aspects to focus on when making decisions – 1) technical risk, 2) market risk, 3) people risk, and 4) financial risk (Warner, 1998). Founded in 1972, KPCB became famous in a hurry by funding pioneering businesses that today are familiar names: Genentech, which almost single-handedly launched the modern biotech industry; Sun Microsystems which spearheaded the world's shift from mainframe to client-server computing; Compaq Computer, the PC maker that rose to unseat IBM; and Lotus, the king of the PC spreadsheet. Only recently has KPCB hit jackpots that have given it cachet beyond any other venture capital firm. Beginning in 1994 with Netscape, they have funded some of the most important and affluent companies to have emerged from the Internet: Amazon.com, @Home, AOL, and Excite, to name a few. John Doerr has also backed failed companies such as GO Corporation, which was credited with the birth of the pen-based computer. Out of every ten investments made by VCs, on the average, two turn up as being "hits," three show modest returns, three are considered as "walking dead," and two are complete failures (Ruhnka and

Young, 1991). Even KPCB, the firm credited among peers in the venture capital industry as being the most successful, only has a success rate near 30% (Warner, 1998).

There is a shortage of entrepreneurs who understand the process of raising venture capital for their ventures. Entrepreneurs need to focus in their approach to raising venture capital, as opposed to randomly sending their business plans to any VC just because they manage equity capital to invest. Aside from gaining access to prospective financiers (VCs), entrepreneurs report major problems in understanding the VCs priorities and investment criteria. This lack of understanding could be attributed to the differences in types of VCs in terms of their backgrounds, experiences, prejudices, and objectives (Roberts, 1991).

Venture capital-backed ventures have a higher survival rate than non-VC-backed ventures (Timmons, 1994). A better understanding of the investment process used by VCs may increase the entrepreneur's chances of obtaining funding and may even lead to better survival rates. Entrepreneurs seeking venture capital also benefit from understanding what investment criteria are most important to the VC (Zacharakis and Meyer, 1998).

1.2 Background

VCs bring investors and entrepreneurs together in an efficient manner in order to make better investment decisions than limited partners and provide non-financial assistance that in turn enhances survival (Gupta and Sapienza, 1992). All other things being equal, a VC firm's performance is a function of how well VCs make investment decisions and how effective their management advice and services are after the investment decision has been made. Consequently, improving the information available to VCs will improve both the decision criteria and the firm's overall performance.

1.3 Types of VCs

Gupta and Sapienza (1992) observed that not only do VCs differ from one another, but also specialization occurs among firms (Schilit and Chandran, 1993). Some VCs limit the ventures they consider by specializing in a particular stage of financing (e.g., early or later stage financing); industry (e.g., telecommunications or Internet) (Bygrave, 1987); or geographic location (e.g., Silicon Valley or Boston) (Elango, Fried, Hisrich, Polonchek, 1995).

Some VCs take high risks at the early-stages with the expectation of making high returns on their investments. A few VC-backed companies create products so revolutionary that they give birth to new industries, while others bring about evolutionary change in existing industries. Schilit and Chandran (1993) report that some VCs prefer not to fund ventures at their early-stages largely due to the high risk associated with them. Instead, they prefer to fund ventures in which the entrepreneurs have already made a significant financial and time commitment.

The venture capital firm will organize its partnership as a pooled fund; that is, a fund made up of the general partner(s) and the investors or limited partners (Bygrave and Timmons, 1992). These funds are typically organized as fixed life partnerships, and usually have a life of ten years. Each fund is financed by commitments of capital from the limited partners. Once the partnership has reached its target size, the partnership is closed to further investment from new investors, or even existing investors, so the fund has a fixed capital pool from which to make its investments.

A venture capital firm may have more than one fund in existence; it also may raise another fund a few years after closing the first fund in order to continue to invest in companies and to provide more opportunities for existing and new investors. In fact, it is not uncommon to see a successful firm raise six or seven funds consecutively over the span of ten to fifteen years. Each fund is managed separately and has its own investors or limited partners and its own general partner(s). The investment strategy for each fund may be similar to that of other

funds in the firm. However, the firm may have one fund with a specific focus and another with a different focus and yet another with a broadly diversified portfolio. The number of funds depends on the strategy and focus of the venture capital firm itself.

VCs can be generalists, investing in various industry sectors, or various geographic locations, or various stages of a company's life. Alternatively, they may be specialists in one or two industry sectors, or may seek to invest in only a localized geographic area. The VC also may invest in a company throughout the company's life cycle. As a result, some funds focus on later stage investing by providing financing to help the company grow to a critical mass in order to attract public financing through a stock offering. Alternatively, the VC may help the company attract a merger or acquisition with another company by providing liquidity and exit for the company's founders.

Depending on its investment focus and strategy, the venture capital firm will seek to exit the investment in the portfolio company within three to five years of the initial investment. While the initial public offering (IPO) may be the most glamorous and heralded type of exit for the VC and owners of the company, most successful exits of investments occur through a merger or acquisition of the company by either the original founders or another company. Again, the expertise of the venture capital firm in successfully exiting its investment will dictate the success of the exit for the firm itself and its owners (Timmons, 1994).

1.4 Early-Stages of Financing

The early-stages of financing of a technology-based new venture include the research and development, seed, start-up, and first stages, and are described below:

Research and Development Financing is a tax-advantaged partnership set up to finance product development for start-ups as well as more mature companies. Investors secure tax write-offs for the investments as well as a later share of the profits if the product development is successful.

Seed Financing is a relatively small amount of capital provided to an inventor or entrepreneur to prove a concept and to qualify for start-up capital. This kind of financing also may involve product development and market research as well as building a management team and developing a business plan, assuming the initial steps are successful.

Start-up Financing is provided to companies on the completion of product development and initial marketing. Companies may be in the process of organizing or they may already be in business for one year or less, but have not sold their product commercially. Usually, such firms will have conducted market studies, assembled the key management personnel, developed a business plan, and appear ready to do business.

First Stage Financing is provided to companies that have expended their initial capital (often in developing and market-testing a prototype) and require funds to initiate full-scale manufacturing and sales.

The other stages of financing a new venture (not of interest in this study) are also described below to provide a complete picture of the stages of financing provided by venture capitalists. Expansion Financing includes second stage, third stage or mezzanine, and bridge financing. The other type of financing is acquisition or buyout financing.

Second Stage Financing is working capital for the initial expansion of a company that is producing and shipping, and has growing accounts receivable and inventories. Although the company has made progress, it may not yet be showing a profit.

Third Stage or Mezzanine Financing is provided for a major expansion of a company whose sales volume is increasing and is breaking even or profitable. These funds are used for further plant expansion, marketing, working capital, or development of an improved product.

Bridge Financing is needed at times when a company plans to go public within six months to a year. Often bridge financing is structured so that it can be repaid from the proceeds of a public underwriting. It also can involve restructuring of major stockholder positions through

secondary transactions. Restructuring is undertaken if there are early investors who want to reduce or liquidate their positions, or if management has changed and the stock holdings of the former management, as well as their relatives and associates are being bought out to relieve a potential oversupply of public stock.

Acquisition Financing provides funds to finance an acquisition of another company to management. These leveraged buyout funds enable an operating management group to acquire a product line or business (which maybe at any stage of development) from either a public or private company; often these companies are closely held or family-owned. Management / leveraged buyouts usually involve revitalizing an operation with entrepreneurial management acquiring a significant equity interest.

1.5 Geographic Sites

Some of the technology-based ventures that received venture capital at their early-stages include Lotus, Compaq, Intuit, Sun, Silicon Graphics, Netscape, Digital, Apple, and Intel. The VCs credited with the timely support and a proven track record for spotting the growth potential of these successful technology-based ventures are concentrated in two main areas: the Silicon Valley and Boston, as demonstrated by the rate of return on investments and the success stories of ventures backed by VCs from these two areas. The size of a particular VC fund is often a function of its past investment success. The more successful VCs attract more investment funds (Gupta and Sapienza, 1992). Some VCs in these areas specialize in early-stage technology-based venture investments.

The key building blocks for economic growth in the Silicon Valley and Boston are the research and educational institutions located there. But excellent as those research facilities are, they are not sufficient to ensure the commercialization of innovative products. Societal values, government policies, research and educational institutions, and location factors revolve around the people, capital, product or service markets, and support organizations from which new ventures are ultimately created and developed. The interaction of these elements, the technological infrastructure, leads to the creation of new technology-based

ventures (Weiss and Birnbaum, 1989). For example, a favorable infrastructure would include societal values that support risk taking and tolerate failure. The presence of successful role models not only inspires those who seek to emulate them, but also sets a positive tone in the local business culture for entrepreneurial activities. As suppliers, customers, and support organizations (such as banks and accounting and legal firms) gain familiarity with new enterprise development and growth, they are able to perceive less risk in doing business with such ventures. Familiarity also teaches them how to deal with new enterprises in a way that is often quite different from how they handle well-established customers.

While there are other global investment communities in which VCs make early-stage technology-based venture investments, we feel that by capturing the essence of VC's decision-making in the two focus areas of this study, we will have captured knowledge from the commonly acknowledged leading VCs for early-stage technology-based ventures. At the very least, we are confident that the two sites contain cutting-edge practices used by English-speaking VCs.

1.6 Thesis Organization

This thesis is organized to describe the research process carried out in this study. The next chapter summarizes the key literature in venture capital decision-making. Following this, the research methods used to answer the research questions are described. The next chapter describes the analysis techniques used to obtain results of the four stages of this study. Stage # 1 involves the creation of a network of VCs which provided the sample for the following stages. Stage # 2 describes a case study of an early-stage technology-based venture that received venture capital financing. Stage # 3 describes interviews with 18 VCs in Silicon Valley and Boston. The final Stage # 4 summarizes the results of two web-based surveys answered by 100 VCs (primarily US based) and 12 VCs (Canadian) respectively. The last chapter concludes the thesis with a discussion of the results.

CHAPTER 2
LITERATURE REVIEW

This chapter reviews research in the area of the decision-making investment processes of VCs. It begins with a review of some of the general research in behavioral decision-making pertinent to this study and draws upon aspects that relate to decision-making processes. This section is followed by a review of the literature on the investment process used by VCs when making investment decisions. Several researchers have noted that VCs use a process involving the following stages: deal origination, screening, evaluation, structuring, monitoring, and cashing-out. The screening and evaluation stages involve the use of investment criteria. Given that the focus of this study is on the criteria used by VCs, the attention in this chapter is on research in the screening and evaluation stages. Some researchers have identified the evaluation stage as the area where VCs spend a large proportion of their time on the investment process. The previous research on investment criteria at the evaluation stage is described in detail. A few researchers have identified VCs as being heterogeneous. The literature described here focuses on work relating to VCs investments in technology-based new ventures. There is a convergence of criteria used by VCs at the evaluation stage. However, without a clear focus on investments in the type of new ventures that are the focus of this study, it is difficult to judge the relevance to the current study of the criteria based on previous research. The final section brings together earlier research to support the research question of this thesis.

2.1 Decision-Making Research

Decision-making is a process by which an individual, group, or organization identifies a potential choice or judgment, gathers and evaluates information about alternatives, and selects from among the alternatives (Carroll and Johnson, 1990). Research on the decision-making process of individuals (Newell and Simon, 1972) indicates that decision-makers deal with situations by factoring them into familiar, structurable elements, thereby reducing a complex decision environment to a series of simplified conceptual models. Mintzberg, Raisinghani and Theoret (1976) also conclude that, "unstructured decision-making processes

are programmable even if they are not in fact programmed." In examining the decision-making process of human beings, Simon (1955) pays attention to some areas of cognitive limitations including the principle of bounded rationality, and the effects of an individual's perceived environmental uncertainty (Duncan, 1972).

Some researchers have described decision-makers as "boundedly" rational as opposed to "perfectly" rational (Simon, 1955; Cyert and March, 1963; Newell and Simon, 1972), suggest that the decision-maker cannot obtain entirely accurate or complete information. Simon (1955) further explains that the decision-maker might be forced to "sacrifice," due to the large amount of information that needs to be processed in a limited time. Schilit and Chandran (1993) explain that by being boundedly rational, a VC could create the potential for opportunistic behavior by the individuals affected by the decision. They also suggest that the VC must learn about the new venture in which little, if any, public information is available. Schilit and Chandran (1993) explain that if the VC specializes by industry or geography, the learning costs could be reduced. They conclude it is important for the VC to control information flow in such a manner as to ensure that the decision-maker is screened from irrelevant data, thus allowing him or her to "optimize."

Zacharakis and Meyer (1998) suggest that VCs might have difficulty in evaluating all the information presented to them, and some salient factors within the information could bias these decision-makers (Fiske and Taylor, 1991). One such bias, the availability bias (Tversky and Kahneman, 1974), encourages decision-makers to recall salient information from memory. If a new venture's entrepreneur has been successful in a previous venture, this available information may bias some VCs, and they might overlook other aspects of the venture which may suggest that the current venture is likely to fail (Zacharakis and Meyer, 1998). As a result of such biases, VCs may change the relative importance and use of information factors between new ventures being considered for investment (Zacharakis and Meyer, 1998).

Dawes (1979) suggests that biases may not only inhibit decision-making, but also are likely to impede the individual's ability to accurately report on her/his decision-making process.

Instead of recalling the actual information that was used to make the decision, decision-makers may fixate on a previously successful decision (Dawes, 1979; Dawes, Faust and Meehl, 1989) and recall information particular to that situation (Fiske and Taylor, 1991). Dawes (1979) suggests that this might be a potential reason for psychological resistance to using linear models in decision-making. VCs may focus on the entrepreneur because of his/her past record of success and dynamic personality; as a result their reporting characteristics of the entrepreneur seem more important to the decision than they actually were (Hall and Hofer, 1993; Zacharakis and Meyer, 1998). Nesbitt, Borgida, Crandall, and Reed (1976) show that such single instances often have greater impact on judgment than do much more valid statistical compilations.

Slovic and Lichtenstein (1971) suggest that individuals are prone to report using more information than they actually use when making decisions. Stewart (1988) explains further that most decision-makers rely on only three to seven information factors or cues even though they *believe* that they thoroughly consider all relevant information. Dawes, Faust and Meehl (1989) suggest that an actuarial model which is properly developed and applied is likely to help in predicting human behavior as well as or better than the clinical method. They stressed that their argument would hold even when the clinical judge had access to equal or greater amounts of information than the actuarial model. In the clinical method, the decision-maker combines or processes information mentally through personal judgment (Dawes, Fuast and Meehl, 1989). In an actuarial or statistical model, the human decision-maker is replaced by conclusions that rest solely on empirically established relationships between the data and the condition or event of interest (Dawes, Faust and Meehl, 1989). They further suggest that actuarial methods are explicit, in contrast to clinical judgment, which rests on mental processes that are often difficult to specify.

Dawes (1979) presents evidence that even improper linear models are superior to clinical intuition when predicting a numerical criterion from numerical predictors. He describes proper linear models as those in which predictor variables are given weights in such a way that the resulting linear composite optimally predicts some criterion of interest (e.g. standard regression analysis). Dawes (1979) defines improper linear models as those in which the

weights of the predictor variables are obtained by some non-optimal method (e.g. obtained on the basis of intuition or set to be equal). He suggests that unit (or equal) weighing is robust for making such predictions. Dawes (1979) also indicates that proper linear models work because individuals are good at selecting the right predictor variables and at coding them in such a way that they have a conditionally monotone relationship with the criterion. On the other hand, he suggests that individuals have difficulty in mentally integrating information from diverse and incomparable sources, while proper linear models are good at such integration when the predictions have a conditionally monotone relationship to the criterion.

2.2 VCs Investment Process Research

Some researchers have described the decision-making process used by VCs (Wells, 1974; Tyebjee and Bruno, 1984; Silver, 1985; Hall, 1989; Fried and Hisrich, 1994). These researchers have noted that, when deciding to invest in new ventures, VCs go through several stages. Generally, these stages are origination, screening, evaluation, structuring, monitoring and cashing out. Table 2-1 summarizes some of the research on the decision-making process of VCs.

Sandberg, Schweiger and Hofer (1987) suggest that previous research sought investment criteria without examining the VC's decision-making process or considering that VCs were not a homogeneous group, and that different criteria or weightings may be used to evaluate different types of ventures. Gupta and Sapienza (1992) also suggest that VCs are not homogeneous and indicate that they may limit the new ventures they consider by specializing in a particular stage of financing (i.e. early or later stage) or a particular industry (i.e. technology-based or non-technology-based) or a particular geographic region (i.e. the Silicon Valley or Boston). Also, the investment criteria used by VCs may differ between the screening and the evaluation stages (Tyebjee and Bruno, 1984). Since the focus of this thesis is on investment criteria, research on the screening and evaluation stages are described here. Appendix 7.1 summarizes the salient investment criteria used by VCs as identified by researchers.

Riquelme and Rickards (1992) conclude that, in the screening stage, VCs focus on a small subset of criteria in a non-compensatory process (i.e., an unacceptable value on one criterion cannot be offset by a high value of another one). They also suggest that in the evaluation stage, VCs conduct due diligence by choosing the most preferred new ventures through a decision-making process approximating compensatory rules (i.e., a low but acceptable value on one criterion can be compensated by a high value on another).

Table 2-1

VCs Investment Process

Wells (1974)	**Tyebjee and Bruno (1984)**	**Silver (1985)**	**Hall (1989)**	**Fried and Hisrich (1994)**
Six Stages	Five Stages	Six Stages	Eight Stages	Six Stages
Search	Deal Origination	Generating Deal Flow	Generating Deal Flow	Origination
Screening	Deal Screening	Initial Screen	Proposal Screening	Venture Capital Firm-Specific Screen
			Proposal Assessment	Generic Screen
Evaluation	Deal Evaluation		Project Evaluation	First Phase Evaluation
		Due Diligence	Due Diligence	Second Phase Evaluation
	Deal Structuring	Valuation, Terms and Conditions	Deal Structuring	Closing
Board Meetings Venture Operations	Post-Investment Activities	Monitoring and Adding Value	Venture Operations	
Cashing Out		Selling or Liquidifying	Cashing Out	

2.2.1 Screening

Wells (1974) observes that, in screening proposals, the VCs directed a series of standardized questions to the entrepreneur(s). Interviewing partners at seven venture capital firms in Pittsburgh, PA, Wells (1974) obtained the data used in deriving the conclusions in his study. Tyebjee and Bruno (1984) find empirical support for a model based on research by Wells (1974) and Poindexter (1976) by using responses from telephone surveys with 46 VCs across CA, MA, and Texas. Silver (1985) and Tyebjee and Bruno (1984) suggest that during screening, the VCs reduced the number of deals they looked at to a more manageable number by applying a set of investment criteria.

Silver (1985) suggests from his experience as a US VC that venture capital firms typically have a small number of employees, which results in only a few people being available to screen the relatively large number of potential deals. The VCs only invest in a fraction of the deals which come to their attention (Tyebjee and Bruno, 1984). Their screening criteria reflected a tendency to limit investments to areas with which the VC was familiar, particularly in terms of the technology, product, and market of the new venture (Tyebjee and Bruno, 1984). They identify a broad range of screening criteria including the size of the investment, the investment policy of the venture capital firm, the technology and market sector of the venture, the geographic location of the venture, and the stage of financing.

Hall (1989) identifies two key criteria used by VCs for screening: the fit of the new venture seeking financing with the venture capital firm's lending guidelines, and the long-term growth and profitability of the industry in which the proposed new venture would operate. He found VCs did not attach enough importance to the entrepreneur or entrepreneurial team and the strategy of the proposed venture during the screening stage.

Fried and Hisrich (1994) requested VCs to describe the investment process they each followed in their most recent investment as a lead investor. This approach minimizes problems associated with hypothetical or non-contingent responses, tendencies towards self-reporting bias because the rate of return of the investment was unknown, and also helped to

increase the accuracy of recollection. Fried and Hisrich (1994) describe the screening stage in two steps: the venture capital firm-specific screen and the generic screen. Many VCs have firm-specific criteria on investment size, industries in which they invest, geographic location of the investment, and the stage of financing. Fried and Hisrich, 1994 indicate that these criteria eliminate proposals that clearly do not meet the firm's requirements. At most, they suggest that the screening stage involves a cursory glance at the business plan without a detailed analysis of the proposal. Many proposals pass through the firm-specific screen only to be rejected without extensive review when the VC analyzes the proposal in terms of the generic criteria (Fried and Hisrich, 1994).

2.2.2 Evaluation

Wells (1974) concludes that only those proposals that pass through the screening stage were thoroughly investigated in the evaluation stage. Tyebjee and Bruno (1984) indicate that evaluation involves an assessment of the potential return and risk and a detailed examination of the proposed deal in terms of five main characteristics: 1) market attractiveness (represented by size, growth, and accessibility), 2) product differentiation (which combines the uniqueness of the product, the profit margin, and its ability to be patented), 3) managerial capabilities of the entrepreneur or team, 4) environmental threats, and 5) cash-out potential (reflecting the VC's likeliness to liquidate the investment).

VCs attempt to determine the probability of success or failure by evaluating information relating to the particular new venture (Zacharakis, 1995). The VC has to rely on a largely subjective assessment procedure based upon the business plan presented by the venture's management team (Tyebjee and Bruno, 1984). Tyebjee and Bruno (1984) also suggest that VCs do weigh risk and return in their decision to invest or not in a particular deal, but few formalize this assessment into a computation of an expected rate of return or determine its sensitivity to future uncertainties. Instead, the decision-making process seeks to subjectively assess the venture on a multi-dimensional set of criteria (Tyebjee and Bruno, 1984).

Tyebjee and Bruno (1984) describe the activities of VCs as an orderly process involving five sequential steps. The first step, deal origination, includes the processes by which deals entered into consideration as investment prospects. They identify three sources of potential deals, namely, unsolicited cold calls from entrepreneurs, the referral process, and an active search for deals by the VCs themselves. The second step, deal screening, entails the application of investment criteria that would reduce the number of investment prospects to a manageable few for detailed evaluation. During the third step, deal evaluation, the investment opportunity is examined in terms of five basic characteristics: 1) market attractiveness, 2) product differentiation, 3) managerial capabilities of the entrepreneur/team, 4) environmental threat resistance, and 5) cash-out potential. The negotiation of financial arrangements between the investor and the entrepreneur takes place in the fourth step, referred to as deal structuring. Once a decision to invest in the company is made by the VCs, post-investment activities follow as the final step in their decision-making process. Tyebjee and Bruno (1984) claim that their model is descriptive, simplistic and lacks a theoretical basis. They justify these characteristics of their model by suggesting that a more rigorously specified model cannot capture the heterogeneity of the investment process used by VCs.

Silver (1985) describes the due diligence process in terms of five principle audits: 1) legal, 2) size of the problem that the business was attempting to solve, 3) elegance of the solution, 4) entrepreneurial team, and 5) financial statement. Hall (1989) describes project evaluation as the stage during which the VC met with the entrepreneurial team and visited the business if it was in existence. Due diligence was then performed, as long as the VC was still interested in the deal.

Hall and Hofer (1993) identify the key criteria used by VCs for evaluation as: 1) the source of the business proposal (which played a role in the VC's interest in the plan), and 2) the proposal previously reviewed by persons known and trusted by the VC. Fried and Hisrich (1994) describe evaluation in two phases. First, the VC begins to gather additional information about the proposal. Following this research, at some point, the VC tends to develop an emotional commitment to the proposal, which marks the start of the second phase. Evaluation activities continue, but the amount of the VC's time spent on the proposal

increases dramatically, and the VC's goal changes. While in the first phase the goal is to determine whether there is serious interest in a deal, in the second phase, the object is to determine what the obstacles to the investment are and how they can be overcome.

MacMillan, Siegel and SubbaNarasimha (1985) classify the decision-making criteria used by VCs into six groups: 1) entrepreneur's personality, 2) entrepreneur's experience, 3) venture team, 4) characteristics of the product or service, 5) characteristics of the market, and 6) financial considerations. The most significant criteria are related to the entrepreneur and the team, protectability of the product, market growth, and the required rate of return (identified as ten times that of the investment within five to ten years). The authors also identified essential criteria (the absence of, or shortfall on, any of these would result in rejection of the proposal regardless of any other redeeming characteristics). Five of the ten essential criteria are associated with the entrepreneurs themselves: their capability for sustained effort, demonstrated leadership, track record relevant to the venture, reaction to risk, and capability of articulating the venture well. MacMillan, Siegel and SubbaNarasimha (1985) suggest that their VC respondents could have been influenced by their own perception of the nature of a desirable response or a response that is seen as appropriate to their position as representatives of the venture capital community, rather than the criteria they actually use. They further explain the danger that some respondents may not actually use the criteria in the ways that they think they do.

MacMillan, Zemann and SubbaNarasimha (1987) address the issue of whether or not decision-making criteria distinguish between successful and unsuccessful ventures. They determine the extent to which criteria identified in the previous studies (Wells, 1974; Poindexter, 1976; Tyebjee and Bruno, 1984; MacMillan, Siegel and SubbaNarasimha, 1985) are useful predictors of performance. A cluster analysis of the data gathered through mailed questionnaires to 67 US VCs yielded several major classes of successful and unsuccessful ventures. Their most notable finding was that each class of unsuccessful ventures had a look-alike class of successful venture that differed only in one major flaw, and it was this one flaw that led to failure. Regression analysis identified two criteria that were not heavily weighted by VCs in MacMillan, Siegel and SubbaNarasimha (1985), but were the only consistent

predictors across several performance criteria. These predictors were the degree of competitive threat and the degree of market acceptance of the product. While these two criteria were highly weighted in MacMillan, Siegel and SubbaNarasimha (1985), they were not good predictors, not because they were of no value, but because the VCs had already applied them to weed out undesirable ventures.

Zacharakis, Meyer and DeCastro (1999) examine new venture failure from the perspective of both the entrepreneur and the VC. Using the attribution theory viewpoint, they found that entrepreneurs acknowledge that internal causes contribute to a venture's failure. On the other hand, VCs attribute the failure to external causes. Attribution theory explains how people perceive and make judgments about stimuli (Fiske and Taylor, 1991). Both the entrepreneur and the VC were more likely to attribute the failure of other ventures to internal factors (Zacharakis, Meyer and DeCastro (1999).

Knight (1994) conducted a cross-cultural analysis of the criteria used by VCs in Canada, Europe, and the Asia Pacific region to evaluate venture proposals. Knight (1994) compares and contrasts his results with MacMillan, Siegel and SubbaNarasimha (1985). The similarities between responses are quite striking, and among the key differences, high technology investments are not nearly as popular with VCs in other parts of the world as they are in the US.

The previous studies described so far use post hoc methodologies, such as interviews and surveys, which may be subject to post hoc rationalization and recall biases (Sandberg, Schweiger and Hofer, 1987). They stress that such biases may likely inhibit how accurately individuals can assess their own thought processes. Also, experts who tend to rely on intuition are notoriously poor introspectors (Sandberg, Schweiger and Hofer, 1987). As experts in financing new ventures, VCs also rely on their intuition (Khan, 1987; MacMillan, Zemann and SubbaNarasimha, 1987). Sandberg, Schweiger and Hofer (1987) suggest that poor insight can be a challenge because VCs need to communicate to other VCs the decision-making criteria they use in order for all the investors to commit capital.

Hisrich and Jankowicz (1990) use the repertory grid to develop an understanding of intuition, "personal chemistry," or "gut feel" in VCs' decisions. This method is used to capture the ways in which VCs construe (think about, or ascribe personal meaning to) investment proposals. Hisrich and Jankowicz (1990) conduct principal component analysis on the data gathered from a series of in-depth interviews with five US VCs to indicate the relationships between these concerns. The results reveal relatively low cognitive complexity, and essentially, just one or two major areas of emphasis predominate in each VC's thinking; also each VC has his/her own way of structuring the ventures involved in an investment decision.

Zacharakis and Meyer (1998) use social judgment theory (Brunswik, 1956) to investigate how well VCs introspect about their own decision process. They use policy capturing, a real-time method common in cognitive psychology, to capture the VC's "actual theories in use" versus "espoused theories" (Hitt and Tyler, 1991). Their underlying assumption is that decision-makers do not have access to "real" information, but instead perceive the importance of information through proximal cues (Strong, 1992). These cues quantitatively describe the relationship between an individual's judgment and the information used to make the judgment (Stewart, 1988). This method requires VCs to make a series of real-time decisions based on eight information factors. Regression analysis of each VC's decision indicate how important each of the information factors is to her/his actual decision process. After the VCs made their decisions, they provided a weighting of how they believed they used the information factors. Comparing the captured decision policies to stated decision policies provides a measure of VC's insight. Their findings suggest that VCs are not good at assessing their own decision-making process and lack a strong understanding of how they make decisions.

Although policy capturing allows real-time, unbiased capture of VCs decisions, it does have some limitations. Zacharakis and Meyer (1998) suggest that the subjects participated in a decision-making situation that did not mirror the real-life decision. Zacharakis and Meyer (1998) indicate that their experiment forced VCs to make decisions based upon the presented cues. They explain that in reality, VCs (1) have access to a multitude of possible information cues and (2) use interactive due diligence and other methods to clarify and assess reliability

of chosen cues. Their experiment, for example, gave participants the relative strength of competition on a 5-point scale. This cue was a distillation of several information points within the business plan. While VCs would normally distill and evaluate these elements for themselves, the experiment completed this process for the VCs (Zacharakis and Meyer, 1998). As such, the assigned value for competitor strength (and other subjective cues) could have differed from the value assigned by VCs themselves. Furthermore, the participating VCs were not privy to the excluded other information. Had they been aware of all the information cues they may have been less confident in assessing the impact of competition than they might otherwise have been (Zacharakis and Meyer, 1998).

Bachher (1994) identifies the criteria of his study by combining the cumulative list of criteria derived from earlier research on the investment process of VCs. He notes that the convergence across the studies described in this section (evaluation stage of the VCs investment process) in the investment criteria used by VCs. The broad categories of criteria include: 1) characteristics of the management team, 2) characteristics of the target market, 3) characteristics of the product or service, 4) VCs' requirements, and 5) characteristics of the business plan. Bachher (1994) summarizes the cumulative criteria from earlier research into five broad categories and studies the importance of the 95 decision-making criteria to 60 Canadian equity investors when evaluating an investment proposal from an early-stage technology-based company. He requested three types of equity investors to participate in the study: 1) Business Angels, 2) Private Venture Capitalists, and 3) Public Venture Capital Funds. Bachher (1994) embarked on his study to specifically address the issue that VCs are heterogeneous and was interested in understanding the investment criteria as related to early-stages of technology-based new ventures. He identified a stable rank ordering of the importance placed by VCs on each of the five categories with characteristics of the management team being the most important, followed by characteristics of the target market. The next important category was characteristics of the venture offering (product or service), followed by VCs requirements and then, characteristics of the business plan. Bachher (1994) also identifies salient investment criteria within each of the categories and notes that there are explicit differences between the type of investors, the type of new venture (technology-based or non technology-based), and the stage of investment process (screening or evaluation) in

the use of criteria by Canadian VCs. Among other things, he concludes that, in order to better understand the decision-making criteria used by VCs when deciding to invest in early stage technology-based companies, one must study VCs located in CA and MA, US.

Shepherd (1999) found that VCs' "in use" assessment policies of new venture survival are consistent with those proposed in the strategy literature. He explains that such consistency provides an opportunity to utilize established theories to help in understanding why VCs consider certain criteria in their assessment of new venture survival as well as why some criteria are more important in their assessment than others. Shepherd (1999) states that, to his knowledge, his study is the first to use an overarching theory to derive the criteria to be investigated in VCs' assessment of new venture survival. However, he does not suggest that this strategy is the only research literature that provides insight into VCs' decision policies; in fact, he encourages the investigation of VCs' decisions from a number of different theoretical perspectives.

2.3 Research Question

In terms of current research in decision-making, Dawes, Faust and Meehl (1989) suggest that an actuarial model which is properly developed and applied is likely to help in predicting human behavior as good as or better than the clinical method. Dawes (1979) presents evidence that even improper linear models are superior to clinical intuition when predicting a numerical criterion from numerical predictors. Consequently, if the investment process of VCs can be structured and the investment criteria elicited, an actuarial model would be the most valid choice.

In order to minimize self-reporting bias and increase the accuracy of information obtained from a study of investment criteria, Fried and Hisrich (1994) suggest asking VCs to describe the investment process they each followed in their most recent investment as a lead investor. Although the policy capturing method allows real-time, unbiased documentation of VCs decisions, the subjects participate in a decision-making situation that does not mirror

their real-life decisions (Zacharakis and Meyer, 1998). In this study, our choice of method is driven by the need to capture real-life information and minimize self-reporting bias.

It is highly probable that different criteria are used at different stages of the decision-making process. While some researchers have used methodologies to identify the decision-making criteria used at the different stages of the process, others have simply studied the decision-making criteria generally used by VCs. The latter have not accounted for any differences that may arise when studying the criteria within the context of a process. Our study also looks for factors that might explain activities carried out at other stages in the decision making process. Primarily, however, we will study the investment criteria within the context of an investment process.

Gupta and Sapienza (1992) and Sandberg, Schweiger and Hofer (1987) suggest that previous research sought investment criteria without differentiating between the types of VCs and their investment preferences based on the stage of financing, the type of new venture, and the geographic location of the VC. As a result, it is important in this study to clearly identify the type of VCs of interest and the nature of the investment preferences being explored. A review of the previous studies led to the observation that researchers had not focused their studies on technology-based new ventures seeking early-stages of financing. An exception is work carried out by the author of this thesis in an earlier study (Bachher, 1994). Therefore, the specific research question of this thesis is:

> *What are the investment criteria used by VCs when deciding to invest in an early-stage technology-based venture at the evaluation stage?*

CHAPTER 3
METHOD

The primary research question of this study is: "What are the investment criteria used by VCs when deciding to invest in an early-stage technology-based venture at the evaluation stage?"

The research strategy addressing this question was developed after a review of the academic literature on venture capital investment decisions, and after receiving feedback from practicing VCs in the industry. The overall study was conducted in four related stages, using both qualitative and quantitative research methods. This chapter describes each of the research stages in detail, from Network Creation to the Case Study to Interviews to Web-Based Surveys. Table 3-1 below presents an overview of the four stages.

Table 3-1

Summary of Research Strategy

	Stage # 1	**Stage # 2**	**Stage # 3**	**Stage # 4**
	Network Creation	Case Study	Interviews	Web-Based Surveys
Objective	Establish our network of VCs	Observe detailed process and criteria used by venture capital firms to invest	Explore the investment criteria used by VCs in technology-based new ventures	Identify the investment criteria used by VCs in technology-based new ventures
Method	Qualitative	Qualitative	Qualitative	Quantitative
Data collection	Snowball sampling	Case study, participant observation	Interviews	Web-based surveys
Type of Data	Primary	Primary, secondary	Primary	Primary
Timeframe	January 1995 – August 1996	January 1996 – December 1998	April 1996 – January 1998	August 1998 – October 1999
Length of time	1 year, 8 months	3 years	1 year, 9 months	1 year, 2 months
Sample size	Network of over 100 VCs	2	18	Survey 1–100 VCs Survey 2–12 VCs
Unit of analysis	Individuals	Firms	Individuals	Individuals

3.1 Stage # 1 – Network Creation

In order to study VCs, it was important for the author to familiarize himself with the venture capital industry and its professionals. In this stage, the research objective was to extend our network of VCs whose members would be willing to share their experiences with us, as they related to this study. In exchange, we offered the VCs an opportunity to meet entrepreneurs with technology-based new ventures, primarily in Waterloo, Canada. The VCs also expected a copy of the results of this study. The method used to create the network was snowballing; every VC approached was requested to suggest others who might be interested in being helpful to the author. In snowball sampling, the author began by identifying one VC who met the criteria for inclusion in this study (investing in the early stages of technology-based ventures). The author then asked the VC to recommend other VCs who also met the criteria. Snowball sampling is especially useful when the researcher is trying to reach populations that are as inaccessible or hard to contact as VCs. The resulting network created over 100 VCs At this stage and included VCs primarily from Canada, California, Massachusetts, as well as other parts of the US (representing close to 25% of the population of VCs of interest in this study).

The author began the process of networking by first participating actively within the venture capital community in Canada. This process involved attending networking sessions organized by others such as Toronto Venture Group (www.tvg.org), MIT-York Enterprise Forum (www.mit-yorkenterprise.org), and Canadian Venture Capital Association (www.cvca.ca), to mention a few. The contacts made at these sessions were very helpful to the author.

The author is the founder of Investment Technology Network Inc. (ITN), which provided, as one of its services (between March 1994 and January 1995), monthly networking sessions for entrepreneurs, equity investors (including VCs), and intermediaries (e.g. lawyers, accountants, and consultants). These individuals, who were interested in the financing of primarily Canadian technology-based new ventures, met monthly in Waterloo and Ottawa, Canada to discuss related issues. The learning gained through the networking sessions

helped to increase the author's knowledge of the challenges faced by entrepreneurs and VCs in Canada. The profile received by ITN in the media also helped to increase public awareness of the author as a contributor to the venture capital industry in Canada.

Through the ITN network, it became apparent that in order to explore the investment process and criteria used by VCs in technology-based new ventures, researchers should focus their attention on California (Silicon Valley) and Massachusetts (Boston). The VCs in these two areas are exposed to a large number of technology-based ventures seeking financing at their early stages because the local infrastructure actively encourages the creation of this type of venture. Given the many demands on their time, VCs are very difficult to contact. They rely heavily on referrals and networking for their business. In order to gain access to and meet with VCs in these two areas, the author had to extend networking to these areas. As a result, he identified and attended venture capital related meetings taking place in California and Massachusetts. Although this networking required personal investments of both a significant amount of time and financial resources, the outcome was very beneficial to the extension of the author's network outside of Canada. In sum, the author participated in the following main venture capital conferences and meetings:

- Venture Investing '95 (June 12-14, San Francisco, CA)
- Venture Forum '95 (October 24-27, Boston, MA)
- National Venture Capital Association (US) (May 1-3, 1996, San Francisco, CA)
- Venture Investing '96 (June 10-12, San Francisco, CA).

The author also welcomed discussions with VCs in other parts of the US, and areas in the United Kingdom (UK) known for their high level of investment activity in technology-based ventures. During a trip to the UK in July 1995, the author made visits to seven VCs in London, Oxford, and Cambridge.

The author began the process of identifying the population of VCs of interest in this study by searching the directories used commonly in the venture capital industry. Getting venture capital firms to appear in directories is not a simple task (Silver, 1994). There are two directories commonly referred to in the venture capital industry: *Pratt's Guide to Venture*

Capital Sources and *Galante's Venture Capital and Private Equity Directory*. Since both list venture capital firms, the author used the 1995 versions of both directories to gather information. *Pratt's Guide* is considered the primary source of information on VCs (primarily in the United States) and has been published annually since 1972. *Galante's Directory* has been in publication since 1992 and contains additional investment information that is not included in the *Pratt's Guide*, such as the number of funds managed by the venture capital firm.

Of the several types of venture capital firms, the most common is independent, meaning it has no affiliations with any other financial institution. They invest their capital through funds organized as limited partnerships in which the venture capital firm serves as the general partner. Venture capital firms may also be affiliates or subsidiaries of a commercial bank, investment bank or insurance company and make investments on behalf of outside investors or the parent firm's clients. Firms also may be subsidiaries of non-financial, industrial corporations making investments on behalf of the parent itself. Other organizations may include government-affiliated investment programs that help start up companies either through local, state, or federal programs.

Venture capital firms are known to have investment preferences based on both the type of venture and the venture's stage of development. The early stages include research and development, as well as seed, startup and first-stage financing (defined earlier in this thesis). Pratt's and Galante's directories define each of these stages similarly. With our interest in VC firms that invest in technology-based ventures, we were interested in investment preferences in the following: aerospace and defense, biotechnology, communications equipment, computer hardware, computer services, computer software, electronic equipment, internet and online services, manufacturing, medical and health devices, publishing and advertising, and telecommunications.

3.2 Stage # 2 – Case Study

Through our network of VCs, the author was presented with the opportunity to study, in detail, the process a technology-based venture went through in raising venture capital financing in its early stages. In considering this process through case study research and participant observation, the results from this second stage generated a set of criteria used by the two venture capital firms to invest in Avenir Internet Solutions Inc., an Internet electronic commerce software company. The unit of analysis in this stage is one venture capital firm.

The methods used to answer the research questions in this study are a combination of case study research and participant observation (Eisenhardt, 1989). This case study, which describes events and observations in Avenir between March 1996 and March 1999, attempts to answer the following research question: "*What are the investment criteria used by venture capitalists when deciding to invest in a technology-based new venture?*"

3.2.1 Case Study Research

Yin (1989) defines a case study as an empirical inquiry that investigates a contemporary phenomenon within its real-life context, when the boundaries between a phenomenon and a context are not clearly evident, and multiple sources of evidence are used. The case study research strategy is best suited to research questions of the "how" or "why" type where the investigator has little or no control over actual behavioral events and the data can be used in explanatory, exploratory, or descriptive research studies (Babbie, 1992).

Nachmias and Nachmias (1992) describe a research design as a plan that guides the investigator in the process of collecting, analyzing, and interpreting observations. For case studies, there are five components of a research design: 1) research questions, 2) propositions, if any, 3) unit(s) of analysis, 4) the logic linking the data to the propositions, and 5) the criteria for interpreting the findings. Case studies provide little basis for scientific generalization and do not represent a "sample." As a result, case studies cannot be

generalized to a population or universe. However it has been shown that important learning can take place even with a sample size of one (March, Sproull and Tamuz, 1991).

3.2.2 Participant Observation

As a methodology, participant observation is a form of case study research (Jorgensen, 1989) and involves the detailed description and analysis of an individual case. Case studies conducted by way of participant observation attempt to describe comprehensively and exhaustively a phenomenon in terms of a research problem. Participant observation requires the researcher to become directly involved as a participant in peoples' daily lives within a real-life context. Through participation, the researcher is able to observe and experience the meaning and interactions of people from the perspective of an insider. Participant observation is a method for gaining access to the interior, seemingly subjective, aspects of human existence.

"Becoming the phenomenon" is a participant observational strategy for penetrating and gaining direct experience of an aspect of human life. It can be an objective approach insofar as it results in the accurate, detailed description of the insider's experience of life. In carrying out this strategy, it is important that the researcher be able to switch back and forth between the insiders' perspective and the analytic framework of a scientist. Talking over field experiences with colleagues can facilitate this ability to switch between perspectives. Examples of participant observers who have endeavored to become the phenomenon in order to achieve an observational advantage include Scott (1968) and Becker (1963).

3.2.3 Data Collection

The researcher here was one person, the author of this thesis. The author, one of the Partners of ITN, was a Director of Avenir (August 1, 1996 to March 19, 1999) during which period he was also the CEO of Avenir (September 1, 1996 to December 2, 1998). The Board of Directors of Avenir has provided the research team with written permission to conduct and

report this case study. The researcher was also provided with unrestricted access to all corporate records of Avenir.

Most of the significant information was invisible to the general public. The field setting was open to the participant observer without any restrictions. The author employed an overt strategy to become a participant observer in the field setting. The location of the author as a participant was the official premises of Avenir. From March 1996 to August 1996, the author joined the Avenir team at their office in Mississauga on an average of one day per week. Between September 1996 and March 1997, the author participated in Avenir meetings at their office (Suite #1, 440 Phillip Street in Waterloo, Ontario) on an average of three days per week. From April 1997 to August 1997, the author was located at Avenir's office at 101 Frederick Street, Suite 505, Kitchener, Canada. Between August 1997 and August 1998, the author conducted research at Avenir's office in Waterloo, Ontario at 175 Columbia Street West, Suite 107 on an average of four days per week. Between August 1998 and December 1998, the author participated at the Boulder, Colorado office of Avenir at 2362 Spotswood Drive on an average of one day per month.

Insiders at Avenir were reassured that they would not be harmed in any way through misuse of company-confidential information and their interests would be protected through a complete non-disclosure policy. It was also emphasized to them that their cooperation was voluntary, their identity would remain anonymous if they so desired, and any information they provided would be considered confidential.

The researcher kept a daily record of the events, activities, and observations that took place during the period in which he was a participant observer. He recorded all of his observations and notes in a journal and a time management system. Throughout the participant observation, the author made notes, kept records, and created data files. On a weekly basis, he summarized key observations, produced written notes, and archived copies of key documents. Notes and files were handwritten, typewritten, and/or recorded by still photography, audio-video equipment, audiotape, or word processor. Once created, the

records were organized and analyzed on a monthly basis, usually on the first and last day of each month.

A case study protocol was developed and used to help increase reliability and to guide the researcher in carrying out the case study. It contained the procedures and general rules that were followed during the study including: 1) objectives and auspices, case study issues, and relevant readings about the topic being investigated; 2) field procedures including credentials and access to the case study "site," general sources of information, and procedural reminders; 3) the research questions to keep in mind when collecting data, and the potential sources of information for answering each question; and 4) a guide for the case study report (outline, format for the narrative, and specification of any bibliographical information and other documentation).

The author presented the preliminary findings of the case study to his colleagues at the Department of Management Sciences Seminar on May 26, 1997 as a means of gathering feedback that might refine the case study protocol. Informal suggestions made by five members of the Department of Management Sciences were incorporated.

The researcher paid attention to the following skills during the data collection process: 1) the ability to ask relevant questions and interpret the answers; 2) the ability to listen carefully to the respondents; 3) the ability to be adaptive and flexible; 4) the ability to become knowledgeable about the issues being studied; and 5) the ability to be sensitive and to reconcile contradictory evidence.

A major strength of this case study method of data collection is the opportunity to use many different sources of evidence. The use of multiple sources of evidence in case studies allows an investigator to address a broader range of historical, attitudinal, and observational issues. However, the most important advantage presented by using multiple sources of evidence is the development of converging lines of inquiry, by applying the process of triangulation. In this manner, the potential problems of construct validity also can be addressed, because the

multiple sources of evidence essentially provide multiple measures of the same phenomenon (Yin, 1989).

Evidence for case studies may come from at least six sources: 1) documents, 2) archival records, 3) interviews, 4) direct observation, 5) participant observation, and 6) physical artifacts. In this case study, all six sources of evidence were used in an attempt to detect patterns and converge on the same set of facts or findings. A case study database was created and maintained through a chain of evidence; that is, explicit links were made between the questions asked, the data collected, and the conclusions drawn (Yin, 1989).

1. Documentation: A variety of documents were collected including letters, memoranda, agendas, minutes of meetings, written reports of events, administrative documents (proposals, progress reports), formal studies, news clippings and other articles appearing in the media. The documents were used to corroborate and augment evidence from other sources. These kinds of documents are helpful in verifying the accuracy of information presented, such as quotes from interviews. In the event that the documentary evidence was contradictory rather than corroboratory, the researcher did further investigation. The inferences made from documents were treated as clues worthy of further investigation, rather than as definitive findings, in order to avoid incorrect inferences from false leads.

2. Archival Records: This type of evidence included 1) organizational records, such as business plans over a period of time; 2) records of Board of Directors meetings and shareholders meetings, which included conversations revolving around the company's strategy; 3) market research data from external sources and the Internet; 4) personal records, such as diaries, calendars, and telephone listings of Avenir's management team and all other consultants and employees; 5) binders containing negotiations with ITN and ITEX during the financing process; and 6) email messages from the CEO of Avenir, as well as those that were exchanged among team members and copied to the CEO. Most archival records were produced for a specific purpose and a specific audience (of course, other than the case study investigation), and these conditions were fully appreciated in interpreting the usefulness of the archival records.

3. Interviews: One of the most important sources of case study information is the interview. The interviews were considered as verbal reports only. The interviews were of the open-ended type, in which the investigator asks key respondents for the facts of a matter as well as for the respondents' opinions about events.

4. Direct Observation: The most desirable option in a case study is to disclose the identities of both the case and the individuals. Disclosure produces two helpful outcomes. First, in reading and interpreting the case report, the reader is able to recall any other previous information he or she may have learned about the same case from previous research or other sources. Second, the entire case can be reviewed more readily. In this case study, all those identified have been done so by their real names (with permission).

5. Participant Observation: Analysis began with the participant observer collecting information in an everyday life setting and considering it in terms of the research questions of this case study. The author coded and labeled all field notes by sorting, shifting, constructing, and reconstructing the field materials. Analytic strategies included looking for essential features, patterns, relationships, processes, and sequences, as well as comparing and contrasting, and formulating types and classes. The analysis led directly to making sense of the field data.

6. Physical Artifacts: A physical or cultural artifact may be a technological device, a tool or an instrument, a work of art, or some other physical evidence. Such artifacts may be collected or observed as part of a field visit. Artifacts collected include company promotional material, certificates of membership, project memorabilia, and the products developed.

To address the validity of this study, the case study report was reviewed by peers and by four of the key insiders in the case, excluding the author. The reviewers included Ryan Little, Malcolm Gissing, Patrick Lavelle, and Ed Wittman. They reviewed the case study report and their comments were incorporated into the final version in this thesis.

3.3 Stage # 3 - Interviews

In this stage, the research objective was to explore the investment process and identify specific investment criteria used by a sample of VCs when deciding to invest in early-stage technology-based ventures. The method used was semi-structured interviews with 18 VCs and the unit of analysis, in this stage, is the individual VC.

3.3.1 Sample

Through our network of VCs, we became aware of many industry publications, including the media information company Red Herring, a publication that covers technology-based venture capital activities in CA, MA and other investment communities. The Red Herring also organizes an annual conference, called Venture Market, which is held in Silicon Valley (West Coast) and Boston (East Coast), and includes participation from VCs, private company Chief Executive Officers (CEOs), and public company senior executives. The participants enjoy a valuable, well-organized editorial format with supporting reference material, in a pleasant, informal networking environment. The author attended Venture Market West in Monterey, CA (May 6-7, 1996) and Venture Market East in Cambridge, MA (October 28-29, 1996). Our choice of the two sites for the study thus corresponds to two of the locations of Venture Market.

Private companies were selected to participate at the Venture Market events by a committee of VCs considered by their peers to be "best-in-class" investors. Evidence from this event shows that during the two days of the meetings, the VCs bid for the companies and made investments in them by the end of the conference or shortly thereafter (within few weeks).

The Venture Market events were selected specifically because of their track record in the venture capital industry for attracting both "best-in-class" VCs from these areas, and technology-based new ventures. Red Herring organized a selection committee of VCs with impressive credentials. At these events, the author observed sessions where VCs questioned

entrepreneurs of technology-based new ventures on their business plans for the purpose of making an investment.

This research strategy provides the opportunity to both observe truncated investment processes, and identify investment criteria used by the VCs in Silicon Valley and Boston. In this stage, we interviewed members of the selection committees. The selection committee was comprised of "best-in-class" VCs, who recommended private companies for inclusion in the event. Recommendations were based on the VCs investment criteria. The Red Herring organizing committee received all recommendations and organized a meeting of the selection committee. The committee met to discuss the recommendations and to approve all final selections of the private companies that would present at the event. The interview sample for this stage was chosen from the members of the selection committee of Venture Market's West and East events.

In each of the two sites, nine VCs were interviewed, making a total of 18 VCs. They were asked to describe the applicant selection process for early-stage technology-based ventures.

3.3.2 Data Collection

The interviews were open-ended and somewhat constrained by time and event agenda. The emphasis was to engage the respondents in discussion about how they believed they selected the companies that presented at Venture Market. The author (interviewer) asked each of the VCs (interviewee) the following questions as the basis for discussion: "What are the investment criteria you consider when deciding to invest in technology-based new ventures at the evaluating stage?" Because the interviewees declined to be taped during the conversations, the author was limited to taking notes during the interviews. Following each day of interviews, all notes taken were summarized.

All interviews were held face-to-face. Once again all VCs declined to be taped during the interviews. The average length of each interview lasted from 15 minutes to half an hour depending on the availability of the VC. Each investor was guaranteed confidentiality and

anonymity in the study. The interview notes were summarized following each of the events, as well as after each meeting.

The cumulative results from this stage and the previous one (Stage # 2) were used as the basis for creating the survey in the final stage of this study (Stage # 4).

3.4 Stage # 4 – Web-Based Surveys

This stage involved a quantitative study of the investment criteria used by VCs, and incorporated the results obtained from Stages # 2 and # 3. The sample for this stage was obtained from the VCs (identified as the population in Stage # 1). In this final stage, the two main research objectives were to explore the investment criteria used by VCs when deciding to invest in early-stage technology-based ventures, and to identify the investment criteria that the VCs considered to be intangible. The strategy used in this stage was the web-based survey research method. The unit of analysis in Stage # 4 is the individual VC.

Survey research is a method that involves the administration of a standardized questionnaire to a sample of respondents. The questionnaire seeks to insure that exactly the same observation technique is used with each and every respondent in the study (Babbie, 1992). In our context, survey research was used in exploring what investment criteria VCs use when deciding to invest in early-stage technology-based ventures. Some of the advantages of administering the survey in this stage include:

1. It provides a consistent means of collecting data.
2. It helps in reducing bias that may be introduced in data collection through open-ended interviews.
3. It permits more detailed quantitative statistical analysis than semi-structured or open-ended interviews.

In order to determine the preferred means of administering the survey among VCs, seven of them were randomly selected and requested to identify their choice for completing a survey

related to this study: by fax, by mail, through a website, or during personal interviews. All of them identified the web-based survey as the preferred choice.

The electronic version of the survey was developed using Perseus Survey Solutions for the Web, version 2.0, developed by Perseus Survey Solutions. The selection criteria for selecting this software package over competing ones were: 1) the presence of a user-friendly development interface, 2) it cost less than US $500, and 3) its compatibility with Microsoft Office Software Suite. The web site for the survey was hosted at a local Internet Service Provider (ISP) under a domain name specifically registered for the survey and chosen for its ease of remembrance -- www.venturecapital2000.com (Appendix 7.2). For a cost, this web site provided unlimited space, quicker maintenance turnaround in the event of an emergency, and a log of activity on the web site.

A web-based survey has the following advantages with respect to this study:

1. It simplifies the process of coding the responses and entering the results into a database by minimizing the steps involved. Once a survey is completed, the results are entered into an electronic database in two easy steps, each of which takes less than a minute. Assuming that the procedure is implemented accurately, this minimizes human data entry errors.
2. VCs are very busy. To arrange meetings or interviews with them is extremely difficult because of their busy schedules. VCs are known to keep themselves very busy and allocate a majority of their resources to activities related directly to their firm. Spending significant time on a survey is simply out of the question for most of them. A survey by fax or mail may get lost in the hundreds of business plans that lie unattended on their desks. We found that e-mail based communication is an effective mode with the VCs and the likelihood that they would respond to a web-based survey was expected to be higher. For the 30 minutes needed to complete the survey, they could be evaluating yet another potential investment opportunity. Having the choice, they may opt for the later.
3. The VCs need the flexibility to participate in the survey at their leisure. They may prefer to do it at a time that does not eat into their business day. The web-based survey can provide this flexibility.

4. They generally responded to email because it is also one of the common sources by which they review business plans. If our message were to get lost in their stack of emails, a reminder would make it easy for them to find the message or site using a keyword.
5. The web-based method enabled the author to estimate accurately the time taken to complete the survey based on a time stamp of the completed response. This was possible for each major question in the survey and for each of the sections.
6. The web-based survey avoided the perception of a lengthy survey. At any given time, when answering questions, the VCs were only presented with a sub-set of the survey.
7. The web-based survey reduced the burden on the respondent to complete a lengthy survey. By breaking up the survey into several parts, each on a different page, the respondent could finish a section of the survey, submit the page electronically, and then return to the rest of the survey after taking a short break. In order for respondents to perform another task on their computer where the survey was being completed, they would be encouraged to finish the survey before proceeding on to other tasks. In contrast, if respondents stopped while completing a paper-based survey, they might not return to it. Also, the novelty of completing surveys on the web might have encouraged its completion.

3.4.1 Pilot Study

A pilot study of the survey was conducted before full-scale implementation. A total of ten respondents were recruited for the pilot study conducted in June 1999. Respondents to this pilot study made the following suggestions:

1. Edit minor grammatical errors, reword some questions, and clarify the organization of the home page of the survey and other pages in the web site.
2. Split the survey into several pages to minimize fatigue or the perception of length.
3. Simplify the process of submitting the survey at the end of each page and avoid any marketing of the company that designed the survey.

4. Clarify and reorder the questions to mirror the process of considering investment criteria. This reordering had to be done with special programming skills that were hired within the university.
5. Add a question at the end for the respondents to indicate the importance of each category on a scale of 1-10 and compare these results with their ranking earlier.
6. Avoid compounding questions.
7. Design the web site in a simple and clean manner. For example, use a universally available font that is browser and desktop independent, such as the font of this thesis, with a white background and black text, which is designed to be viewed with 640 x 480 resolution.
8. Order the criteria as follows: 1) top of the list: clear, low speculation, not controversial; 2) middle of the list: more speculation and more controversial; 3) bottom of the list: high ambiguity, what we were told by the VCs.
9. Define key terms upfront in the survey, and then characterize the new venture in relation to these key terms.
10. Redesign the Likert scale so that columns are of equal width. Even though the width of columns 1, 2, 3, 4, 5, 6, 7, and N/A on the scale were not equal, this was intentional - we wanted to remind the respondent of what the anchors of the scale signified, as opposed to recalling from memory. We also wanted to avoid any scrolling of the web site from left to right.

Other decisions made as a result of the pilot study:

1. The web site was tested on campus and off campus, using Microsoft Internet Explorer version 4.0 and upward, and Netscape Communicator 4.0 and upward.
2. We asked the VCs to think about a venture that they had invested in within the last 12 months. We considered using 18 months and felt that in today's Internet market, 18 months is the time it takes to see an exit for the investors. Twelve months reduces the likelihood that they will be biased by the outcome of the venture because it did or did not realize a return on their investment.

3. Questions on the investment process were not included because of time considerations. We felt that this would lengthen the survey. Target time for completion was 30 minutes. The average time for completion of the pilot study was 30 minutes.
4. The web programming of the site helped to identify the information most important to VCs. The first section dealt with decision-making criteria. One of the earlier questions was "the VCs were requested to indicate how they rated the categories of decision-making criteria." Once they answered this question, the web site was programmed to automatically order the categories and ask the following questions in the same order as identified by the VC. In a previous study by the author, a survey questionnaire was used to understand the decision-making criteria used by Canadian equity investors. An interview was conducted and, while the equity investor was ranking the categories in degree of importance, the author was organizing the rest of the pages of questions (one per category) in the same order. A total of five categories were organized with 95 criteria. In that earlier study, investors received the set of criteria three times: at the screening stage, at the evaluation stage, and for the case of a non-technology-based venture. The exercise was very fatiguing but the interviewer being present in person helped. It took approximately one hour to gather data from each equity investor. The present exercise was partially replicated in an automated fashion using the web and achieved similar objectives.
5. The application for ethics review of research with human participants was submitted to the Office of Research Ethics at the University of Waterloo. It received a conditional ethics clearance to begin with, and following all requested changes, notification of full ethics clearance of our application to conduct research with human participants was received verbally on June 17, 1999.

3.4.2 Sample Identification

Sampling is the process of selecting units (individual VCs) from a population of interest (VCs investing in early-stage technology-based ventures). A set of selection criteria was developed in order to identify the sample for this stage. The objective of data collection was to target one VC per venture capital firm in order to provide independence of observation.

We expect greater similarity within a venture capital firm as opposed to between firms. The sample in this stage was obtained from the population of VCs of interest in this study and listed in the published venture capital directories, 1998 (CD-ROM versions) of Pratt's and Galante's Directories.

The Pratt's Guide lists a total of 1309 private venture capital firms, small business investment corporations (SBICs), or venture capital subsidiaries of an operating company. We are only interested in the private venture capital firms among Pratt's listings. Galante's Directory lists 1319 venture capital firms. While Galante's Directory differentiates the types of firms listed, Pratt's Guide does not enable a search on this basis.

Those VCs were selected who were actively investing at the time of release of the directory from the following states in the US: California, Massachusetts, New Jersey, New York, Connecticut, Texas, Washington, Oregon, Ohio, Colorado. Over 70% of the venture capital invested in the US was in California and Massachusetts and another 25% was in the remainder of the states identified here. Additional search criteria involved the VCs that invested in technology-based ventures at their early-stages. In sum, these criteria led to a total population of 450 US VCs.

The Canadian population of VCs was identified from the Canadian Venture Capital Association (CVCA) directory. The most recent directory at the time of data collection was the June 1998 version, which contains a listing of 60 full members (1998-99 membership). For each member, it provides a profile including the size of the funds managed by the venture capital firm, type and stage of preferred investments, as well as contact information and a listing of partners. The web site of the association at www.cvca.ca contained a more accurate set of profiles and listed a total of 75 full members of the association. As a result, the author chose to rely on the web site for up-to-date information. Also, the author had extensive contacts in the Canadian VC industry and used them to contact the appropriate VCs. These contacts helped to identify almost 100% of the population of VCs that have made investments in early-stage technology-based ventures in Canada, and led to a total population of 35 Canadian VCs.

A venture capital firm organizes its partnership as a pooled fund; that is, a fund made up of the general partner and the investors or limited partners. These funds are typically organized as fixed life partnerships, usually having a life of ten years. Each fund is funded by commitments of capital from the limited partners. Once the partnership has reached its target size, the partnership is closed to further investment from new investors or even existing investors so the fund has a fixed capital pool from which to make its investments. A venture capital firm may have more than one fund in existence. A venture firm may raise another fund a few years after closing the first fund in order to continue to invest in companies and to provide more opportunities for existing and new investors. It is not uncommon to see a successful firm raise six or seven funds consecutively over the span of ten to fifteen years. Each fund is managed separately and has its own investors or limited partners and its own general partner. A fund's investment strategy may be similar to that of other funds in the firm. However, the firm may have one fund with a specific focus and another with a different focus and yet another with a broadly diversified portfolio. The number of funds depends on the strategy and focus of the venture capital firm itself. Our network had strongly recommended that we should focus on those VCs that have two or more funds, because the limited partners view venture capital firms and VCs as successful if they raise two or more funds.

Based on the selection criteria, a total of 200 venture capital firms were selected as the population of VCs relevant to this third stage of the study. From each of these firms, our objective was to select one VC per firm in order to generate a population of 200 VCs. The theoretical population of venture capital firms in this study is 200 firms. Each firm has one or more VCs. As a result, the theoretical population of VCs in these firms will be a sum of the total number of VCs that make investments in early-stage technology-based ventures in each of these firms. From each of these firms, only one VC was permitted in this study. As a result, the accessible population is 200 VCs. The listing of the accessible population from which the sample was drawn is the sampling frame in this study. The sample available in this study is the accessible population of 200 VCs.

The sampling method used in this stage of the study is nonprobablity sampling. This method is purposive in nature because we approached the sampling problem with a specific plan in mind. In this stage, we sought expert sampling, which involved assembling a sample of VCs with known or demographic experience and expertise in investing in technology-based new ventures.

3.4.3 Data Collection

The process employed in selecting a VC per firm began initially with an extensive search of the firm's web site. Two meta web sites that contained links to venture capital firms were used to help in the search, www.nvca.org, and www.vfinance.com. The first is the web site of the US National Venture Capital Association. The section on NVCA members contains an alphabetical listing of the venture capital firms and links to their web sites when available. The second is a site containing information related to venture capital financing. It also lists venture capital firms and contains links to their web sites.

For those firms with web sites, the next step involved a comprehensive review of the site and a search for the profile and background of the partners of the venture capital firm. Based on a review of the profiles, the author made a judgment on which specific VC in the firm to contact by telephone. The individual of choice was selected on the basis of being 1) the founding or co-founding partner of the firm, 2) the managing partner of the firm, 3) the partner responsible for technology-based investments, 4) the partner with an impressive and unique background, 5) a partner with publicized successful investments in new ventures, 6) a partner with a Ph.D. and thus might have an inclination to help the author, and 7) a partner with an academic interest (for example, teaching courses in entrepreneurship or venture capital) or holding visiting academic positions such as members of visiting committees.

The author then placed a telephone call to the venture capital firm requesting to speak with the selected partner. In most cases, each phone call placed was received by the firm's receptionist, and then was directed either to the partner or to his/her administrative assistant. In most cases, either the assistant answered or the author had to leave voice mail. The

author, in all cases, used a telephone script (Appendix 7.3). However, this script had to be modified based on the quick read of the individual at the other end. The objective of each phone call was to get past all the administrative people and get to the partner directly. Hence, it was critical to sell the value of participating in the study to all individuals along the way and make them feel the value of their decision to help the author. In the case of each venture capital firm of interest, the author checked to see if he knew of anyone personally in the firm (as a result of Stage # 1) or if he knew of another person within his network who could refer him to someone in the venture capital firm. The average phone call lasted from 30 seconds to one minute.

In the event that the venture capital firm did not have a web site, it became important to sell the value of the study to whomever answered the telephone call at the firm and to request them to suggest the partner who would be most willing to participate in the study. In some cases, the author had a list of a firm's team members and their titles, available through the venture capital directories. When titles were available, the author selected the managing partner or a matching title (managing director, principal) which appeared to indicate the senior individual in the firm and asked for him/her during the call.

In the event that the author reached the partner requested, or another partner in the firm suggested by the administrative staff, after a quick description of the study, the author requested this partner to commit to participating in the study. If he/she agreed, then the author followed up within five minutes of concluding the call with an email message describing the details of the survey. The email also contained a link to the web site where the survey instrument resided (Appendix 7.4). Also, during the phone call, the author mentioned the web site address where the survey was located. Having a URL that was easy to remember helped very much in increasing the chances that a partner would complete the survey.

In most cases, the author was not able to speak with partners on the first attempt. As a result, he left a voice mail message for the partner and requested that he/she return the call to the author's cellular phone number. While this method of returning calls turned out to be an

expensive choice, it increased the likelihood of taking any phone call that arrived from VCs, including one case in which a VC called at 4:30 AM author's time! In some cases, the administrative staff of a VC suggested that the author email the survey without speaking to the partner. They agreed to discuss the survey with the partner and get back to the author as soon as they had an indication of the partner's response.

In the event that the author received a refusal to participate in the study, VCs presented clear reasons such as, 1) they were very busy and could not afford the time commitment required for the survey, and 2) they do not participate in surveys of any kind. The author next requested the partners to propose an alternate partner in their firm who might be able to participate. The response to this request was negative almost all the time. The most common question that was posed by the partners was, "How long will the survey take?" The author responded by indicating an average time of 15 to 30 minutes. An alternative response was, "We estimated that the survey would take 30 minutes but the 30 VCs who have responded did so in 15 minutes". Knowing that their peers had been participating encouraged the VCs to participate. Most venture capital firms received at least four calls before they responded. In some cases as many as 12 calls were made to a firm before receiving a response.

After receiving a completed response from a VC, the author called back to request referrals for other VCs who might feel comfortable participating in the study. Some VCs were reluctant to release names of others not having met the author in person. On the other hand, one VC, which the author had met personally, recommended 30 other VCs to contact with whom he had professional relationships. Most telephone calls to VCs were made from Waterloo. After the first month of data collection, only nine completed responses had been received. The author decided to make personal visits to the offices of VCs in Silicon Valley as a means of reinforcing the importance of the study. A personalized follow-up card was delivered personally to each VC in his/her office (Appendix 7.5). This follow-up took place over a period of two weeks and resulted in the number of responses increasing to 21. The Office of Research Ethics at the University of Waterloo was consulted and cleared this method of increasing the response rate.

After a second telephone reminder, some VCs bookmarked the web site as a reminder to complete the survey. Bookmarking may well have worked better than following up with another email survey. Because the web site address was easy to remember, some VCs completed the survey before they even received the email by going directly to the web site. A few people asked to complete the survey by mail. This lack of control was not encouraged, as consistency of data collection method was important; in the end, no surveys were completed by mail. However, we could not control whether or not they had the survey printed out, completed it, then had their assistants enter it into the web site, or if they completed the survey directly on the web site.

At the end of July 1999 (after six weeks of data collection), the author had collected 36 responses. In order to increase the response rate, the author employed the following strategies in August 1999:

1. Asked each VC who responded to recommend three other VCs they consider peers in the industry. This request was made with an email message and a follow-up phone call to each of the VCs.
2. Contacted all those who had agreed to participate but had not done so yet. This contact was first established by a friendly email reminder and a phone call to follow.
3. Provided everyone with a deadline for participation (August 13, 1999). This deadline encouraged many to send their completed responses. However, it discouraged a few from participating. Still, the author believes the deadline encouraged more response than it discouraged.

The author was persistent with the VCs and in some cases, made as many as five reminders. However, a fine balance was maintained between being persistent and being irritating. The author relied heavily on referrals.

Out of a total of 200 VCs targeted, a total of 100 VCs responded to the web-based survey. In order to reduce any bias that may have resulted from the method of data collection, only those VCs who responded through the web were used for the sample. In a few cases, VCs

who preferred to complete the survey by fax or through a mailed copy were refused participation in the study. Data collection lasted from June 18, 1999 to September 9, 1999.

3.4.4 Survey # 2 – Tangibility of Investment Criteria

After completing the data collection for the survey described above, a follow-up Survey # 2 was conducted to explore the tangibility of the investment criteria from Survey # 1. The author was interested in describing the investment criteria for which data were collected in the previous survey as being either tangible or intangible. VCs tend to describe the assets of technology-based new ventures as primarily intangible in nature. As a result, the author was interested in exploring which of the investment criteria were tangible or intangible based on the VCs perceptions. The objective of this follow-up survey was to provide further insights into the investment criteria identified by VCs as important. To accomplish this objective, the survey was modified and administered with a different sample of VCs. The questions remained the same with the exception of a change in the 7-point Likert scale used for gathering responses on the investment criteria. On the Likert scale in the follow-up Survey # 2, "1" represented "Extremely Intangible" and "7" represented "Extremely Tangible." Respondents were also given the option of selecting "N/A" implying the specific investment criteria were not applicable to the new venture. We defined a tangible criterion as an aspect of the new venture that can be readily perceived, or is capable of being appraised at an actual or approximate value. We also defined an intangible criterion as an aspect of the new venture which cannot be readily perceived, or is not capable of being appraised at an actual or approximate value.

For convenience, a Canadian sample of VCs was used for Survey # 2. Out of the population of 35 Canadian VCs who qualified in Stage # 4, a total of 12 VCs qualified to be included in this next Survey # 2. The remainder of the Canadian VC population had participated in the earlier survey by this stage. The author attended the 1999 Annual General Meeting of the Canadian Venture Capital Association in late September to recruit the 12 VCs who were the accessible population of Survey # 2. The author intended to do a census of this accessible population. Over the first three weeks in October, the author set up meetings with each of

the 12 VCs and administered the survey during a face-to-face meeting. To complete one of these surveys,

1. The author set up an hour-long meeting with the VC at a venue of his or her choice, and one where an Internet connection was available.
2. The author arrived at the meeting site at least ten minutes in advance to ensure being on time.
3. Once the meeting began at the designated time and place, the author introduced the purpose of the study and described the objective for the meeting.
4. The VC was then advised to begin completion of the survey at www.venturecapital2000.com/survey (Appendix 7.6). On average, the time taken to complete the survey was between 15 and 30 minutes.
5. The author concluded the meeting by asking the VCs to make any comments they had regarding the study, and then thanked them for their participation.

The results from Survey # 1 (n = 100) and Survey # 2 (n = 12) were analyzed, and these results are described in the next chapter.

CHAPTER 4
RESULTS

This chapter describes the analyses performed on the data collected, and presents the results obtained for the last three of the four stages of this study. Both qualitative and quantitative data analysis techniques were used to answer the research question of this study. The results from Stage # 1 identify the samples to be investigated in Stages # 2, # 3, and # 4.

4.1 Stage # 1 – Network Creation

We found that VCs are approachable when contacted within an industry-focused network and were generally willing to co-operate in this study. While they tend to be highly opinionated, the VCs contacted were typically very articulate with respect to how and why they invest.

4.2 Stage # 2 – Case Study

Avenir Internet Solutions Inc. ("Avenir") is in the business of enabling barter trade over the Internet. Barter is the generic term for transactions between two or more businesses in which products or services are traded for other products or services without the exchange of money. This chapter describes a case study of how Avenir, currently based in Boulder, Colorado, US, raised early-stage financing from VCs between January 1996 and March 1999. This case study attempts to answer the following research question:

> *What are the investment criteria used by venture capitalists when deciding to invest in a technology-based new venture?*

4.2.1 Background

Three young entrepreneurs seeking to develop World Wide Web sites for other small and medium sized businesses founded Avenir in January 1996. These Canadian founders, based in Mississauga, Ontario attracted the attention of a private venture capital firm, Investment Technology Network Inc. (ITN), based in Waterloo, Ontario, Canada. In March 1996, ITN

invested seed financing of $10,000 for 33.3% in equity. The seed financing, a relatively small amount of capital, was provided to the entrepreneurs to communicate their concept and thereby to qualify for startup capital in a subsequent round of financing. The seed capital was used to conduct market research and develop a business plan.

This seed financing allowed Avenir to focus on developing web sites which enabled electronic commerce transactions on the Internet. Avenir's competitive advantage would be the proprietary software developed to enable electronic commerce. The business model focused on licensing Avenir software to companies interested in developing electronic commerce applications to sell their products and services on the Internet. The market size was estimated to be very large for such electronic commerce transactions. Avenir's revenue model included a software license, maintenance and support, and transaction fees. To execute this business plan, Avenir raised $525,000 of startup capital from ITN, the Royal Bank of Canada, and business angels between October 1996 and October 1997. The capital was used to build the team, develop the product, and initiate marketing of the software to targeted customers.

Avenir's early customers wanted an electronic commerce solution in the barter trade industry. By July 1996, Avenir had gathered enough evidence to suggest that the barter trade industry conducted $9 billion of transactions annually: there was no dominant provider of electronic commerce software: and the industry was seeking an Internet platform to conduct trade-related electronic commerce. The management team at Avenir decided to develop a customized version of its software for the barter trade industry and test-market the concept. Market acceptance was promising and Avenir might have an opportunity to dominate the Internet barter trade software market. As a result, Avenir decided to focus its business model on producing a leading software application for Internet barter trade. The team believed that this strategy would enable the company to raise additional capital from VCs, and create a lucrative opportunity for all its shareholders.

Avenir completed a round of first-stage financing totaling US $1 million in March 1998 from the venture capital division of ITEX Corporation, based in Portland, Oregon. ITEX runs an

international retail trade exchange for its 30,000 members. The startup financing was needed to complete product development and begin marketing to retail trade exchanges and corporate barter companies. Up until the time of this documentation, both ITN and ITEX have continued to maintain their equity investments in Avenir and to play an active role in managing their investment. Background information on ITN is included in Appendix 7.7.

This section of the thesis describes two of the salient investment criteria observed as important to the VCs in deciding to invest in Avenir: 1) flexibility with strategy, and 2) credible Boards of Directors and Advisors. The chain of evidence supporting the importance of these criteria to the VCs and the presence of these criteria in Avenir are described.

4.2.2 Flexibility With Strategy

One of the investment criteria used by the VCs in ITN was the:

> *Attractive ability of the Avenir management team to be flexible with the strategy of the new venture based on rapidly changing market needs.*

The management team was able to develop a unique business model which differentiated the new venture in the market. Also, their flexibility was driven by the passion and confidence in a vision for the new venture. These characteristics of the management team were all attractive to the VCs. The discussion that follows describes evidence to support the identification of this specific investment criterion.

On March 1, 1996, one of the partners of ITN (while watching the 11:00 PM daily news on City TV in Toronto, Ontario) came across Future Designs (later renamed Avenir Internet Solutions Inc.), a world wide web site development company started by three "kids": Ryan Little (then aged 15), Paolo Giacco (then aged 15), and David Lee (then aged 14). In the 60-second segment that caught the partner's attention, he noticed that the TV reporter asked Little, "Do you feel guilty running a business which charges $48 for the development of web sites when your competitors are charging upwards of $2000 for the same service?" The young entrepreneur handled himself confidently and responded to the question by stating that business is competitive and they are not responsible for the pricing strategy of other

businesses. Impressed with Little's confidence, the ITN partner noted their web site address. After reviewing their well-designed web site, he immediately e-mailed these three young founders on March 3, 1996. After an hour-long telephone conversation with Little, the ITN partner invited the founders to a meeting in Waterloo, on March 16, 1996. Following personal introductions, the three "kids," who were dressed professionally in business attire, provided the partner with an overview of their business. They brought along a five-page summary of their business, which they had written, and a marketing package on the company. These materials concisely described their vision, and outlined their current financial position. The section on financials even had a list of their assets, including the computers they owned, valued to account for depreciation. These young entrepreneurs not only embodied the idea that youth was an advantage in the Internet industry, but also demonstrated their competitive advantage: they had low overhead because their consultants were primarily other high school students. During the four-hour meeting with the founders, the partner observed:

- The founders were responsive to feedback. The ITN partner reviewed their web site in their presence and his recommendations were accepted enthusiastically.
- Little, the primary founder, was perceived as visionary in his thinking about business. He wanted to build a large successful Internet company.
- The team was willing to develop and adapt its business models to keep pace with the rapidly changing Internet market.
- The founders were effective at marketing themselves. They made it onto CityTV by sending an e-mail to the station and using their age as an angle to get a TV interview.
- The partner got the impression that they were determined to succeed and the young entrepreneurs came across as being very motivated while possessing a strong business sense.
- The founders had energizing personalities and got along well with the partner.
- World wide web site development was an emerging trend in the Internet market at the time. The industry was "hot."
- The founders were not conditioned in their thinking by past business experience and were willing to try whatever it took to be successful.
- Little was very confident in his ability to succeed in an entrepreneurial venture.

- The ITN partner began to become interested in the young entrepreneurs and their business ideas.

During the meeting with these young entrepreneurs, the ITN partner became very interested in the ideas of the team regarding their business. One of the salient criteria identified by the ITN partner in relation to their investment decision-making is the ability of the management team to change the strategy of the new venture based on changing market needs. The ITN partner described the importance of this criterion as follows:

> *The Internet is a new industry and is less than a year old. No one can predict the future of the industry, but we do know that it will have a significant impact on the lives of everyone. As the industry evolves, we need to evolve the business models of the ventures we invest in. More importantly, the entrepreneurs must be willing to change and manage the change effectively within their ventures. Something similar happened in the early days of the PC industry. As the industry evolved, change based on changing market conditions was critical. There were a lot of new ventures in the market and few emerged as dominant industry leaders.*

The ITN partner directly questioned the management team on how they would deal with change in their business model based on changing market needs. Ryan Little responded:

> *Our goal is to create a large and successful Internet company. There are many new ventures being started by young entrepreneurs around our age and we feel confident that we have an exciting opportunity with the Internet. In order to deal with change, if the market demand drives us to change our business model, we plan to do so. At all times, what will be most critical for us is to observe the market and be leaders in our business.*

The partner felt that in order to appreciate the ability of the management team to be flexible in their strategy based on changing market needs, he would have to make an investment in Avenir and measure the progress over time to determine the continued involvement of ITN and the potential for success of Avenir. The types of companies in which ITN were seeking investment opportunities included:

- Private and technology-based companies based in Canada
- Companies at the early stages (seed, startup stages)
- Internet related companies
- Companies seeking capital of up to $50,000 in a seed or startup round of financing
- Companies seeking management expertise
- Companies that require more capital (which would be obtained from ITN's network of investors)
- Companies which require a Board of Directors and infrastructure
- Companies that need ITN's network of contacts as potential team members, customers, and strategic alliance partners.

Once the ITN partner felt comfortable with the management team and was willing to take a risk on their limited experience in business, he proposed ITN's interest in investing in Avenir with the following investment deal in Future Designs (pending unanimous approval from all the other partners of ITN). ITN was to:

- Purchase 33.3% of Future Designs for $10,000.
- Distribute equity in the company as follows: Founders (33.3%), employee "pool" (33.3%) and ITN (33.3%).
- Assist in the creation of a new business plan.
- Suggest that Little, Lee, and Giacco begin to develop the business plan.
- Be responsible for raising future rounds of financing.
- Help in creating an Advisory Board.
- Actively participate in the growth of their company.

The founders of the company approached their business mentors with the deal and information about ITN's interest in investing. The partner at ITN met with the parents of each founder individually and then introduced the founders to each of the partners of ITN in person. The partner discussed the deal with the other partners of ITN and followed up with a formal offer. After all parties felt comfortable with each other, and the offer was discussed in detail, the deal was accepted by Future Design's founders. The founders renamed the company Avenir Internet Solutions Inc. and it was incorporated on June 28, 1996. Based on

ITN's investment in the company, Avenir attracted further media attention in Canada, including an article in *Profit* magazine, and the *Globe and Mail*, a national newspaper.

The first objective of the Avenir team was to create a business plan. The team thought about the issues surrounding their business and completed their business plan by July 1996 with the help of one of the partners from ITN. The business plan set a goal of generating sales from World Wide Web sites for small and medium sized businesses in a high volume, low cost fashion. Avenir would have to franchise its concept and set up additional partnerships to realize this strategy. From March 1996 to June 1996, the company established a presence on the web as Avenir.com. The founders made their first marketing effort to sell web site development by attending "Internet World 1996" in Toronto in March 1996. This initiative alone led to over 70 leads for web sites, which the founders followed up on. By October 1996, Avenir had a strong Advisory Board which included all four partners of ITN, the author leading the company as the CEO, and an office in Waterloo (compared to working out of Little's parents' home basement). The Avenir team continued to attend trade shows and conferences in search of customers. Through this period, the Internet market became crowded with a large number of web site development companies and the market became very competitive. Without a channel that enabled the low cost, high volume sales, it became difficult to sustain the current business model and the team began to explore other business opportunities that involved larger revenue streams per customer. One of Avenir's customers for a web site was Global Trade Group (GTG) based in Boston, Massachusetts. GTG had become aware of Avenir through the *Globe and Mail* article, which they received from a mutual acquaintance who was associated with both Avenir and GTG.

Following the incorporation of the company at its first shareholders meeting, a slate of Directors was nominated and approved. This Board was comprised four Directors who were experienced in managing and investing in technology-based ventures, and included: 1) Malcolm Gissing, the past CEO of Hewlett Packard Canada, and Chairman of Canadian Venture Founders, a $20 million early-stage venture capital fund; 2) Kent Plumley, the seed investor in Mitel, Director of Newbridge Networks, and Partner of one of Canada's leading law firms, Osler, Hoskin and Harcourt; 3) Patrick Lavelle, Chairman of Export Development

Corporation and Past Chairman of the Business Development Bank of Canada; and 4) Jagdeep Bachher, founder and Managing Partner of ITN. All four Directors were also Partners in ITN.

In August 1996, the team was beginning to observe that electronic commerce was a large area of opportunity emerging on the Internet. The market size was estimated to be very large (in the tens of billions) for electronic commerce transactions. Little began discussions with Mark Quinn and Ben Kafka of GTG regarding the extension of the functionality on their web site to include electronic commerce transactions of industrial parts over the Internet (an idea that had been proposed by GTG to Avenir). On October 17 1996, the CEO met with Mark Quinn at the Hyatt Hotel (Grand Central Station) in New York. Mark Quinn had flown in from Philadelphia for the meeting. Global Trade Group had an investment in their company from PECO Energy Company (NASDAQ: PECO) and was now seeking to create an electronic commerce site on the Internet to sell PECO's excess inventory of industrial spare parts valued at over $50 million. Avenir had the opportunity to bid on the project based on its existing relationship and, as a result, to sign up its first electronic commerce customer. To extend Avenir's business plan to include electronic commerce business, Avenir needed capital to build the team, develop the product, and initiate marketing of the software to targeted customers. The business plan estimated financing needs of $500,000 for the first six months in 1997. The management team decided to raise a portion of this sum from a combination of equity capital from investors, debt capital from one of the major Canadian banks, and the rest through sales from the contract with GTG. This approach would reduce the need to sell equity in Avenir for cash.

The advantages of this new business included a larger revenue model, a US based customer, access to the US market, a strong customer reference to help secure future contracts, additional resources to continue to build the team, explore and refine the business model and secure the next round of investment capital, a billion dollar company as a customer (as a result of PECO's relationship with GTG), and a sustainable long-term revenue stream through Internet transaction fees. With a two-page proposal, Avenir bid on the GTG project within four days of the meeting in New York. Within a week, GTG had agreed to work with

Avenir and move forward. Details had to be worked out on the pricing of the deal. Avenir focused its resources on winning the contract from GTG. There were several meetings held over the telephone and in person. Teams from Avenir, PECO, and GTG convened in cities including Toronto, Waterloo, Philadelphia, Boston, and New York over four months to negotiate a contract. Avenir continued to build the management team by attending to the following:

- Malcolm Gissing's management of the negotiations with customers and helped the development of proposals
- The credibility of the Board of Directors which helped address issues surrounding the long term viability of the company
- The CEO's background in technology
- Avenir's ability to communicate effectively with the GTG team
- Kent Plumley's assembly of a legal team at Osler, Hoskin and Harcourt to negotiate the contracts with GTG's legal team of nine attorneys
- Office premises in Toronto for meetings and customer visits to lend further credibility donated by Malcolm Gissing
- Securing rented office space in Waterloo to house the growing team
- Hiring a development team of four people to begin prototyping the system and making the customer feel confident in Avenir's technical capabilities. (The software development team was hired in Waterloo, Canada. Ed Orlik led the first prototype development effort, based on Microsoft's electronic commerce tools, from December 1996 to February 1997).
- Using stock options to defer cash payments for services such as wages
- Exploring informal relationships with Microsoft, and Open Market, leading providers of electronic commerce software in the market. (For example, deferring software costs by requesting Microsoft to provide software for free up to a value of $45,000).

At this point in Avenir's development, ITN suggested that the management team approach business angels for capital. Business angels are individuals who invest their private capital in technology-based new ventures. They are willing to take a risk at this stage of a new venture's development with the potential for a high return at a later point in time. The capital

was required to further develop the business plan, assemble the team required to develop the prototype in order to win the confidence of the GTG team in Avenir's ability to deliver on the contract. The risk remained high. Based on close personal relationships with business angels, ITN introduced the management team to the potential investors. Each investor met with the Board, interviewed employees, visited the Avenir office, received a demonstration of the product under development, and reviewed customer letters of intent for potential contracts. Two of the business angels that met the Avenir management team agreed to invest a total of $32,500. In addition, based on interest from other investors and the attractiveness of the opportunity that Avenir was preparing to explore, as well as the ability of the management team to evolve the strategy of the new venture, ITN invested an additional $50,000. By January 1997, Avenir had raised a total of $92,500 in equity capital from ITN and angel investors.

The final contract, signed on February 18, 1997, was valued at US $120,000 for software development costs plus US $200,000 for a one-year maintenance and support agreement. GTG was also interested in building an Internet electronic commerce application for the barter trade industry. PECO was interested in trading excess inventory to businesses using credit cards over the Internet (in addition to selling them for cash). Isaac Lian extended the functionality of the prototype until Arlan Nugara joined the product development team in April 1997 as the Director of Engineering. Nugara had come from Mortice Kern Systems Inc. (TSE:MKX), a Waterloo software company. He developed Avenir's technology strategy to be compatible with Microsoft's electronic commerce strategy. The product was being developed based on functional specifications from the launch customer, GTG. Nugara and his team developed a prototype for demonstration to PECO Energy Company and GTG. The CEO also demonstrated the product to General Electric Power Systems in New York and PECO in Philadelphia in June 1997 and subsequently delivered the product to GTG. The customers were pleased with the prototype and requested additional functionality. As the working relationship between Avenir and GTG grew stronger, the US $200,000 from the maintenance and support portion of the contract between both companies was converted into a 5% equity stake for Avenir in GTG.

Avenir continued to market its software to other large utilities and utilities suppliers. One of the market niches in which Avenir was also selling its software in partnership with GTG was the barter trade industry. At the end of September 1997, Avenir was scheduled to attend the International Reciprocal Trade Association's (IRTA's) annual conference in Las Vegas. At a special presentation to the Board of IRTA, comprised of all major retail barter trade exchanges and corporate barter companies, Avenir presented its product to the industry. The presentation had been arranged for Avenir by GTG. The Avenir team also made private demonstrations to trading companies and received a favorable response. Avenir was invited to make presentations to Active International (October 13, 1997), the largest corporate barter company and ITEX Corporation (October 30, 1997), the largest retail trade exchange, by their CEOs as a result of the demonstrations presented at IRTA. Avenir sold its first license to the trade industry for US $30,000 to a company looking to become a distributor of the software to retail trade exchanges.

By October 1997, Avenir had evolved from a web site development company to a business focused on developing electronic commerce software. ITN remained involved through this period and, over a year, became convinced that the management team had the ability to effectively change its strategy with changing market needs. Avenir's management team had focused its business model on becoming the leading barter trade exchange over the Internet through an evolutionary process described above. To finance this business model, Avenir required additional investment capital, which came from business angels, the Royal Bank of Canada, and ITEX Corporation. In this next round of investment capital, ITN continued its participation and invested further in Avenir.

4.2.3 Credible Board of Directors

One of the salient investment criteria of ITEX in favor of Avenir was the:

Ability of the management team to build a credible Board of Directors.

Meeting this criterion demonstrated the team's ability to learn from mentors, network efficiently within the business community, manage expectations of and communicate the risks involved to investors, customers, and employees, as well as communicate the

importance of the Board's credibility to the new venture. The section below describes evidence gathered from the case study in support of the importance of this investment criterion.

The VC at ITEX Corporation was interested in sharing the risk associated with the new venture with other investors as opposed to being the sole new investor. In addition to sharing the investment risk, it was important to the VC at ITEX that the management team in Avenir be experienced in managing the venture through its next stage; that is, executing the barter trade business model. The current management team understood electronic commerce but needed additional expertise in barter trade. Given the credibility of the Board of Advisors and Directors of Avenir, the VC at ITEX began to become comfortable with the ability of the management team to expand in order to fill in the missing functional areas of expertise. The VC at ITEX described this as follows:

> *With the Board of Directors that the management team has assembled at such an early stage, we are confident in the ability of the management team to execute on their business model.*

The articles on Avenir in the media provide further evidence of the importance of the Board of Directors and Advisors to the VCs. As the VC at ITEX described:

> *In the Internet economy, new ventures have young management teams. As a result, having an experienced and personally invested Board of Directors complements the youth and energy of the management team.*

Early in 1997, Avenir's CEO was introduced to Rob Ryan, founder of Ascend Communications (acquired in 1999 by Lucent Technologies) at an event organized by MIT's (Massachusetts Institute of Technology) Entrepreneurs Club, in Boston, MA. Ryan had successfully cashed out of Ascend and was looking for opportunities to mentor entrepreneurs. Following the meeting, Avenir discussed the development of Ryan's web site (www.entreprneur-america.com). Rob Ryan later joined the Avenir Board of Directors based on his interest in Avenir's business and positive working relationship with the management team. The current Board of Directors encouraged the introduction of an additional Director who was also located in the US since Avenir's primary markets were in the US. The CEO

recommended Graham Mitchell, the former Assistant Secretary of Commerce for Technology Policy for the US Government. Mitchell was well networked and experienced in the industrial marketplace. Following meetings between Graham Mitchell, the management team and the current Board, he accepted the invitation to join.

To explore the possibility of raising debt capital, the management team contacted the large Canadian banks. Patrick Lavelle contacted the Royal Bank of Canada regarding Avenir's application for a small business loan (SBL). Following this initial contact, Malcolm Gissing negotiated the terms with the Bank and personally guaranteed 10% of the loan (as required by the bank). A total of four meetings took place between the Avenir team and the Royal Bank account managers. Their due diligence included interviewing all employees and Board members and they requested documentation, including contracts with customers. As one of the account managers summarized to the CEO of Avenir, "if the Board is backing the company, they must see the value of the business and their credibility is very important to us." Their decision to take the risk and provide financing was based on the Board's credibility and customer contracts as well as Gissing's personal guarantee. By January 1997, the Bank approved $200,000 in an SBL, and an operating line for $220,000.

By October 1997, Avenir required further capital to continue to finance the operations and market its products. The author made presentations of the business plan to several private individual investors, corporate investors, and venture capital firms. Avenir was referred to the investors by some of its Directors. The potential investors with whom discussions took place included:

- Canadian Venture Founders (CVF)
- Royal Bank Capital Corporation (RBCC)
- Advent International (Advent), based in Boston, MA
- ITEX Corporation, based in Portland, OR.

At the meeting with ITEX's CEO, the discussions led to the common agreement that ITEX's vision and Avenir's vision were complementary. Specifically, ITEX wanted to increase its retail trade exchange from 20,000 to over 200,000 members using the Internet as a platform.

Avenir wanted to be central to the technology infrastructure to enable this growth. They finally negotiated an equity investment in Avenir for US $500,000, pending due diligence. The deal was sealed with a letter of intent followed by a memorandum of understanding. The due diligence team at ITEX was comprised of Ed Wittman, VP Business Development, and Joe Morris, CFO. Both were located in Denver, Colorado. They requested Avenir's business plan. Avenir updated its business plan in early November 1997 and sent it out to ITEX. The team at ITEX had questions regarding the assumptions on which revenue projections were based and the CEO and Chairman of Avenir responded to questions by fax, telephone, and email.

In late November 1997, Arlan Nugara, Avenir's VP of Research and Development, and the CEO flew to Denver to meet with the potential investors and to present the business plan. Over the two days of meetings, the Avenir team presented the product and its functionality and answered questions on all aspects of the plan, both in formal meetings and informal conversations. The meetings involved Ed Wittman, Joe Morris, and ITEX's CEO, Graham Norris, individually and collectively. In the final meeting of the trip, the three of them stated all their concerns with the deal. These were:

- The potential time commitment of the Board of Directors
- Existence of contracts with key employees
- Challenges presented by the traditional barter trade industry
- The negative perception of barter in the financial industry
- High risks involved if the software development team members left the company
- Projections of potential revenues were unclear
- The challenge of being dependent on one customer
- The lack of a large market of customers in the barter industry.

Starting with the easiest and then moving to the most difficult of their concerns (as perceived by Avenir's CEO), the CEO answered all questions based on his best estimates and spoke passionately about his business. By the end of the negotiations, ITEX invested US $1 million for 45% of Avenir. On December 19, 1997, ITEX presented the deal to the Board of Avenir. Legal negotiations took four months and the deal was signed on March 6, 1998 in

Denver, Colorado. Following the ITEX investment, Avenir grew to 15 employees in Waterloo, Canada. The author resigned from the CEO role in December 1998 for personal reasons and Wittman of ITEX replaced him. Avenir was relocated to Boulder, CO in late 1998.

4.2.4 Summary

The two salient investment criteria identified by the author in this case study section are: 1) the ability of the management team to be flexible with the strategy of the new venture based on rapidly changing market needs; and 2) the ability of the management team to build a credible Board of Directors. Each criterion was important to the VCs when deciding to make an investment in the new venture. Examples of evidence to support the importance of the criteria include interviews with the VCs and management team of the new venture, documents collected during the case study investigation, and direct observation as a participant by the author in the new venture. The salient investment criteria derived from the learning in Stage # 2 are outlined in Appendix 7.8 and a similar approach to the one described for the two criteria above was used to identify an additional 34 investment criteria.

4.3 Stage # 3 - Interviews

The primary data gathered in Stage # 3 was qualitative in nature and consisted of notes from interviews with 18 VCs in the Silicon Valley and Boston areas. The information collected by the author was in the form of handwritten and typed field notes, notes dictated after field contact, and tape recordings of interviews with three VCs. Words were the basic form in which data was found and the raw data was processed before the analysis was conducted. Field notes were converted into "write-ups" by being typed directly and transcribed from dictation. The write-ups were prepared in a form that enabled them to be read, edited for accuracy, commented on, coded, and analyzed. Some raw field notes were incomplete and hence the author completed them by reflecting back on the meeting to recall things that had not been written down. Tape-recorded interviews were transcribed into text by the author. This process was dependent on the author's knowledge of the field and skills in transcribing.

The field notes were organized into contact summary sheets and document summary sheets, and then analyzed by coding. A contact summary is a sheet with some focusing or summarizing questions about a particular field contact. The author reviewed the written-up field notes and answered each question briefly to develop an overall summary of the main points in the contact. Some of the questions included: Who was the VC contact and what firm did he/she represent? What were the main themes or issues in the contact? What were the investment criteria identified by the VC? What aspects of the investment process used by the VC contact were described? The author gathered a range of documents from the meeting sites: meeting agendas, brochures of venture capital firms, industry publications and newsletters, books on entrepreneurship and venture capital, news media articles referring to venture capital related stories, biographies of VCs, and attendance lists. For documents of interest to this study, the author complied a document summary sheet, which placed each document in context, and was coded to enable rapid retrieval.

The analysis involved coding the organized data, reviewing the set of transcribed and synthesized field notes, and dissecting them meaningfully, while keeping the relations between the parts intact. This part of the analysis involved the process of differentiating and combining both the data retrieved and the reflections made about the information. Codes are tags or labels for assigning units of meaning to the descriptive or inferential information compiled during the study. Codes usually are attached to "chunks" of varying size: words, phrases, sentences, or whole paragraphs, connected or unconnected, to a specific setting. They can take the form of a straightforward category label or a more complex one such as a metaphor. Codes are used to retrieve the chunks of data. The organization of the data entailed a system for categorizing the various chunks in order to enable quick retrieval, and clustering of the segments relating to the research questions of this study. Clustering sets the stage for drawing conclusions.

The codes derived from the data analysis in Stage # 3 are summarized in Table 4-1, and the clustered data pertaining to each of the codes are shown in Table 4-2.

Table 4-1

Categories of Investment Criteria

Categories	Sub-Categories
Management Team	Entrepreneur
	Network of Entrepreneur
	Abilities of the Management Team
	Personal Characteristics of Entrepreneur
	Venture Capitalist
	Network of Venture Capitalist
	Personal Characteristics of Venture Capitalist
Target Market	Target Customer Market Characteristics Brand Recognition
Competitive Positioning Within Environment	Competition Industry Business Environment Strategic Partners
Venture Offering	Product or Service Technology
Capital Payback Projections	Exit Strategy Financial Projections Risks
Business Plan	
Decision-Making Process	

Table 4-2 outlines the investment criteria related to each of the sub-categories identified in Table 4-1. We clustered the roles of the entrepreneur, management team, and VC in the new venture, their personal characteristics, their networking capabilities and the events they attended, and referred to them collectively as the "management team." The second cluster is labeled "target market." This term denotes the characteristics of the market such as trends, strategies, revenue streams, the target customer, and brand recognition metrics such as customer relationships and market positioning and timing. The competition, industry, business environment, and strategic partners of the new venture were clustered together as characteristics of the "competitive positioning within its environment." The second and third clusters could also have been generally collected together as market-related. However, due to the level of attention provided to each of these clusters by the VCs, we felt that it would be best to keep them separate in this analysis. Another distinct cluster related to the

characteristics of the product or service, and the technology. Together, we refer to these as the characteristics of the "venture offering." Observations relating to the investment proposal from the new venture to the VCs were clustered together as the "business plan" in a stand-alone category. The sixth cluster involved characteristics of the new venture's "capital payback projections." This category is comprised of the financial projections developed by the new venture, discussion of risks faced by the venture, and identification of an exit strategy for the VCs. A distinct cluster was labeled "decision-making process" which contains observations made by the VCs in relation to aspects of their decision-making process.

Table 4-2

Sub-Categories of Investment Criteria

Sub-Categories	Summary
Entrepreneur	Vision Motivation Commitment Knowledge of business plan Realism about chances for success Recognition of gaps in business plan Recognition of gaps in management team Network • referral from entrepreneur previously funded by VC • reputation within business community • ability and willingness to recruit talented people • personal contacts • previous experience of working with team Selling skills (sales pitch) • opportunity to attract potential customers • opportunity to recruit management team • value proposition of new venture Previous work experience • educational background • professional accomplishments • personal accomplishments • directly relevant to new venture • ability to respond to adversity • ability to make difficult decisions • familiarity with industry players and dynamics

Sub-Categories	Summary
	• knowledge of technology
Network of Entrepreneur	Uses "rifle aim" to approach VCs versus "shotgun-blast" Attends business plan presentation groups Attends networking sessions to meet with VCs
Personal Characteristics of Entrepreneur	Seeks and learns from the competencies of others Common sense Humility Energy Willingness to accept change in role over time Pragmatic Rational Intelligent Can get things done Action oriented Communicates effectively and easily Excellent interpersonal skills Desire to win Desire to make money Highly motivated Starters versus builders High integrity Hard-workers Easy to get along with Ability to think for themselves and avoid herd mentality Intellectual capability Experienced Driven Committed Passionate Ability to recognize problems early Intellectually honest Integrity Ability to build a network of people Ability to create and share knowledge Patience Persistence
Abilities of Management Team Members	Build a profitable company Build a company focused on core competencies Are more motivated by stock options than cash Create value for stakeholders Adhere to strong ethical business practices Focus on long term strategy and vary operational tactics Create high standards of performance

Sub-Categories	Summary
	Fairly reward superior performance Respond rapidly to changes Admit to a lack of knowledge in some areas Display a high energy level and sense of urgency Make difficult decisions Communicate effectively Are team players Manage people Build teams Are application-driven versus technology-driven Enjoy the personal satisfaction of building a company Recover from failure Are realistic about the capacity to deliver Manage projects under tight deadlines Develop and deliver products to customers Understand sales cycles Work in a disciplined management process Manage research and development efforts Manage cash flow conservatively Create a family of products Understand the dynamics of a startup Manage multiple projects at the same time Understand finances Understand technology Execute effectively Understand the importance of the speed of execution
Venture Capitalist	Builds a management team Changes the management team as company matures (if necessary) Interviews entrepreneurs regarding • issues related to the new venture • actual events in their career Analyzes an entrepreneur's written documentation • resumes • publications (business plan) Interviews an entrepreneur's references • personal references • supervisors • coworkers • industry players • current employees • suppliers • customers • lawyers • accountants

Sub-Categories	Summary
	• bankers • other VCs
Network of Venture Capitalists	Most deals referred by a trustworthy source • entrepreneur funded previously by VC • co-investors Rarely invests in deals from "cold-call" Attends industry conferences on a regular basis Participates in informal networking groups among VCs Holds gatherings of the VC's close network regularly Consists of potential executives for new ventures Refers investment opportunities to other co-investors Co-invests with selective venture capital firms to • share investment opportunities • spread financial risk • share knowledge
Personal Characteristics of Venture Capitalists	Discipline Patience Flexibility Courage Confidence Decisiveness Listener Deals with complex issues with high speed and precision Ambitious Driven Likes to be busy Relies on gut feeling Ability to make judgments Reduces risk in investments over time Willing to accept risk Tough Arrogant Short attention span Lucky Good negotiators Ready to kill deals invested in High achievers Adaptive personalities Disturbing of their image drives them to work harder Work in small groups Protective of the partnership
Market	Marketing Sales Uniqueness of strategy

Sub-Categories	Summary
	• to capture market share • to capture mind share • to reach identified customers Identification of key players • personal contacts • professional associations Targeted market segments Evolution of market trends • market reports • press publications • trade shows Potential market size (preferably large) • e.g., $50 million in annual revenues within 5 years Potential market growth rate (preferably high) Potential market share (preferably large) Potential revenue streams (preferably multiple) Pricing of venture offering Price and volume relationship • high price, low volume • low price, high volume
Target Customer	Alternatives to same problem currently in existence Perceived benefits Buying investment process Ease to retain
Brand Recognition	Rate of adoption • among innovators and early adopters - the number of early buyers as a function of time • the proportion of buyers out of the total potential market Frequency of use Churn rate • turnover of customers - number of customers who try the offering but then switch to another Customer loyalty • strategy to avoid churning Media coverage received Owning the customer relationship • discount offering initially heavy to build up installed customer base • willingness to sacrifice current profits for future advantage Market timing • ability to hit the market at the right time Being first to market Training investment (cost and time) required
Competition	Identify current competitors

Sub-Categories	Summary
	Identify potential competitors who might be able to observe and exploit the same opportunity • ways to cooperate with potential competitors (e.g., forming alliances) Strengths and weaknesses Response to new entrant in the market Compare business model • radical business model may present competition with difficulty in responding Competitive advantage • prefer competitive advantage derived from technology versus price advantage Strategy to respond to attack from competitors
Industry	Creation of new industry Overriding industry characteristics (e.g. Moore's Law in Semiconductors) Macro trends within industry Strategy for growth
Business Environment	Identify factors that change and cannot be controlled by the management team (e.g., macroeconomic environment) • inflation • exchange rates • interest rates • government regulations Present a strategy to address business environment factors • impact government regulations or industry standards through lobbying efforts Method of recognizing change in business environment and ways of dealing with change
Strategic Partners	Reputation of business angels that may have funded the company Identify outside parties providing key services • lawyers • accountants • suppliers Identify potentially larger companies that can • bring special resources • accelerate growth • reduce risk
Product or Service	Solutions Ease to understand Presence of prototype in beta testing Independence from one customer or supplier Customers willing to pay Development and maturity life cycle

Sub-Categories	Summary
	Market positioning Innovative Strategy for initial launch International potential
Technology	Understand the technology • incremental improvement • radical improvement Protection • proprietary • patented • barriers to entry Time to market Core technology • technology with a market • enabling technologies as opposed to embodied technologies • market driven versus science driven • gives the advantage of moving vertically and horizontally across markets
Exit Strategy	Describe exit strategy in business plan • potential to take company public in the future • potential to sell company to larger corporate buyer in the future Attractive potential for return on investment • 10-20X in 5-7 years "Meeting of minds" between entrepreneur and VC regarding exit strategy
Financial Projections	Cash flow management • favorable terms for accounts payables (e.g. net 30 days) • cost (time and resources) to acquire a new customer (sales cycle) • favorable terms for accounts receivables • research and development costs • cost to support the venture offering • amount of capital equipment required to support a dollar of sales • profit margin (preferably high) Quantitative measures of profitability (industry specific) • manufacturing – the yield on a production process • magazine publishing - the anticipated renewal rate • software – impact of distribution channels Break-even analysis • amount of sales at which profit is made • time taken to reach positive cash flow
Risks	Assessment of things that can possibly go wrong Contingencies to respond to risks Technical People

Sub-Categories	Summary
	• what if one of the team members leaves Market • what if competitors respond with more ferocity than expected • what if there is disruption in source of key raw material Financing Taking technical risks and market risks together is not desirable Assessing anticipated risk by adjusting projections in business plan based on the factors below: • cost of product = x 2 • time to market = x 2 • size of market = x 1/2
Business Plan	Communicates the business in writing Written (led and edited) by the most articulate team member Written by the entrepreneurs themselves Presentation of plan helps communicate the intangible aspects of the business Changes over time Unfolds possibilities of action and reaction Discusses business as a moving target The most important document considered by VCs • are short – often 30 pages, but sometimes just three Most important part is biographies of the team Rate of acceptance of plans to invest in is low (1%), meetings with about 4% of teams that submit plans VCs are looking for how the team thinks about its business in the plan Meets with the founders to gain further understanding of intangible aspects of the business If it is written by a third party (VCs can tell this by looking at the plan and talking to the management team), VCs either do not look at the plan or it loses credibility Should provide information that VCs require Should provide detailed monthly financial projections for a year with less emphasis on the financial projections beyond one year Rejected if difficult to predict numbers due to too many unknowns
Decision-Making Process	Difficult to assess financial projections in business plan Meetings with a few number of teams that submit business plans Team is interviewed regarding issues related to the new venture Team is interviewed regarding actual events in their career Referees provided by team are interviewed More an art than a science More important to be able to evaluate the deal than rely on luck Dominated by instinct, experience, wisdom, and gut feeling Each deal has a deal champion in the venture capital firm All partners in venture capital firm vote on decision to invest in a deal

Sub-Categories	Summary
	Investment recommendation is prepared and presented by deal champion Deals are assigned to partners based on relevance to their experience VC is willing to recruit the team to fill any gaps Do not calculate potential return on investment Each partner invests in two deals per year, on average Looking for outstanding CEOs Evaluate deals as if investing personal capital Important to have unanimous voting by partners to accept a deal Brand name of the venture capital firm can help attract management Gather for a day-long meeting each week to discuss deals Gather for off-site meetings every six months to plan long-range initiatives Invest in good people for their next career as opposed to a new venture Use external advisors to evaluate deals Learn investment practice from mentors Act as strong business advocate and partner for team Help the company solve its problems Understand process of building companies Recruit, compensate, and motivate team members Leverage strength of venture capital firm partnership to attract an entrepreneur Taking technical risks and market risks together is not desirable In the business of providing services to entrepreneurs Prefer active participation on the board Do deals that emphasize trust rather than legal ties Deals do not blow apart if actual differs slightly from plan Prefer bootstrapped companies to the point that a venture model is developed Venture must be located within two hours of the venture capital firm's office Each deal is graded by the VC Encourage three to five member board of directors Prefer to have control by being on the board and through shareholder agreements Prefer to be the only investor in a company with minority ownership VC only cares about control when the team cares Controlling shareholders should be the ones who own the technology Existence of agreements outlining actions for resolution if things don't go as planned People who come to VCs do not know what the risks are VCs spend a considerable amount of time advising team Investments must leverage the expertise of the VC VCs proactively look out for deals The major winners are the ones that look good from the early stages The key is to really support the winning companies

Sub-Categories	Summary
	VCs feel it is important that they have power to make changes Ability to change management team or supplement management team is important

The data from Stages # 2 and # 3 were combined to develop the set of investment criteria used in Stage # 4 of this study. The criteria were combined, phrased, and developed based on the author's knowledge of the field. Following this process, three independent judges (Canadian VCs) reviewed the categories and criteria for validation. Suggestions made by these judges were incorporated into Stage # 4 and, as a result, were incorporated into the design of the survey.

4.4 Stage # 4 – Web-Based Surveys

The survey of investment criteria used by VCs is comprised of two sections:

1. "Investment Criteria" asks VCs how they use specific investment criteria when making an investment decision in a technology-based new venture.
2. "Background Information" requests VCs to provide general information about themselves and the investment they made in a specific new venture.

Each VC was assured that the information he/she provided would be strictly confidential. The VCs were requested to keep in mind one specific early-stage technology-based investment they made in a new venture within the last year. Focusing the VC on one specific investment encourages learning from normative, as opposed to prescriptive, investment and helps to minimize recall bias and bias resulting from a favourable or unfavourable exit from the new venture. VCs are known to invest in an average of two ventures a year. This average implies that the VC has a limited set of choices from which to select.

The VCs began by characterizing the new venture. They described five types of new ventures including Internet, communications, software, hardware, and life sciences ventures. Table 4-3 summarizes a few examples of each of these ventures. Only 4% of the respondents

did not clearly identify the new venture they used as the basis for responding to the survey. Respondent VCs most often cited Internet ventures (41%) followed by communications ventures (18%). This preference reflects the investment patterns in new ventures in 1998 and 1999 (MoneyTree Survey, 1999).

Table 4-3

Type of New Venture

Type of Venture n = 100	Examples
Internet (41%)	Online provider of secure business to business document management, communication services Business to consumer – internet-based juke-box (in bars etc.) Matches buyers and sellers of technical services Second generation consumer internet startup operating in stealth mode, developing an easy-to-use consumer service that will change the way millions of users interact with the Web
Communications (18%)	Developing a new platform for the deployment of virtual private network First-stage financing in a wireless telecommunications equipment manufacturer Start-up financing for patented vacuum microwave dehydration technology Equipment for providing voice services over DSL-based data networks
Software (12%)	French-based enterprise software company Supply chain management of treasury functions for midsize to large companies ERP software for discrete manufacturers under $50mm in revenue Software tools for database mining in the genomic area
Hardware (13%)	Develops and sells hardware and software upgrades for photolithography machines Early-stage semiconductor capital equipment vendor Robots deploying laser technology initially for use in automotive industry Flat panel speakers
Life sciences (12%)	Developed a computer-controlled mechanical ventilator used during surgery Use of Nobel-prize winning science to develop pharmaceutical products Start-up with technology to enhance molecular detection in research and clinical laboratories Seeking a bio-marker indicative of Coronary Artery Disease

Over 90% of the VCs report that they take minutes to days to screen a deal, and over 96% of these VCs take between weeks to more than a month to evaluate a deal. The focus of the investment criteria outlined in Table 4-4 is on the evaluation stage, the stage in which VCs expend large amounts of time and effort. Table 4-4 summarizes background information on the time taken to conduct due diligence on a new venture.

Table 4-4

Deal Screening and Evaluation Stages

Due Diligence	Time Frame	% Response (n = 100)	% Response (n = 12)
Deal Screening	Minutes	36%	33%
	Hours	34%	50%
	Days	21%	8%
	Weeks	9%	8%
Deal Evaluation	> 1 Month	40%	67%
	1 Month	26%	17%
	Weeks	30%	17%
	Days	4%	0%

4.4.1 Summary of Analysis

Figures 4-1 and 4-2 summarize the analysis performed on the data collected in Stage # 4 in order to answer the primary research question of this study.

Figure 4-1

Summary of Data Analysis for 100 VCs Sample

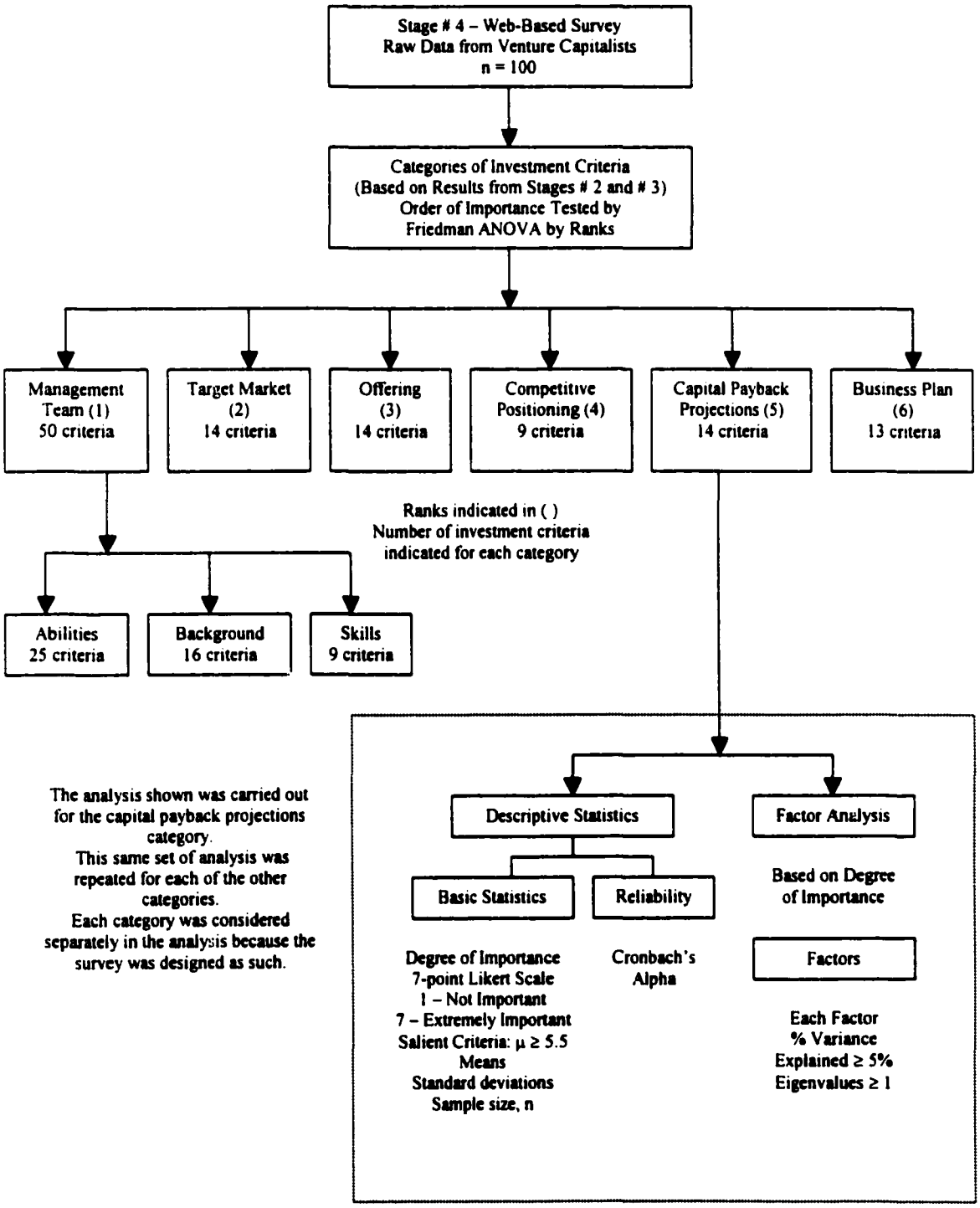
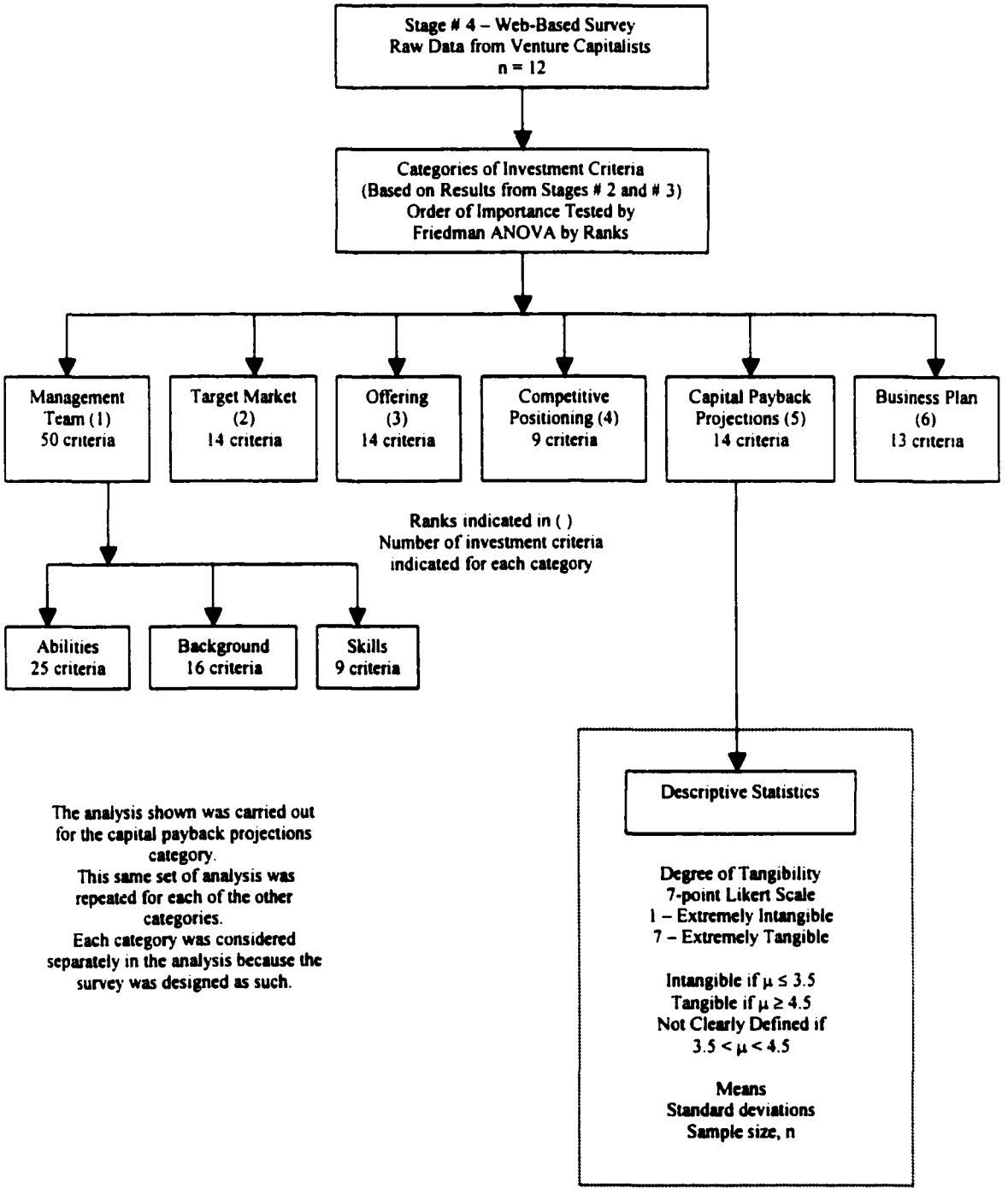


Figure 4-2

Summary of Data Analysis for 12 VCs Sample



4.4.2 Categories of Investment Criteria

The investment criteria derived from Stages # 2 and # 3 were organized by the author into six categories (described earlier in section 4.3). The VCs were requested to indicate the order in which they considered these categories when deciding to make an investment. The six categories in this survey permitted a close comparison to the results obtained from an earlier study by the author (Bachher, 1994), in which VCs identified five categories of investment criteria, ranked as follows (from most to least important):

1. General characteristics of the entrepreneur(s)
2. Characteristics of the market targeted by the venture
3. Characteristics of the venture offering (product or service)
4. Investor(s) requirements
5. Characteristics of the investment proposal from the venture to the investor(s).

The present study represents an opportunity for a partial replication of the earlier work. A Friedman two-way analysis of variance (ANOVA) by ranks was used for testing the postulated hypothesis of "stable ordering" against the null hypothesis that the distribution of ranks in each category would be a matter of chance. Thus, under H_o, we would expect the ranks of '1', '2', '3', '4', '5', and '6' to appear in all categories with about equal frequency. However, Table 4-5 shows that the rank sums differ significantly across the six categories ($F = 278.7$, $df = 5$, $p = .00$). In Table 4-5, "consider it first" implies that the category was considered first, and was the most important to the VC's decision to invest in the new venture. "Consider it last" implies that the category was considered last, and was the least important to the VC's decision to invest in the new venture. The VCs were asked to select a unique order for each category (i.e. no ties were permitted). A rank of "1" implied the category is considered first, and "6" implied the category is considered last in the investment.

Table 4-5

Categories of Investment Criteria (n = 100)

Characteristics of the New Venture's	Rank Sum n = 100	Rank	Consider it	Mean n = 100	SD	Min	Max
	F = 278.7, df = 5, p = .00						
Management team	177	1	First	9.01	1.27	5	10
Target market	237	2	Second	8.43	1.44	3	10
Offering (product or service)	300	3	Third	8.01	1.37	3	10
Positioning within its competitive environment	369	4	Fourth	7.46	1.55	1	10
Capital payback projections	479	5	Fifth	5.98	2.17	1	10
Business plan	538	6	Last	5.16	1.98	1	10

Later in the survey, the VCs were requested to rate the importance of each of the six categories on a 10-point scale, where "1" represented least important category and "10" represented most important category. Table 4-5 also shows the mean degree of importance and standard deviation for each category. The means for the categories indicate that their order of importance from most important to least important is similar to the order of rankings from "consider it first" to "consider it last." The management team was regarded as the most important criterion in the investment decision. This category was followed by the new venture's target market, in terms of overall importance. Next, the venture offering was considered, followed by the competitive positioning of the new venture. The last two categories were the venture capital payback projections and the business plan, in that order.

The results in Table 4-5 reflect a rank ordering of categories identical to the order in which they were presented to the VCs in the survey. In order to test for a potential order effect, the categories were randomly assigned in an alternative list and presented to a different group of Canadian VCs (n = 12) as follows:

1. Characteristics of the new venture's offering (product or service)
2. Characteristics of the new venture's capital payback projections
3. Characteristics of the new venture's management team

4. Characteristics of the new venture's business plan
5. Characteristics of the new venture's positioning within its competitive environment
6. Characteristics of the new venture's target market.

Later in the follow-up survey of the Canadian VCs (n = 12), participants were requested to indicate the degree of importance of each of the categories on a 10-point scale similar to the earlier survey. However, in order to make another attempt at testing for order effects, the order used in presenting the categories was randomly changed once again as follows:

1. Characteristics of the new venture's target market
2. Characteristics of the new venture's business plan
3. Characteristics of the new venture's positioning within its competitive environment
4. Characteristics of the new venture's management team
5. Characteristics of the new venture's offering (product or service)
6. Characteristics of the new venture's capital payback projections.

Table 4-6 presents the results obtained from the Friedman two-way ANOVA on the categories of investment criteria with the sample (n = 12) of Canadian VCs. The table shows that the rank sums differed significantly across the six categories ($F = 29.3$, $df = 5$, $p = .00$). The order in which VCs considered the six categories (from first to last) obtained from the Canadian sample of VCs (n = 12) was similar to the total sample of VCs from the earlier survey (n = 100) in the case of the first four categories (1-management team; 2-target market; 3-offering; 4-positioning within its competitive environment). In Table 4-6, the order of the last two categories considered (capital payback projections and business plan) was reversed in comparison to the earlier survey of VCs (n = 100) and shown in Table 4-5. The mean degree of importance of each of the six categories in Table 4-6 (from most to least important) replicated the order in which the six categories were considered by Canadian VCs (n =12).

Table 4-6

Categories of Investment Criteria (n = 12)

Characteristics of the New Venture's	Rank Sum n = 12	Rank	Consider it	Mean n = 12	SD	Min	Max
	F = 29.3, df = 5, p = .00						
Management team	25	1	First	9.08	1.24	6	10
Target market	29	2	Second	8.58	1.44	6	10
Offering (product or service)	31	3	Third	7.67	1.23	6	10
Positioning within its competitive environment	48	4	Fourth	7.50	1.73	5	10
Capital payback projections	61	6	Last	4.75	2.09	1	8
Business plan	58	5	Fifth	5.17	2.55	1	9

The sample of VCs (n = 100) was organized into dichotomous groups based on 1) the type of new venture – Internet (n = 41) versus other technology-based (n = 59), and 2) the location of the VC – California and Massachusetts (n = 42) versus other parts of the US and Canada (n = 58). The Friedman two-way ANOVA by ranks test was carried out on each of the dichotomous groups for both classifications. Table 4-7 below shows the results for the categories of investment criteria based on the type of new venture and Table 4-8 shows results for the location of the VC.

Table 4-7

Type of New Venture – Categories of Investment Criteria

Characteristics of the New Venture's	Rank Sum		Rank		Mean (μ) and SD			
	Internet	Tech-Based	Internet	Tech-Based	Internet		Tech-Based	
	F = 115.6, df = 5, p = .00	F = 165.8, df = 5, p = .00	n = 41	n = 59	μ	SD	μ	SD
Management team	73	104	1	1	9.02	1.13	9.00	1.37
Target market	88	149	2	2	8.51	1.58	8.37	1.35
Offering (product or service)	134	166	3	3	7.66	1.56	8.25	1.18
Positioning within its competitive environment	153	216	4	4	7.37	1.70	7.53	1.44
Capital payback projections	192	287	5	5	5.98	2.40	5.98	2.02
Business plan	221	317	6	6	4.56	2.36	5.58	1.57

Table 4-8

Location of VC – Categories of Investment Criteria

Characteristics of the New Venture's	Rank Sum		Rank		Mean (μ) and SD			
	CA and MA	Other	CA and MA	Other	CA and MA		Other	
	F = 114.4, df = 5, p = .00	F = 167.5, df = 5, p = .00	n = 42	n = 58	μ	SD	μ	SD
Management team	70	107	1	1	9.26	1.08	8.83	1.37
Target market	110	127	2	2	8.21	1.44	8.59	1.44
Offering (product or service)	125	175	3	3	7.95	1.50	8.05	1.29
Positioning within its competitive environment	149	220	4	4	7.81	1.40	7.21	1.61
Capital payback projections	209	270	5	5	6.41	1.65	5.67	2.45
Business plan	219	319	6	6	5.86	1.66	4.66	2.06

The results of the order of categories of criteria obtained for each of the dichotomous groups in Tables 4-7 and 4-8 are identical to the results obtained when all the VCs were considered together as a sample (n = 100) in Table 4-5. Like the overall sample, the VCs considered the management team to be the most important category and considered it first in their investment decision. Following this criterion, the target market, offering, positioning within its competitive environment, capital payback projections, and business plan (in decreasing order of importance) were considered by the VCs for each of the classifications of the dichotomous groups.

In observing the results for each VC in the total sample, Table 4-9 shows that 91% deviated from selecting the presented order of categories of investment criteria as their preferred order of consideration of the categories. This fact is important to observe because the pattern of rank ordering of the categories could not have been observed at the individual level of each subject, but only at the aggregate level of the sample being considered. VCs claimed to differ individually from one another in the order of importance placed on the categories. However, only after the research was conducted and an aggregation of responses compiled, could one detect such patterns. Table 4-9 shows that for each of the dichotomous groupings, there is a large within-group variation in order of consideration of categories compared to the stable order obtained from the Friedman two-way ANOVA. For example, in the dichotomous group based on location of the VC, within the CA and MA group, 90% of the sample deviated from the order of categories compared to the results for the Friedman two-way ANOVA for that group. Table 4-9 summarizes the percentage of the sample that deviated from the stable rank order, to identify their order of consideration of the categories.

Table 4-9

Deviation From Presented Order of Categories

	Sample (n)	Percentage Deviation
Total	100	91%
Location of VC		
CA and MA	42	90%
Others	58	91%
Type of New Venture		
Internet	41	88%
Other Technology-Based	59	93%

The results in Table 4-9 show that there is a large within-group variance among the VCs for each of the groups presented. As a result, it would appear, that the VCs do not completely agree among themselves about the order of consideration of categories of investment criteria. However, when considered as a sample, their individual responses translate into a stable rank ordering for the sample of VCs being considered for each group.

The differences between and within the groups of VCs regarding the degree of importance of the categories of investment criteria (identified in Tables 4-7 and 4-8) were investigated using independent t-tests and pairwise dependent t-tests respectively. For each of the t-tests, the separate variance t statistic and Bonferroni adjusted probability were recorded. A significance level of .05 was used to discuss significant results. There were no significant differences in the degree of importance of each of the categories between the sample of VCs that used Internet ventures to respond in this study (n = 41) and VCs that used other technology-based ventures (n = 59). In five of the six categories, there were no significant differences in the degree of importance of each of the categories between the sample of VCs that were located in CA and MA in this study (n = 42) and VCs that were located in other parts of the US and Canada (n = 59). In the sixth category, characteristics of the new venture's business plan, there was a significant difference ($t' = 3.228$, $df = 96.8$, $p = .01$) observed between the VCs in the two location groups in this study. The mean importance for CA and MA was 5.86 and mean importance for others parts of the US and Canada was 4.66

resulting in a difference in means of 1.20. The pairwise dependent t-test results for differences within each of the groups of VCs are reported in Tables 4-10, 4-11, 4-12 and 4-13. Each of the tables outlines the results of the t-tests organized as follows. The rows and columns represent the categories of investment criteria. The columns numbered from 1 to 6 represent the categories numbered identically in the rows also labeled from 1 to 6. The values in brackets are the mean degree of importance for each of the categories. The diagonal of the matrix of values in the tables filled with an "X" represent no significant differences since they correspond to comparing each category with itself. The "X" in other cells of the tables represent no significant differences between the categories for each of the groups of VCs. The cells in the tables with values reported in them represent the pairwise t-test separate variance t-statistic value. Each cell with a value in it represents a combination of categories with a significant difference (Bonferroni adjusted $p < .05$). For each of Tables 4-10, 4-11, 4-12 and 4-13, the degrees of freedom for the t-tests are reported at the bottom of the table.

Table 4-10

Pairwise t-test* for Internet Ventures

Category (Mean)	**1** (9.02)	**2** (8.51)	**3** (7.66)	**4** (7.37)	**5** (5.98)	**6** (4.56)
1 Management team (9.02)	X	X	t = 4.11	t = 5.36	t = 7.15	t = 11.91
2 Target market (8.51)		X	X	X	t = 5.30	t = 9.70
3 Offering (product or service) (7.66)			X	X	t = 3.72	t = 6.87
4 Positioning within its competitive environment (7.37)				X	X	t = 7.09
5 Capital payback projections (5.98)					X	X
6 Business plan (4.56)						X

* $t \geq 3.72$, $df = 40$, $p < .05$ (Bonferroni adjusted)

Table 4-10 demonstrates that the importance placed on the management team by VCs for Internet ventures is significantly different and more important than each of the other categories: venture offering, positioning within the new venture's competitive environment, capital payback projections, and the business plan. In comparison to the group of other technology-based ventures, the importance placed by VCs on the management team is significantly different and also more important than positioning within the new venture's competitive environment, venture capital payback projections and the business plan. It appears that in the case of Internet ventures, the management team and target market are not significantly different while, for other technology-based ventures, the management team, target market and venture offering are not significantly different.

Table 4-11

Pairwise t-test* for Other Technology-Based Ventures

Category (Mean)	**1** (9.00)	**2** (8.37)	**3** (8.25)	**4** (7.53)	**5** (5.98)	**6** (5.58)
1 Management team (9.00)	X	X	X	t = 5.09	t = 9.94	t = 14.29
2 Target market (8.37)		X	X	t = 3.16	t = 7.03	t = 11.47
3 Offering (product or service) (8.25)			X	t = 3.56	t = 7.95	t = 11.22
4 Positioning within its competitive environment (7.53)				X	t = 4.66	t = 8.57
5 Capital payback projections (5.98)					X	X
6 Business plan (5.58)						X

* $t \geq 3.16$, $df = 58$, $p < .05$ (Bonferroni adjusted)

Table 4-12

Pairwise t-test* for VCs in CA and MA

Category (Mean)	1 (9.26)	2 (8.21)	3 (7.95)	4 (7.81)	5 (6.41)	6 (5.86)
1 Management team (9.26)	X	t = 3.79	t = 4.42	t = 4.85	t = 10.77	t = 12.11
2 Target market (8.21)		X	X	X	t = 4.88	t = 7.60
3 Offering (product or service) (7.95)			X	X	t = 4.98	t = 8.30
4 Positioning within its competitive environment (7.81)				X	t = 4.30	t = 5.88
5 Capital payback projections (6.41)					X	X
6 Business plan (5.86)						X

* $t \geq 3.79$, $df = 41$, $p < .05$ (Bonferroni adjusted)

In Table 4-12, the management team's importance is significantly different and more important than all the five other categories for VCs in CA and MA. In the case of Table 4-13, for VCs in other parts of the US and Canada, the management team is significantly different and more important than the last three categories (positioning within the new venture's competitive environment, venture capital payback projections, and business plan). Table 4-12 also demonstrates that the target market and offering are not significantly different from the positioning within the new venture's competitive environment. For VCs in other parts of the US and Canada, the importance placed on the target market and venture offering is more important and significantly different from the positioning within the new venture's competitive environment.

Table 4-13

Pairwise t-test* for VCs in Other Parts of US and Canada

Category (Mean)	1 (8.83)	2 (8.59)	3 (8.05)	4 (7.21)	5 (5.67)	6 (4.66)
1 Management team (8.83)	X	X	X	t = 5.48	t = 8.20	t = 13.80
2 Target market (8.59)		X	X	t = 4.74	t = 7.44	t = 13.47
3 Offering (product or service) (8.05)			X	t = 3.10	t = 6.52	t = 9.99
4 Positioning within its competitive environment (7.21)				X	t = 3.74	t = 9.24
5 Capital payback projections (5.67)					X	X
6 Business plan (4.66)						X

* $t \geq 3.10$, $df = 57$, $p < .05$ (Bonferroni adjusted)

The next section describes the investment criteria that comprise each of the categories and summarizes the results obtained from exploring the data.

4.4.3 Investment Criteria

Each of the six categories consisted of a set of investment criteria obtained from Stage # 2 and # 3 of this study. In the first category, the management team was a priori divided into three sub-categories, namely 1) ability of the management team, 2) background, experience, general characteristics of the management team, and 3) skills within the management team. The table below summarizes the number of criteria comprising each category and the corresponding inter-rater reliability (Cronbach's alpha).

Table 4-14

Reliability

Characteristics of the New Venture's	Number of criteria	Cronbach's alpha	n
Management Team			
Ability	25	0.91	93
Background, experience, and general characteristics	16	0.80	96
Skills	9	0.78	98
Offering (product or service)	14	0.80	94
Target Market	14	0.78	87
Competitive positioning within its environment	9	0.79	97
Capital payback projections	14	0.83	97
Business plan	13	0.85	94
	114		

The Cronbach's alpha for all of the categories and sub-categories of investment criteria was above the minimum threshold of .70 as recommended by Trochim (1999). The results presented are for statistical tests conducted on the raw data collected. These statistics and all others reported were generated using Systat, a statistical software package, and PC version 8.0.

The raw data were tested for normality as follows: all the investment criteria were checked for their conformance to a normal distribution. Histograms were plotted for all of these criteria. A normal curve was superimposed on these histograms. By eyeballing the fit of the curve on the histogram, it was observed that some of the data were normal whereas others were skewed positively (long right tail) or negatively (long left tail). Based on the eyeball fit, the author decided to proceed with the raw data in conducting statistical tests.

4.4.4 Importance of Investment Criteria

For each category, VCs indicated the degree of importance of the criteria when evaluating a technology-based new venture. The VCs indicated the degree of importance of each of the criteria on a 7-point Likert scale, where 1 represents "not important," 7 represents "extremely

important," and N/A represents "not applicable." Likert scaling is a one-dimensional scaling method (Trochim, 1999). The scale items, referred to as investment criteria, were generated from the results of Stages # 2 and # 3 of this study. This type of scale is frequently used as an approximation for representing a continuous variable in the social sciences (Trochim, 1999).

In describing the results, each of the categories is considered separately and the analysis conducted on the set of criteria in each category is summarized. Descriptive statistics are presented here for summarized responses. For each criterion, the mean degree of importance (Mean), standard deviation (SD), and sample size (n) are presented. Means range from 1 to 7, with 1 implying that the criterion is not important to the VC's investment and 7 implying that the criterion is extremely important to his/her investment.

One VC indicated that, "these questions were all very black or white, in that they attempt to discover shades of gray through the "rate from 1-7 model" when in fact, in each venture, it is a balance between the various issues of management, market, and competition. The relative importance of each variable is different based on the value for each." Another VC summarized his investment criteria as, "1) high value to user, 2) scalable, proven business model, 3) defensible competitive position, and 4) brand business. This is all easily said, but hard to do." Yet another VC indicated that, "I also teach venture capital and would appreciate receiving a clean copy of your questionnaire that I just completed to distribute to others." These comments demonstrate the varying impressions of VCs who completed the survey.

Out of a total of 114 criteria from six categories, 42 had one or more respondents select a criterion as being N/A to their investment. The criterion that received the most respondents (eight) selecting N/A was "received positive media coverage." The next highest number of respondents to select a given criterion as N/A was five, and the criterion was "described facts trusted by the VC." Two to four respondents selected ten criteria as N/A, and 30 other criteria were selected by one respondent as being N/A (implying n = 99 for these criteria). Based on these responses, we felt that the results for N/A were not significant enough to

warrant special treatment. Therefore, we used the sample size available for each criterion in obtaining descriptive statistics.

Tables 4-15, 4-16, 4-17, 4-18, 4-19, 4-20, 4-21, and 4-22 identify those criteria that the author considers most salient. The selection criteria for these 51 criteria are those with a mean degree of importance ≥ 5.5. In a previous study by the author (Bachher and Guild, 1996), a similar selection criterion was used to consider those criteria that were salient among the list of criteria presented to VCs.

4.4.5 Tangibility of Investment Criteria

A different sample of Canadian VCs (n = 12) was asked to indicate the degree of tangibility of each of the same investment criteria. We defined a tangible criterion as an aspect of the new venture that can be readily perceived, or is capable of being appraised at an actual or approximate value. However, an intangible criterion also implied an aspect of the new venture that cannot be readily perceived, or is not capable of being appraised at an actual or approximate value. Each VC indicated the degree of tangibility for the criterion by rating it on a 7-point Likert scale where 1 represents "extremely intangible" and 7 represents "extremely tangible." The mean degree of tangibility, SD, and n for each of the criteria are also described in the tables that follow this section. In this study, we consider criteria with a mean degree of tangibility ≤ 3.5 as more intangible than tangible; criteria with a mean degree of tangibility ranging from 3.5 to 4.5 as neither tangible nor intangible; and criteria with a mean degree of tangibility ≥ 4.5 as being more tangible than intangible. This choice of selection criteria was based on the author's classifications.

Table 4-15

Abilities of Management Team

	Importance			Tangibility		
	Mean	SD	n	Mean	SD	n
Ability to create a superior product or service compared to that of the competition	6.19	1.16	100	4.75	1.82	12
Ability to follow through on a strategy	6.18	0.99	100	4.55	1.86	11
Ability to create value for future shareholders	6.16	1.10	98	3.58	2.27	12
Ability to focus on customers' needs	6.11	1.22	100	5.17	1.64	12
Ability to place the new venture in a position of market leadership	6.11	1.12	99	4.33	2.02	12
Ability to recruit people for the new venture's team	6.00	1.22	100	4.17	2.08	12
Ability to adhere to ethical business practices	5.95	1.29	100	4.55	1.92	11
Ability to anticipate need for change of strategy in the new venture	5.94	1.14	99	4.17	1.90	12
Ability to be flexible with the new venture's strategy	5.80	1.20	100	3.75	1.60	12
Ability to create high standards of team performance	5.80	1.07	100	3.67	1.67	12
Ability to sustain high intensity work in the new venture	5.78	1.18	100	4.83	1.90	12
Ability to focus the new venture on building "core competencies" that may yield a competitive advantage	5.75	1.25	100	4.50	2.11	12
Ability to effectively manage change within the new venture	5.73	1.18	98	3.17	1.75	12
Ability to anticipate problems early in the new venture	5.60	1.28	100	3.67	1.61	12
Ability to encourage the team to be results-oriented	5.54	1.42	100	4.50	2.02	12
Ability to accept a change in roles as the evolving new venture requires	5.52	1.30	98	4.50	2.07	12

Table 4-16

Background and Experience of Management Team

	Importance			Tangibility		
	Mean	SD	n	Mean	SD	n
The management team's level of commitment to the success of the new venture	6.53	0.82	100	4.83	2.04	12
The management team's sense of urgency regarding the new venture	6.31	0.93	100	4.92	1.98	12
The management team's leadership experience	6.00	1.03	100	5.17	1.47	12
The management team's shared commitment to a vision of the new venture	5.89	1.17	100	4.92	1.88	12
The management team's compatibility with the venture capitalist(s)	5.74	1.31	100	4.92	2.07	12
The management team's previous related work experience within the industry sector of the new venture	5.72	1.19	100	5.08	2.11	12
The management team's entrepreneurial experience in a prior venture	5.53	1.52	99	5.18	1.47	11

Table 4-17

Skills of Management Team

	Importance			Tangibility		
	Mean	SD	n	Mean	SD	n
Communication skills	5.94	0.98	100	4.67	1.87	12
Marketing skills	5.87	1.35	100	4.42	1.88	12
Product development skills	5.86	1.03	100	5.33	1.56	12
Technical skills	5.86	1.14	100	5.00	2.00	12
Project management skills	5.74	1.01	100	5.17	1.53	12
Sales skills	5.69	1.33	99	4.58	1.78	12
Research and development skills	5.53	1.35	99	5.17	2.04	12

Table 4-18

Target Market

	Importance			Tangibility		
	Mean	SD	n	Mean	SD	n
Identified the potential customers targeted by the new venture	5.78	1.31	100	6.33	0.65	12
Projected the market size to be captured by the new venture	5.69	1.21	99	4.92	1.78	12
Potential to create long-term relationships with customers	5.65	1.26	100	4.67	1.56	12
Potential to be the first within its target market	5.60	1.54	99	5.17	1.75	12

Table 4-19

Venture Offering (Product or Service)

	Importance			Tangibility		
	Mean	SD	n	Mean	SD	n
Venture offering is driven by market demand	6.23	1.04	100	5.58	1.78	12
Venture offering is designed on clear customer requirements	5.93	1.31	100	5.25	1.82	12
Venture offering is innovative	5.91	1.22	100	5.42	1.56	12
Venture offering is superior compared to that of the competition	5.89	1.17	100	5.25	2.14	12
Venture offering has a well-defined market niche	5.88	1.09	100	5.00	2.00	12
Venture offering can keep pace with changes in market needs	5.67	1.20	99	4.50	1.93	12
Venture offering reaches the market before its competitors	5.66	1.14	99	5.25	2.18	12
Venture offering is designed using proprietary core technology owned by the new venture	5.61	1.71	99	6.00	1.04	12

Table 4-20

Venture's Positioning Within its Competitive Environment

	Importance			Tangibility		
	Mean	SD	n	Mean	SD	n
General trends within the industry	5.88	1.23	100	5.58	1.24	12
Potential to form partnerships with larger companies to accelerate the new venture's growth	5.67	1.36	100	5.50	1.38	12

Table 4-21

Venture Capital Payback Projections

	Importance			Tangibility		
	Mean	SD	n	Mean	SD	n
Identification of market related risks associated with the new venture	5.89	1.03	100	4.75	1.91	12
Potential for an acquisition of the new venture by a larger company	5.75	1.26	100	5.33	1.97	12
Potential for an initial public offering (IPO) by the new venture	5.69	1.20	100	4.92	1.98	12
Identification of management team related risks associated with the new venture	5.59	1.26	100	4.58	2.02	12

Table 4-22

Business Plan

	Importance			Tangibility		
	Mean	SD	n	Mean	SD	n
Presentation of a reasonable business model	5.73	1.31	100	5.67	1.92	12
Level of market analysis in the business plan	5.69	1.10	100	5.25	1.42	12
Level of customer needs analysis in the business plan	5.53	1.24	100	5.08	1.88	12

Of the six categories, "the management team" generated the highest number of important criteria, a total of 30. This total approaches 60% of all the important criteria. The remaining 40% account for 21 of the criteria, the most in any one category which relate to characteristics of the venture offering (product or service). Close to 58% of the criteria posed to VCs in this category were salient. In each of the four other categories, between 20% and 30% of the criteria posed emerged as important, based on a selection of those criteria with means ≥ 5.5. The most salient criterion, among the 21 non-management team related criteria, is "venture offering is driven by market demand" (mean = 6.23). The majority of important criteria related to the management team and market, and were customer focused. In considering those criteria with a mean degree of tangibility ≥ 4.5 as more tangible than intangible, all of the 21 important criteria relating to the target market, venture offering, positioning within the competitive environment, venture capital payback projections, and business plan were perceived to be tangible. All criteria relating to the background, experience, and general characteristics of the management team were also tangible and, with the exception of marketing skills of the management team, the same degree of tangibility can be applied to the skills within the management team. Half of the important criteria which

related to the abilities of the management team were more tangible than intangible. In this study, we consider criteria with a mean degree of tangibility ≤ 3.5 as more intangible than tangible and only one criterion, "the ability to effectively manage change within the new venture" (mean tangibility = 3.17), was intangible. The other seven of the 16 criteria cannot be classified in either category (tangible or intangible) and had a mean degree of tangibility ranging from 3.5 to 4.5.

4.4.6 Investment Criteria Reduction

In order to reduce the number of criteria in each of the six categories to a smaller set, a factor analysis was performed on the constituent set of criteria. The data used for the factor analysis were from the sample with n = 100 and the degree of importance indicated by the VCs for each criterion. The results of the factor analysis indicated those factors generated from a Varimax rotation with eigenvalues greater than one. The percentage of total variance explained by each of the factors reported was greater than 5%. Each of the categories had between three to six factors with the total percentage variance explained by those ranging from 60 to 75%. The resulting factors were assigned labels by the author.

Each of the categories of investment criteria is listed in Tables 4-23, 4-24, 4-25, 4-27, 4-28, 4-29, 4-30, and 4-31. Within characteristics of the management team, there are three separate tables for each of its sub-categories. Each table contains results from the factor analysis, and indicates descriptive statistics for the degree of importance and degree of tangibility of the criteria. The first column of the table indicates the number of criteria as it appears in the list of criteria within its category in the survey. The second column lists the factors yielding from a factor analysis, labels for the factors provided by the author, and description of the criteria which comprise the factor. In the rows that list the factor label, the next column over indicates the percentage variance explained by the factor. The third column lists the factor loadings for each of the criteria. Only those loadings are noted which occur significantly onto the factor (≥ 0.500). The next three columns display descriptive statistics pertaining to the degree of importance of each criterion and the last three columns provide the mean, SD, and n for the degree of tangibility results.

Table 4-23

Abilities of Management Team

	Importance				Tangibility		
	% Var. Loading	Mean	SD	n	Mean	SD	n
Factor 1 – Team Understands the Market	(13.8%)						
Ability to create a superior product or service compared to that of the competition	0.733	6.19	1.16	100	4.75	1.82	12
Ability to focus on customers needs	0.546	6.11	1.22	100	5.17	1.64	12
Ability to place the new venture in a position of market leadership	0.599	6.11	1.12	99	4.33	2.02	12
Ability to adhere to ethical business practices	0.647	5.95	1.29	100	4.55	1.92	11
Ability to focus the new venture on building "core competencies" that may yield a competitive advantage	0.713	5.75	1.25	100	4.50	2.11	12
Factor 2 – Ability to Accept Change in Roles	(13.8%)						
Ability to accept a change in role as the evolving new venture requires	0.669	5.52	1.30	98	4.50	2.07	12
Ability to learn from mistakes made as the new venture evolves	0.653	5.33	1.30	100	3.92	1.68	12
Ability to respond positively to constructive criticism from others	0.767	5.18	1.36	100	3.83	1.95	12
Ability to seek and learn from the competencies of mentors	0.759	4.75	1.51	100	4.25	1.54	12
Factor 3 – Entrepreneur can Build Team	(10.9%)						
Ability to recruit people for the new venture's team	0.732	6.00	1.22	100	4.17	2.08	12
Ability to create high standards of team performance	0.697	5.80	1.07	100	3.67	1.67	12
Ability to reward performance fairly	0.513	4.69	1.23	99	4.00	1.76	12
Factor 4 – Team can Focus on Results	(10.6%)						
Ability to anticipate problems early in the new venture	0.764	5.60	1.28	100	3.67	1.61	12
Ability to encourage the team to be results-oriented	0.689	5.54	1.42	100	4.50	2.02	12
Ability to discuss risks facing the new venture among team members	0.703	4.87	1.40	100	4.75	1.76	12
Factor 5 – Team can Manage Change in Strategy	(9.1%)						
Ability to anticipate a need for change of strategy in the new venture	0.883	5.94	1.14	99	4.17	1.90	12
Ability to be flexible with the new venture's strategy	0.677	5.80	1.20	100	3.75	1.60	12
Ability to effectively manage change within the new venture	0.614	5.73	1.18	98	3.17	1.75	12
Factor 6 – Team can Manage Cash Flow	(5.7%)						
Ability to manage cash flow conservatively	0.747	4.80	1.41	99	4.25	1.82	12
Ability to follow through on a strategy		6.18	0.99	100	4.55	1.86	11
Ability to create value for future shareholders		6.16	1.10	98	3.58	2.27	12
Ability to sustain high intensity work in the new venture		5.78	1.18	100	4.83	1.90	12
Ability to reject a deal that may be unfavorable to the new venture		5.26	1.34	99	3.92	1.68	12
Ability to create a work environment that fosters knowledge-sharing within the team		5.01	1.18	100	4.08	1.93	12
Ability to encourage the team to be decisive on issues		4.97	1.40	100	3.58	1.83	12

Table 4-24

Background and Experience of Management Team

	Importance				Tangibility		
	% Var. Loading	Mean	SD	n	Mean	SD	n
Factor 1 – Team is Very Experienced	(19.0%)						
The management team's leadership experience	0.641	6.00	1.03	100	5.17	1.47	12
The management team's previous work-related experience within the industry sector of the new venture	0.670	5.72	1.19	100	5.08	2.11	12
The management team's entrepreneurial experience in a prior venture	0.810	5.53	1.52	99	5.18	1.47	11
The management team's reputation within the business community	0.716	5.49	1.34	100	5.42	1.56	12
The management team's extent of personal contacts within the business community	0.711	5.02	1.55	100	4.75	1.66	12
The management team's experience in working together in a prior venture	0.509	4.32	1.45	96	3.73	1.95	11
Factor 2 – Team Understands Risks Involved	(16.4%)						
The management team's commitment to technical excellence	0.609	5.34	1.33	100	4.92	1.73	12
The management team's willingness to accept risk related to the new venture	0.572	5.14	1.39	100	4.42	2.11	12
The management team's understanding of the instability of new ventures	0.857	4.32	1.46	99	3.83	1.95	12
The management team's recognition of chances of failure	0.843	4.16	1.47	99	3.50	2.02	12
Factor 3 – Team is Highly Committed to New Venture	(13.2%)						
The management team's level of commitment to the success of the new venture	0.850	6.53	0.82	100	4.83	2.04	12
The management team's sense of urgency regarding the new venture	0.755	6.31	0.93	100	4.92	1.98	12
The management team's shared commitment to a vision of the new venture	0.603	5.89	1.17	100	4.92	1.88	12
Factor 4 – Team Has Impressive Background	(9.6%)						
The management team's personal accomplishments	0.753	5.38	1.24	100	5.25	1.91	12
The management team's educational background	0.786	4.33	1.41	100	5.45	1.57	11
Factor 5 – Team is Compatible with the VC	(8.1%)						
The management team's compatibility with the venture capitalist(s)	0.889	5.74	1.31	100	4.92	2.07	12

Table 4-25

Skills of Management Team

	Importance				Tangibility		
	% Var. Loading	Mean	SD	n	Mean	SD	n
Factor 1 – Exceptional Technology-Related Skills	(29.1%)						
Product development skills	0.791	5.86	1.03	100	5.33	1.56	12
Technical skills	0.880	5.86	1.14	100	5.00	2.00	12
Project management skills	0.598	5.74	1.01	100	5.17	1.53	12
Research and development skills	0.906	5.53	1.35	99	5.17	2.04	12
Factor 2 – Strong Communication Skills	(22.9%)						
Communication skills	0.752	5.94	0.98	100	4.67	1.87	12
Negotiation skills	0.791	5.19	1.39	100	4.42	1.62	12
Finance skills	0.703	4.55	1.64	100	4.92	1.62	12
Factor 3 – Outstanding Marketing Skills	(20.4%)						
Marketing skills	0.899	5.87	1.35	100	4.42	1.88	12
Sales skills	0.869	5.69	1.33	99	4.58	1.78	12

4.4.7 Top Two Categories – Management Team and Target Market

The top two categories considered by VCs were the management team followed by the target market. VCs acknowledged that the management team was the most important category among the six categories presented in this study. The primary importance of this category is confirmed by the results of the Friedman ANOVA by ranks. The management team was considered first by 54% of the VCs in the study (n = 100). In order of consideration, from most important to least important, 22% of the VCs considered the management team as the second most important category following characteristics of the target market. We can conclude that at least 76% of the sample (n = 100) of VCs considered the management team as either the first or second most important category in their investment. The target market was considered the first category by 25% of the VCs and the second most important category by 41% of the VCs. Therefore, we can conclude that at least 66% of the VCs consider the target market as being the first or second most important category.

4.4.8 Importance of Management Team

When asked to make comments about their investment decisions, one VC indicated that, "gut feeling and experience is the major factor involved, primarily based on the people you are investing in." Another mentioned that, "the ability to work with management is a key decision item." The importance of the team also was stressed as follows: "the most important criteria for a 'go' decision are the quality of and compatibility with management." The VCs considered it important for the management team to have the ability to accept a change in roles as the evolving new venture requires (mean = 5.52). The management team is comprised of the founder(s) or entrepreneur(s), the chief executive officer (CEO) and/or president, and other individuals specializing in functional areas including technology, marketing, operations, business development, sales, and finance (Table 4-26). The members of the management team will vary in relation to the initial stages of the new venture: seed, start-up, or first stage. A high proportion of the new ventures have a CEO or President (77%, n = 100). The management team almost always has the presence of technology skills (94%). This factor could imply that most founders or entrepreneurs (present in 90% of the cases) have technology skills. One of the VCs in this study said that, "this deal was unlike most in that the first 18 months was a 'research venture' whereby the team was trying only to prove the principle. As such, the management team is more of a research team, and many of the traditional qualities we seek in a management team did not apply in this case." New ventures that were missing a founder or entrepreneur (10%, n = 100) may have originated in the proactive nature of VCs in creating companies and recruiting a management team. For example, one VC indicated that, "this was a seed deal that I developed over a period of many months with a technical entrepreneur. I developed the strategy, put the management team together, and syndicated the deal." As described by VCs in the background information, over 61% of the new ventures had another VC present. As a result, it is likely that the ventures being described in this study had already received financing in a previous round or stage and this may have had an effect on the importance placed on the criteria. A comment made by one of the VCs illustrates this; "typically if a VC invests in a number of rounds, as the company matures, the relative importance of the characteristics noted will change in each round."

Table 4-26

Composition of Management Team

Background	New Venture	% Response (n = 100)	% Response (n = 12)
Functional areas	Technology	94%	92%
	Marketing	60%	58%
	Operations	57%	58%
	Business Development	55%	92%
	Sales	48%	42%
	Finance	33%	50%
	Other	4%	0%
Board of Directors	Founder(s) or Entrepreneur(s)	90%	83%
	CEO or President	77%	83%
	Other VC(s)	61%	67%
	Outside Director(s)	58%	58%
	Business Angel(s)	32%	42%
	Management Team Member(s)	30%	17%
	Other	2%	25%

A total of 50 criteria were presented to VCs (n = 100) in order to understand the degree of importance of these criteria to the decision to invest. From this list, a total of 62% of the criteria (31) were considered important (with means ≥ 5.5). In each of the three sub-categories of investment criteria (abilities, background and experience, and skills of the management team) over 50% of the criteria presented were considered important. Those criteria with means ≥ 6.0 are as follows:

1. Their level of commitment to the success of the new venture (6.53)
2. Their sense of urgency regarding the new venture (6.31)
3. Their ability to create a superior offering compared to that of the competition (6.19)
4. Their ability to follow through on a strategy (6.18)
5. Their ability to create value for future shareholders (6.16)
6. Their ability to focus on customer needs (6.11)
7. Their ability to place the new venture in a position of market leadership (6.11)
8. Their ability to recruit people for the new venture's team (6.00)
9. Their leadership experience (6.00).

The characteristics of the management team were divided into three sub-categories. Out of the 16 criteria for the abilities of the management team, 13 of them were combined in five factors emerging from a factor analysis. Three criteria did not factor together. The factors were their:

1. Ability to create a leading offering based on core technologies and customers' needs
2. Ability to build the team and encourage high performance
3. Ability to accept a change in role as required by the evolving new venture
4. Ability to manage changes in strategy
5. Ability to focus on team results.

Two of the three criteria that did not factor together are among the most important abilities of the management team considered by VCs. These criteria were their:

1. Ability to follow through on a strategy (6.18)
2. Ability to create value for future shareholders (6.16)
3. Ability to sustain high intensity work in the new venture (5.78).

The second sub-category of the management team included the background, experience, and general characteristics. Close to 50% of the criteria that were presented appeared salient in terms of degree of importance to VCs and they factored together into three factors namely:

1. Team experience
2. Team vision and execution
3. Team compatibility with the VCs.

The last sub-category in "management team" related to the skills within the team. Close to 80% of the skills listed were considered salient in degree of importance. The seven important criteria were grouped in three factors as follows:

1. Communication skills
2. Technology-related skills
3. Market-related skills.

Despite the fact that patterns become apparent from aggregated results, one VC commented,

These answers will vary wildly with the portfolio company, its products and markets, the development stage, people and financial needs and risks. The answers are by no means representative of a generalized process. It is difficult to conceive that a survey such as this could capture the complexity of these decisions or that statistical analysis will provide insight. While risk assessment and management are the key elements in the venture capital world, they are addressed only minimally in this simplistic and formulaic survey. The survey didn't really tell me why I invested. It was focused on leadership and drive, not management skills (which most entrepreneurs don't have). The company focused with zeal on a niche, which others had ignored and made that market happen. That is a true entrepreneur. Lots of good stuff in this survey, but management talent is brought in after the investment.

VCs are both very opinionated and happy to share their opinions with others. Regardless of this VC's difficulty with the survey method, he still acknowledged that the entrepreneur was the most important and the new venture lacked a management team. As another VC pointed out, "the passion of the team to succeed can only be perceived in an in-person meeting."

Table 4-27

Target Market

	Importance				Tangibility		
	% Var. Loading	Mean	SD	n	Mean	SD	n
Factor 1 – Clearly Identified Target Customers	(15.8%)						
Identified the potential customers targeted by the new venture	0.550	5.78	1.31	100	6.33	0.65	12
Potential to create long-term relationships with customers	0.556	5.65	1.26	100	4.67	1.56	12
Access to effective distribution channels	0.620	5.49	1.40	99	4.83	1.90	12
Recognized the time taken to close a sale with potential customers	0.777	4.95	1.47	98	4.92	1.56	12
Potential for the new venture to provide a high level of customer service	0.661	4.75	1.54	97	4.00	1.70	10
Factor 2 – Strong Brand Awareness	(15.2%)						
Potential to create brand recognition of the new venture's product or service	0.638	5.13	1.45	100	4.50	1.43	10
Developed a strategy to create "mind share" of the new venture	0.817	4.66	1.55	96	4.36	1.57	11
Received positive media coverage	0.726	3.70	1.67	92	3.27	1.85	11
Factor 3 – New Venture is First Within its Target Market	(13.6%)						
Potential to be the first within its target market	0.782	5.60	1.54	99	5.17	1.75	12
Ability to create a new market niche	0.827	5.38	1.50	99	4.25	2.05	12
Factor 4 – Clear Pricing Strategy	(12.1%)						
Ability to develop competitive pricing of product or service	0.725	5.05	1.31	100	4.82	1.60	11
Ability to generate multiple revenue streams	0.841	4.71	1.59	99	4.10	1.79	10
Factor 5 – Large Market Size	(11.6%)						
Projected the market size to be captured by the new venture	0.884	5.69	1.21	99	4.92	1.78	12
Projected the new venture's market growth rate	0.808	5.08	1.36	99	4.33	1.67	12

Based on a factor analysis of the 14 criteria in this category, "target market," a total of five factors emerged. These new venture criteria project the market size to be captured by the new venture and the potential to be the first within its target market. The third factor related to a customer focus and consists of two criteria: the new venture has identified the targeted potential customers and the potential to create long-term relationships with customers. One of the VCs commented that, "today's market is no longer dominated by technology-driven ventures, but rather by commerce-driven start-ups (business to business and business to consumer). The criteria and analysis for these types of deals is different than traditional technology-driven ventures."

Table 4-28

Venture Offering

	Importance				Tangibility		
	% Var. Loading	Mean	SD	n	Mean	SD	n
Factor 1 – Offering is Scalable	(17.7%)						
Venture offering has a well-defined market niche	0.731	5.88	1.09	100	5.00	2.00	12
Venture offering can keep pace with changes in market needs	0.627	5.67	1.20	99	4.50	1.93	12
Venture offering is competitively priced	0.509	5.08	1.40	100	5.08	1.56	12
Venture offering has been developed as a functioning prototype	0.620	5.04	1.90	96	6.27	1.01	11
Venture offering is designed to be user-friendly	0.579	5.00	1.47	98	4.64	1.57	11
Venture offering has a well-defined product launch strategy	0.611	4.89	1.39	99	4.25	1.66	12
Factor 2 – Offering is Designed Using Proprietary Core Technology	(16.4%)						
Venture offering is designed using proprietary core technology owned by the new venture	0.904	5.61	1.71	99	6.00	1.04	12
Venture offering has or can protect its intellectual property	0.874	5.40	1.86	99	5.58	1.78	12
Factor 3 – Compelling Customer Demand for Offering	(13.9%)						
Venture offering is driven by market demand	0.749	6.23	1.04	100	5.58	1.78	12
Venture offering is designed on clear customer requirements	0.678	5.93	1.31	100	5.25	1.82	12
Venture offering is superior compared to competition	0.624	5.89	1.17	100	5.25	2.14	12
Factor 4 – Offering Leads Launch to Market	(12.1%)						
Venture offering is innovative	0.811	5.91	1.22	100	5.42	1.56	12
Venture offering reaches the market before its competitors	0.727	5.66	1.14	99	5.25	2.18	12
Venture offering has the potential to be sold on international markets		4.92	1.79	100	5.25	1.60	12

The 14 criteria posed in this category, "venture offering," were grouped in four factors based on a factor analysis, namely market readiness, legal protection, market pull, and innovativeness. One of the criteria in this category "the potential to be sold in international markets," did not factor into any of the four groups and was also considered less important (mean = 4.92). VCs commented on aspects of this category as follows,

> *This was a start-up/first stage development company. In my experience, investing at this level in technology-based companies needs to be focused on people and on core technology. Market assessment for a particular application is extremely important, but I have rarely seen a start-up company succeed in its first attempt to commercialize. Almost certainly, the ultimate commercial success of a company (the one that will get it to IPO or strategic acquisition) will not be built on the initial application of the technology. The thing I liked most about the company in question here was that the core technology already had more than one commercial application*

identified. The company also had product ready or near ready for launch into the aerospace, oil and gas, and man-made fiber markets. Each product area had significant market potential validated by large strategic partners. We had strong patent protection for these with an extremely strong development team that could continually reinvent existing products and invent new ones.

Another VC advised investors to,

Focus on solutions companies, i.e. companies with the following characteristics: operate in a growth market sector; ability to develop innovative products and/or services; provide products and/or services which bring quantifiable financial benefits to customers; develop product and/or services which are strategically important to customers and hence enable part of the selling process to be done at senior executive level with a potential customer rather than only through its purchasing department as part of the product/service portfolio, develop items which produce a recurring revenue stream (i.e. razor blade equivalents); encapsulate the company's know-how so that it is readily repeatable (i.e. the equivalent of software within the IT industry); and aim to be the most efficient producer within the sector.

Table 4-29

Venture Positioning Within its Competitive Environment

	Importance				Tangibility		
	% Var. Loading	Mean	SD	n	Mean	SD	n
Factor 1 – Macro-Economic Environment	(26.7%)						
Ability of team to recognize a change in the economic climate affecting the new venture	0.826	4.54	1.64	99	4.00	2.00	12
Macro-economic factors affecting the new venture	0.868	4.33	1.59	99	3.92	2.11	12
Strategy to contend with changes in macro-economic factors affecting the new venture	0.908	4.12	1.52	98	3.50	1.93	12
Factor 2 – Plan to Respond to Competition	(26.6%)						
Strategy of the new venture to respond to possible attack from competitors	0.559	5.25	1.19	100	4.83	1.64	12
Ability of potential competitors to arise in the market	0.856	4.99	1.26	100	4.67	2.06	12
Anticipation of competition's likely response to the new venture's entrance into the market	0.826	4.88	1.29	100	4.58	1.78	12
Resources of current competitors	0.746	4.78	1.43	99	5.33	1.83	12
Factor 3 – Attractive Industry Trends	(14.3%)						
General trends within the industry	0.755	5.88	1.23	100	5.58	1.24	12
Potential to form partnerships with larger companies to accelerate the new venture's growth	0.789	5.67	1.36	100	5.50	1.38	12

According to VCs, industry positioning was the only important factor with respect to the new venture's positioning within its competitive environment. Consequently, this category was made up of criteria such as general trends within the industry and the potential to form partnerships with larger companies to accelerate the new venture's growth.

Table 4-30

Venture Capital Payback Projections

	Importance				Tangibility		
	% Var. Loading	Mean	SD	n	Mean	SD	n
Factor 1 – Customer Related Costs	(16.5%)						
Estimated cost to acquire a new customer	0.928	4.84	1.53	100	4.25	1.36	12
Estimated cost to provide support to a new customer	0.902	4.58	1.39	100	4.17	1.40	12
Factor 2 – Entrepreneur Identifies Risks in New Venture	(14.5%)						
Identification of market related risks associated with the new venture	0.829	5.89	1.03	100	4.75	1.91	12
Identification of management team related risks associated with the new venture	0.536	5.59	1.26	100	4.58	2.02	12
Identification of technology related risks associated with the new venture	0.827	5.39	1.43	100	4.58	1.98	12
Factor 3 – Venture Capital Requirements	(14.5%)						
Projection of amount of venture capital required by the new venture	0.792	5.30	1.42	99	4.67	1.72	12
Estimated cost of research and development	0.605	4.49	1.44	99	5.00	1.65	12
Contingency plan developed by the new venture	0.650	4.18	1.35	99	4.50	1.38	12
Factor 4 – Break-Even Analysis	(14.2%)						
Projected profit margin of the new venture	0.789	5.38	1.23	100	5.17	1.53	12
Time taken to reach positive cash flow by the new venture	0.805	4.96	1.36	100	4.75	1.71	12
Amount of sales at which the new venture is profitable	0.705	4.66	1.51	100	5.00	1.81	12
Factor 5 – Potentially High Return to Venture Capitalists	(13.2%)						
Potential for an acquisition of the new venture by a larger company	0.749	5.75	1.26	100	5.33	1.97	12
Potential for an initial public offering (IPO) by the new venture	0.842	5.69	1.20	100	4.92	1.98	12
Agreement between the venture capitalist and management team regarding an exit strategy for investors	0.600	5.34	1.59	100	4.92	2.02	12

The salient criteria related to venture capital payback projections can be summarized as risks and rewards. VCs considered it important to understand the market and management team related risks associated with the new venture. With respect to rewards, or what we refer to as the exit strategy for the VCs, they considered the fact that the new venture has the potential for an acquisition by a larger company more important than the potential for an initial public offering (IPO) by the new venture. One VC acknowledged that, "it is extremely difficult to differentiate individual investment criteria from most important to least important. We generally look at the comprehensive picture of how all of the necessary investment factors fit together, and look to see if the complete picture holds promise as a potential investment, with significant potential for return." VCs may manage their risks by "investing in installments based on milestones achieved by the company in which they have invested."

Table 4-31

Business Plan

	Importance				Tangibility		
	% Var. Loading	Mean	SD	n	Mean	SD	n
Factor 1 – Analysis of Business Model	(21.2%)						
Level of market analysis in the business plan	0.715	5.69	1.10	100	5.25	1.42	12
Level of customer needs analysis in the business plan	0.694	5.53	1.24	100	5.08	1.88	12
Level of competitive analysis in the business plan	0.625	5.35	1.34	100	5.42	1.51	12
Level of product or service analysis in the business plan	0.615	5.10	1.32	99	5.08	1.51	12
Factor 2 – Must be Written by Management Team	(18.8%)						
Reflects the true thoughts of the management team	0.588	5.20	1.54	99	4.17	1.99	12
Clarity of communication in the new venture's business plan	0.803	5.17	1.37	100	4.50	1.83	12
Conciseness of the business plan	0.787	4.66	1.54	100	4.58	1.68	12
Describes facts trusted by the venture capitalist	0.577	4.64	1.65	95	4.50	1.93	12
Factor 3 – Summary of Business Model	(16.6%)						
Presence of detailed biographies of the management team	0.642	5.27	1.50	100	5.25	1.76	12
Clarity of the executive summary in the business plan	0.774	5.10	1.53	100	4.50	2.02	12
Overall quality of the business plan	0.732	4.50	1.40	100	4.50	2.02	12
Presentation of a reasonable business model		5.73	1.31	100	5.67	1.92	12
Provision of realistic financial projections in the business plan		4.62	1.67	99	5.08	1.44	12

Only 23% of the criteria posed under characteristics of the business plan emerged as important. One of the VCs indicated that,

> *"With the current abundance of venture capital, combined with the hot market for internet startups, VCs are having to increasingly move very quickly on deals with great management teams and relatively new/unclaimed markets. The due diligence process is often much, much shorter than it was 10 years ago on these types of deals."*

The business plan is the key tool that begins the due diligence process and the most important things that the VCs prefer to see included in the plan are the level of market and customer needs analysis combined with the presentation of a reasonable business model (this being the most important). All of these criteria were also considered tangible by the VCs.

4.4.9 Investment Preferences of VC

Each VC was requested to complete a section on his/her background, and the characteristics of the new venture he/she selected to use as the basis for the survey. The background data collected included the sources from which the new venture's deal originated, method(s) used to assess the new venture, time taken to informally screen the deal, time taken to formally evaluate the deal, functional areas represented on the new venture's management team, individuals comprising the Board of Directors, the VC's age range (in years), gender, length of time (in years) as a practicing VC, level of education, and general comments (Table 4-32).

Table 4-32

Investment Preferences of VCs

Background		n = 100 (%)	n = 12 (%)
Location of VC	Canada	32%	
	Ontario	17%	100%
	Other Provinces	15%	
	United States	68%	
	California	26%	
	Massachusetts	16%	
	Other States	26%	
Type of VC	Best-in-class	32%	0%
	Not-best-in-class	68%	100%
Experience (in years) of VC	1-5	50%	42%
	6-10	25%	33%
	11-15	17%	0%
	16-20	5%	25%
	>20	3%	0%
Level of education of VC	MBA	54%	67%
	Bachelor's Degree	52%	50%
	Doctorate	9%	0%
	Other	7%	25%
	Master's Degree	5%	0%
	Law Degree	5%	25%
	College Degree	4%	0%
	Master's in Engineering	3%	8%
	MD	2%	0%
Age (in years) of VC	20-30	17%	
	31-40	34%	
	41-50	28%	
	51-60	16%	
	>60	5%	
Gender of VC	Male	90%	92%
	Female	10%	8%

As Table 4-32 shows, 68% of the VCs were located in the United States with 42% residing in California and Massachusetts. The remaining 32% of VCs were located in Canada. Out of the sample of 100 VCs, 32% would be considered "best-in-class" based on the selection criteria identified in the methods section for Stage # 4 while the remaining were classified as "not-best-in-class." All Canadian VCs were considered as "not-best-in-class." An equal split existed in the sample between new entrants into the venture capital profession (one to five years of experience) versus more established VCs with more than five years of experience. Over 50% of the sample had a bachelor's degree and an MBA and 90% of the sample was male, which reflects the gender characteristics of the venture capital industry. The Canadian sample of 12 VCs reflected similar background characteristics. Table 4-33 outlines characteristics of the sources of deal origination, methods of deal assessment, and time taken to screen and evaluate deals.

Table 4-33

Investment Process of VCs

Process		n = 100 (%)	n = 12 (%)
Deal Origination	Referral by a trustworthy source to the venture capitalist	64%	75%
	Solicitation by the entrepreneur	36%	50%
	Other venture capitalists with whom co-investments have been made	28%	42%
	Networking among venture capital firm's key contacts	23%	17%
	Entrepreneurs previously funded by a venture capital firm	15%	17%
	Affiliated venture capital firms	13%	17%
	Networking events where entrepreneurs present their business plans	12%	25%
	Informal networking groups of venture capitalists	9%	17%
	CEO of companies in venture capital firm's portfolio	8%	0%
	Senior executives of companies previously funded by a venture capital firm	7%	8%
	Industry conferences	3%	8%
Deal Assessment	Meeting with the management team	99%	100%
	Reading the business plan	91%	92%
	Seeking advice from a personal network of contacts	81%	83%
	Using the Internet for research	76%	75%
	Contacting references provided by the management team	75%	75%
	Reading industry-specific and market research reports	69%	83%
	Research prepared by an associate in the venture capital firm	43%	25%
	Comparing this case to cases of investments made previously	33%	25%
	Seeking advice from a consultant paid by the venture capital firm	27%	25%
	Other	26%	17%

The most frequent source of deal origination was a referral by a trustworthy source to the VC (64%) followed by solicitation by the entrepreneur (36%). In almost all cases, the method used by VCs to assess a deal involved meeting with the management team (99%), reading the business plan (91%), seeking advice from the VC's personal network of contacts (81%), using the internet for research (76%), and contacting references provided by the management team (75%). Another important assessment method was reading industry-specific and market research reports (69%).

CHAPTER 5
DISCUSSION

A large amount of anecdotal evidence documents successful investments made by VCs in technology-based new ventures. Entrepreneurs and VCs usually share their individual experiences of success in the news media and business publications. These stories may lead entrepreneurs to believe that vast quantities of investment capital are available, venture capital is relatively easy to raise, and entrepreneurship is a sure ticket to success. However, the reality is that most entrepreneurs have difficulty raising venture capital; VCs claim that there are very few good deals in which to invest; there are limited amounts of venture capital available for new ventures at the early stages; and there are more failures than successes among technology-based new ventures. Perhaps the best way for an entrepreneur of a technology-based new venture to raise venture capital is to understand VCs' investment criteria and preferences. This study has addressed this challenge by articulating many of the investment criteria used by VCs when they are evaluating technology-based new ventures. This final chapter discusses the most important investment criteria used by VCs in technology-based new ventures. To facilitate discussion of key findings, the reader is asked to refer to Figure 5-1.

Figure 5-1 summarizes the most salient investment criteria identified in this study. Each of the six categories are depicted in order of decreasing importance (signified by the numbers beside each category). Column "1," "most important," is the management team; column "6," "least important," is the business plan. The criteria listed within each category are organized by the factors that emerged earlier as a result of the factor analysis. Within each factor, only those criteria are represented that were considered important based on the selection criteria applied (representing a high mean degree of importance). Each of the categories is discussed following Figure 5-1.

Figure 5.1

Most Salient Investment Criteria Used by Venture Capitalists in Evaluating a Technology-Based New Venture

LEVEL OF IMPORTANCE

Team ABILITIES
Team Can Execute on Strategy
- Able to follow through on a strategy for new venture
- Able to create value for future shareholders of new venture
- Able to sustain high intensity work in the new venture

Team Understands the Market
- Able to create a superior product or service compared to that of the competition
- Able to focus on understanding customers' needs
- Able to place the new venture in a position of market leadership
- Able to adhere to ethical business practices
- Able to focus new venture on building core competencies that may yield competitive advantage

Team Can Manage Change in Strategy
- Able to anticipate need for change of strategy in new venture
- Able to be flexible with the new venture's strategy
- Able to effectively manage change within the new venture

Entrepreneur can Build Team
- Able to recruit people for the new venture's team
- Able to create high standards of team performance

Team Can Focus on Results
- Able to anticipate problems early on in the new venture
- Able to encourage the team to be results-oriented

Able to accept a change in roles, as the evolving venture requires

Team BACKGROUND
Required by venture capitalists

Team is Highly Committed to New Venture
- Team shows a high level of commitment to the success of the new venture
- Team should demonstrate a sense of urgency regarding the new venture
- Team must share the commitment to a common vision of the new venture

Team is Very Experienced
- Team has strong leadership experience
- Team has previous related work experience within the industry sector of the new venture
- Team has some entrepreneurial experience in a prior venture (success or failure)

The management team is compatible with the venture capitalist(s)

Team SKILLS
Must be present

Strong Communication Skills

Outstanding Marketing Skills
- Including effective sales skills

Exceptional Technology-Related Skills
- Experience in product development skills
- Strong in technical project management skills
- Experience in research and development skills

Clearly Identified Target Customers
- Team must have identified & contacted potential customers targeted by the new venture
- Team must demonstrate strategy of new venture to create long-term relationships with customers

Large Market Size
- Only interested if projected market size to be captured by the new venture is large
- The new venture's projected market growth rate must be large

The new venture should preferably be the first within its target market

Compelling Customer Demand for Offering
- Offering must be driven by large market demand
- Offering has been designed based on clear customer requirements
- Offering is superior to that of the competition (if it exists)

Offering Leads Launch to Market
- Offering is very innovative
- Offering is launched in the market before that of its competitors

Offering is Sustainable
- Offering has a well-defined market niche
- Offering can keep pace with changes in market needs

Offering is designed using proprietary core technology owned by the new venture

Attractive Industry Trends
- Attractive general trends within the industry of new venture
- New venture has great potential to form partnerships with larger companies to accelerate its growth within the industry

Entrepreneur Identifies Risks in New Venture
- Clearly identified market related risks associated with the new venture
- Clearly identified management team related risks associated with the new venture

Potentially High Return to Venture Capitalist(s)
- Through an acquisition of the new venture by a larger company
- Through an initial public offering (IPO) by the new venture

BUSINESS PLAN
- Comprehensive presentation of a reasonable Business Model for the new venture
- Clear emphasis on a detailed level of Market and Customer Needs Analysis

5.1 Categories of Investment Criteria

This study has extended the findings from Gupta and Sapienza (1992) and Sandberg, Schweiger and Hofer (1987) that describe VCs as being heterogeneous. The investment criteria identified here have been researched within the context of an investment process (evaluation stage), a specific stage of financing of the new venture (early stages), for a particular type of new venture (technology-based), and VCs in specific geographic locations (CA/MA, other parts of US and Canada).

The six categories of investment criteria identified in this study represent a first step toward breaking down the large number of investment criteria considered by VCs in technology-based new ventures into a more manageable yet informative number. At an individual level, most VCs (over 90%) deviated in the order of importance they assigned to each category from the results of the stable rank ordering across all the VCs studied (n = 100). This result suggests that these patterns of a stable rank ordering could only have been detected at an aggregate level of analysis. The importance associated with the categories replicated the results obtained in an earlier study by the author (Bachher, 1994). There were no differences in the importance of categories between VCs in CA and MA and those in other parts of the US and Canada. Also, there were no differences in the importance placed on these categories based on the type of new venture being considered by the VCs for investment. These results are surprising considering that VCs are heterogeneous. However, the investigation of differences among VCs was performed on the categories as opposed to the specific investment criteria. A deeper understanding of the differences among investment criteria could be the next step in analyzing the different groups of VCs. The results demonstrated patterns of differences within groups of investors. For example, within the group of investors based in CA and MA, there were significant differences in the importance of "the characteristics of the management team." This group of VCs felt this criterion is much more important than the other five.

5.1.1 Management Team

VCs consider the management team to be the most important aspect of the new venture. A primary focus of VCs is to understand the abilities of the management team. They assess the team members based on their skills, backgrounds and experiences. This finding supports those of Wells (1974), Poindexter (1976), Tyebjee and Bruno (1984), MacMillan, Siegel and SubbaNarasimha (1985), MacMillan, Zemann and SubbaNarasimha (1987), and Hall (1989). These previous studies reveal some important investment criteria particularly with respect to the management team's skills and background. This study contributes to the literature by extending our understanding of the management team's abilities (new contribution), thereby further clarifying the investment criteria related to skills and backgrounds.

Team Abilities

At the evaluation stage, VCs examine the team's ability to execute their strategy, understand the market of the new venture, manage changes in strategy, build a team, focus on results, and finally, accept a change in roles, as required by the evolving new venture. Findings related to abilities of the management team in this study constitute new contributions to the literature and have not been expressed previously as salient investment criteria used by VCs.

Team Can Execute on Strategy

The VCs in this study are interested in assessing the ability of the entrepreneur to execute the strategy of the new venture. Rock (1987) suggests that:

> *Over the past 30 years, I estimate that I've looked at an average of one business plan per day, or about 300 a year, in addition to the large numbers of phone calls and business plans that simply are not appropriate. Of the 300 likely plans, I may invest in one or two a year, and even among those carefully chosen few, I'd say that a good half fail to perform up to expectations. The problem with those companies (and with the ventures I choose not to take part in) is rarely one of strategy. Good ideas and good products are a dime a dozen. Good execution and good management – in a word, good people – are rare.*

Based on the author's learning in Stages # 2 and # 3, executing a strategy in a new venture requires a significant personal commitment from those involved. This fact could explain the importance placed by VCs on the ability of the management team to sustain high intensity work in the new venture. Also, in building the new venture, VCs are interested in understanding the ethical practices of the management team. This finding is supported through previous work by the author (Guild and Bachher, 1996).

Team Can Manage Change in Strategy

The management team must be able to accommodate adjustments in strategy, anticipate the need for a change of strategy, be flexible with the new venture's strategy, and manage change effectively within the new venture. In Stage # 2, the author observed that a group of employees in the new venture resisted change in strategy and it became imperative for the management team to convince them of the need for change and its importance to the vision of the new venture. This finding is a new contribution to the literature.

Entrepreneur Can Build Team

Some VCs consider it important to gauge the ability of the current management team to recruit people for the new venture. It appears that this ability is a critical component of the entrepreneur's role in the new venture. In addition, VCs also want to understand the team's ability to create high standards for both team performance and attainment of results. The team learns to deal with challenges through the evolution of the new venture. VCs look for a team that can anticipate problems early in the new enterprise and deal with them before they get out of control. MacMillan, Siegel and SubbaNarasimha (1985) refer to the presence of a balanced team as an important criterion. In this study, we have elaborated upon the meaning of "the ability" of the entrepreneurs to build an effective team.

Team is Able to Accept a Change in Roles

During Stage # 2, the author observed that as the new venture evolved, so did the roles of the entrepreneurs and management team. From the point of he VC, the more the founding management team can adapt and change their roles, the better. Moreover, the entrepreneurs

too must have the ability to accept a change in their roles as the evolving new venture requires. This finding is a further contribution to the literature.

Strong Communication Skills

The crucial skills of the team include strong communication skills, outstanding marketing skills, and exceptional technology-related skills. In Stages # 2 and # 3, the author observed that it was essential for the team to be able to articulate all aspects of their business to stakeholders in the new venture. Stakeholders include VCs, customers and employees. Communication skills include both oral and written skills. The executive summary of a business plan should preferably be a concisely written description of the new venture's business. MacMillan, Siegel and SubbaNarasimha (1985) describe strong communication skills as among the ten most important criteria observed and referred to this criterion as being "articulate about the venture." Hall and Hofer (1993) describe some of the key characteristics of the business proposal as 1) must have full information, 2) should be a reasonable length, easy to scan, have an executive summary, and professionally presented, 3) must contain a balanced presentation, and 4) use graphics, large print to emphasize key points.

Outstanding Marketing and Sales Skills

VCs have indicated explicitly the need for both outstanding marketing and effective sales skills. In order to reach potential customers, the team must assemble members with the required marketing skills. In addition to being able to develop a strategy to market the new venture, the team must have the requisite sales skills to sell the venture offering (product or service). This factor of investment criteria is supported by the work of Wells (1974), Tyebjee and Bruno (1984), and Bachher and Guild (1996).

Exceptional Technology-Related Skills

Among the skill sets required by the management team in the new venture, their technology skills are relatively less important. These skills include experience in product development, strength in technical project management, and experience in research and development. This

set of investment criteria is supported by the salient findings of Robinson (1987), and is also reflected in Wells (1974) as "the importance of engineering skills."

Team is Highly Committed to New Venture

VCs require the management team to be committed to the new venture, very experienced, and compatible. The process of starting and growing a new venture demands persistence on the part of the management team (as observed in Stage # 2 and # 3). Further, the team must show the VCs a high level of commitment to the success of the new venture. The team must share the commitment to a common vision of the new venture. It is very important that the entrepreneur has a clear vision of the new venture and be able to communicate it to the rest of the company. In Stage # 2, the seed stage of the new venture, team members had an opportunity to pursue alternative paths, each of which had their merits and demerits. These investment criteria bolster the literature on this topic and support some of the salient findings from work done previously by the author (Bachher and Guild, 1996).

VCs expect the management team to demonstrate a sense of urgency regarding the new venture. Improved communications and global competition have increased the urgency to deliver a new venture's product or service into the marketplace before the competition of the product itself (Stewart, 1995). One of the ways in which a VC can assess the team's sense of urgency is by visiting the offices of the new venture to observe first-hand (Warner, 1998). While often a subjective impression, the pace at which progress is being made reflects the team's sense of urgency regarding their new venture.

Team is Very Experienced

Some VCs emphasize the importance of investing in experienced teams. These VCs want the ideal team to have strong leadership experience, a fact which can be demonstrated in the résumés of the team members. It often helps in the investment evaluation if the team has previous work-related experience within the industry sector of the new venture. The finding that VCs favor a very experienced management team is supported in previous research by MacMillan, Siegel and SubbaNarasimha (1985), Robinson (1987), Hisrich and Jankowicz (1990), Hall and Hofer (1993), and Fried and Hisrich (1994).

Team is Compatible with the VCs

Compatibility between the VC and the management team is preferable. In the event that the VC invests in the new venture, he/she will be working closely with the entrepreneurs and management team for a long time (usually years). Consequently, both the entrepreneur and the VC must be comfortable working with each other and get along (Silver, 1985). This key finding is supported by MacMillan, Siegel and SubbaNarasimha (1985) and Hall and Hofer (1993).

5.1.2 Target Market

Clearly Identified Target Customers

VCs view the target market as the second most important aspect of the new venture, following the management team. The management team must demonstrate to the VCs that they have a clear understanding of their target market and are knowledgeable about the customers' needs. In the business plan, the management team must identify the potential customers targeted by the new venture (new contribution). VCs encourage the team to contact potential customers and request their opinion on whether or not they have a need for the type of offering (product or service) being developed (observation from Stage # 2 and # 3). The larger the market size, the more interest generated in VCs.

According to the VCs studied, the management team must demonstrate a strategy for the new venture to create long-term relationships with customers. Observations from Stages # 2 and # 3 led to the finding that the strategy for creating long-term relationships include providing high levels of customer service and satisfying customers' evolving needs in the functionality of the offering. Once the customers were used to working with the product, and had invested heavily in training, they found it preferable to remain with the new venture despite being approached by competition, as in the case of heightened switching costs.

Large Market Size

VCs consider it important for the technology-based new ventures to have a large projected market size and market growth rate because VCs estimate their rate of return as somewhat

determined by the size of the market and its growth rate (as observed in Stages # 2 and # 3). Based on this logic, the larger the new venture's potential market, the larger the company's revenues and the higher the anticipated return on investment. This observation is supported by work carried out by such contributors as Tyebjee and Bruno (1984), MacMillan, Siegel and SubbaNarasimha (1985), and Knight (1994).

First Within Target Market

In some cases, VCs prefer the new venture be the first in its target market. Clearly, being first to market is advantageous in that if the company succeeds in gaining acceptance, it becomes the perceived leader in the marketplace. Of course, it may not always be possible to be first to market, but market leadership and differentiation encourages customers to identify with the new venture.

VCs in this study expected the management team to understand the market. By demonstrating the management team's knowledge of the market, the investors can begin to assess the ability of the team to focus on understanding customers' needs, and to place the new venture in a position of market leadership.

5.1.3 Venture Offering

The product or service of the new venture is referred to as the venture offering. In some cases, the offering could also be in the form of a solution, which includes both a product and an associated service. VCs indicated that the offering should preferably be based on a clear understanding of the market and customers. The key venture offering criteria considered by VCs in this study include: 1) a compelling customer demand for the offering, 2) a lead in the launch to market, 3) a scalable offering, and 4) an offering designed to use proprietary core technology owned by the new venture.

Compelling Customer Demand for Offering

VCs indicated that it is important for the offering to be driven by large market demand. Since the offering is to be used by customers, VCs indicated that its design preferably should

be based on clear customer requirements. In the event of existing competition, the offering developed by the new venture should aim to be superior to the competition in some way. This superiority may be based on functionality, for example. The venture offering should strive to be more innovative than that of the competition, be launched in the market before its competitors, and have a well-defined market niche. In order to create long-term customer relationships, the offering should be designed so that it can keep pace with changes in market needs. MacMillan, Siegel and SubbaNarasimha (1985) refer to compelling customer demand for offering as "market acceptance" and "viability of the product/service characteristics."

Offering is Designed Using Proprietary Core Technology

In a technology-based new venture, the entrepreneurs typically have developed a technology that can be used by a target group of customers. In the event that the technology has a competitive advantage, the offering should preferably be designed using proprietary core technology owned by the new venture. This proprietary control creates a barrier to entry for the competition or potential competitors.

VCs indicated that it is important for the management team to create a superior product or service compared to that of the competition. They also expect the team to be able to focus the new venture on building core competencies that may yield a competitive advantage (Prahalad and Hamel, 1990). With a clear focus on core competencies and core technologies, the new venture can anticipate different end markets that, in turn, can benefit from a core technology packaged in a manner that satisfies different markets (Prahalad and Hamel, 1990). This finding is supported in the work of Tyebjee and Bruno (1984) as "patented technology," and by MacMillan, Siegel and SubbaNarasimha (1985) as "proprietary technology."

5.1.4 Competitive Positioning

Some VCs are interested in considering new ventures which demonstrate attractive industry trends. For example, the current venture climate investment pattern is towards Internet ventures. They appear to be among the most attractive ventures to VCs due to their quicker

return on investment time horizons compared to other types of technology-based ventures (MoneyTree Survey, 1999). This preference requires entrepreneurs to understand the trends within their industries and identify them within their business plan. For example, in the communications industry, bandwidth requirements double every 180 days (Gilder, 1996). This trend may present attractive opportunities (if exploited) for companies that provide the infrastructure for data communications. VCs also indicate that it is important for new ventures to identify strategic partnerships, such as those with larger companies within their industry. Tyebjee and Bruno (1984) describe competitive positioning as "barriers to competitive entry" and Hall and Hofer (1993) articulate it as "the product must demonstrate a defendable competitive position."

5.1.5 Capital Payback Projections

Entrepreneur Identifies Risks in New Venture

VCs rarely want to contend with both technical and market risks in the same new venture. They want the entrepreneur to identify clearly the risks associated with the new venture, especially the market-related risks and management-team related risks (Warner, 1998). According to VCs in this study, both entrepreneurs and the management team need to examine these risks and develop a contingency plan to address them. Poindexter (1976) alludes to this phenomenon as "the expected risk."

Potentially High Return to VCs

VCs are in the business of fostering returns on their investments in new ventures (Warner, 1998). These returns may be realized through an acquisition of the new venture by a larger company or an initial public offering (IPO) by the new venture (Zacharakis, 1995). The entrepreneurs must appreciate that the VC is investing for the purpose of realizing a return. VCs expect the management team to create value for future and present shareholders of the new venture, including the investors. This finding is supported by Wells (1974), Poindexter (1976), Tyebjee and Bruno (1984), MacMillan, Siegel and SubbaNarasimha (1985), Robinson (1987), Hisrich and Jankowicz (1990), and Fried and Hisrich (1994).

5.1.6 Business Plan

The business plan should provide information required by VCs. The most salient information that VCs in this study require of the business plan is a comprehensive presentation of a reasonable business model for the new venture. This presentation must contain a clear market and customer-needs analysis. The business model refers to the new venture's strategy for combining the venture's offering (product or service), competitive positioning, target market, capital payback projections, and management team.

Dawes (1979) suggests that actuarial models are better in making decisions than clinical judgment. The first step towards developing an actuarial model is the identification of the salient criteria used by VCs as part of their investment process. This study has helped in completing this first step and further work may be undertaken to develop a better decision-making model, as suggested by Dawes (1979).

5.2 Limitations

This section describes some of the limitations of the study.

Order Effects

In Stage # 4 of this study, the survey (n = 100) consists of a set of investment categories and criteria in order to elicit their relative importance to VCs. There might be an order effect present in the results due to the way in which the criteria were listed in the survey. While such a bias may operate, the results of degree of importance show that some of the criteria presented at the bottom of a list were among the most salient in the study. Also, a few of the criteria presented closer to the top of a given list were relatively low in degree of importance. On the other hand, some criteria at the top of a list had a relatively high degree of importance while those at the bottom showed relatively low importance scores. To test for order effects, future research should retest the survey on a different sample of VCs using a similar survey but with the criteria listed randomly. An attempt towards testing for order effects was made using the follow-up survey of tangibility of investment criteria (n=12). The order of listing

categories was randomly selected in this survey. The results obtained repeated the finding from the earlier survey (n=100) with the exception of the last two categories which were reversed in order. Order effects, while potentially an important consideration, do not explain these findings.

Sample

The samples in Stages # 2, # 3, and # 4 of this study were not randomly selected. It is difficult to obtain the participation of VCs in a study of this nature. They are very busy individuals and often must refuse to make a time commitment of even half an hour to a study of this nature. This time problem posed a challenge from the onset of the study. As a result, in Stage # 1, the focus is on building a network of VCs with whom the author could work in later stages of this study. In the final Stage # 4, the sample was identified based on the population of VCs cited in this study. However, those contacted were selected specifically on the criteria presented earlier in this thesis. On average, a VC spends 30 minutes meeting with a new venture's team for the first time in order to begin the evaluation process. In essence, by requesting the VCs to spend about half an hour participating in this study, the author also was asking them to sacrifice a meeting with a potentially lucrative new venture.

The sample size in Stage # 4 of 100 VCs may be considered small for the purpose of statistical tests. However, it is important to keep in mind the fact that the sample size represents close to 50% of the population of the VCs subset. By doubling the sample size, for example, the result would be a census of the population, but the number might still be considered small for some statistical analyses.

Principal Components Analysis

The application of principal components analysis in this study is exploratory in nature and is used as a tool for reducing the number of variables or examining patterns of correlations among variables without intent to test theory. Decisions about the number of components are based on empirical and pragmatic rather than theoretical criteria.

5.3 Conclusions

This study has been an exploration of the investment criteria used by venture capitalists for technology-based new ventures at the evaluation stage. At the outset of the study, the author accepted past descriptions of the investment process used by VCs as comprising multiple stages. The quest to learn from VCs in this study became focused on the evaluation stage because of the amount of time spent in understanding the new venture (weeks to more than one month). In the second half of the 1990s, VCs began to become more specialized in their investment preferences to the extent that by the end of the decade, highly regarded VC firms (as perceived inside the industry) began to split their partnerships and portfolio of investments into Internet and other technology-based ventures (MoneyTree Survey, 1999). This split stemmed from the commercial acceptance of the Internet during this same period (1995-1999) as the "hot" trend for investments in new ventures. Some VCs have made record rates of return in relatively short time frames compared to their investment track record from the earlier decades. The rules seem to have changed by which new businesses are launched by entrepreneurs, venture capital is raised by startups, private companies are taken public on stock exchanges, and returns are made by venture capitalists from their investments. As the velocity of business has increased, technology is no longer a "black box curiosity" but now an essential part of all aspects of the economy and a key competitive advantage for both small and large businesses. Entrepreneurs are becoming more powerful in the circle of players involved in a new venture compared to the previous absolute influence of VCs. This change seems to be a reversal of influences compared to the first half of the 1990s. To some extent, these changes in the landscape of small business and entrepreneurship can be attributed to the rapid and widespread commercial acceptance of the Internet as an enabling technology (MoneyTree Survey, 1999).

This study is among the first to conduct an in-depth case study in the form of participant observation on an Internet new venture (as described in Stage # 2). Although not isolated as an independent variable in this study, Stage # 4 includes 41% of the VCs who described their investment criteria with respect to an Internet-based venture. The findings from this study

are a step towards greater understanding of the salient criteria used by VCs for investments in 42 Internet new ventures. The author expects to continue to build on this research because it forms a foundation set of findings for the new economy and its new ventures.

5.4 Future Research

One of the areas of future research involves comparing groups of VCs within the sample of 100 VCs based on background information collected in this thesis. To begin with, the VCs (n = 100) can be classified in four ways according to: location of the VC, experience of the VC, type of new venture preferred by the VC, and type of VC. These distinctions will be elaborated on below.

The sample can be divided into VCs located in CA and MA (n = 42) versus other parts of the US and Canada (n = 58). The sample can also be divided in half with VCs having one to five years of experience (n = 50) versus those having six or more years of experience (n = 50). The sample can further be divided into Internet ventures (n = 41) versus other technology-based ventures comprising the rest of the sample (n = 59). The primary reason for exploring this difference is based on the investment trends over the last five years (1995 to 1999) in which Internet ventures have been the recipient of a large proportion of venture capital compared to the other industry sectors. We would be interested in finding out if the type of venture would affect the degree of importance of some criteria used by VCs. Finally, the sample of VCs can be divided into "best-in-class" (n = 32) versus "not-best-in-class" (n = 68) based on a set of replicable classification variables.

Future research in the area of the investment criteria of VCs could involve case studies of leading venture capital firms. These firms have a reputation within the venture capital industry, and among entrepreneurs who are knowledgeable about venture capital, as being the more successful venture capital firms. Sometimes new ventures backed by one of these firms benefit from associated celebrity status. A contribution may be made by studying the process employed by such venture capital firms to originate, screen, evaluate, negotiate, structure, and monitor their deals, in order to add value to the new venture. In order to

identify these types of leading VCs, robust and replicable selection criteria should be further developed.

In this study, recall that VCs characterized a recent new venture using our given investment criteria. A further contribution may be made by relating the investment to the specific company by searching the web sites of the venture capital firms that participated in the study and track their performance over time. Relating the investment criteria of this study to the level of success of the new venture, and then determining which criteria relate best to the success or failure of the new venture is expected to make a significant contribution.

The investment criteria identified as salient in this study should be explored further to refine both operational definitions and ways of measuring the criteria. VCs now employ some ways of understanding these criteria and measuring them. By focusing on both the criteria and ways of measuring them, one might further reveal the science of investment deals in venture capital. The entrepreneur should explore the process of raising venture capital by focusing on half a dozen venture capital firms at most. In order to do so, entrepreneurs might work with business angels, and incubator organizations to develop their business plans, to craft presentations, and to put in place the elements that are known to be of importance to the VC. Additional study of the process of nurturing a deal before it receives investment by a VC also may benefit entrepreneurs.

This study has begun to reveal the VCs' investment criteria that vary to the extent that they are intangible or tangible. Investors often claim that technology-based new ventures are predicated on primarily intangible assets. Somehow, VCs identify these intangible assets and evaluate them. It may be instructive to continue to explore further the so-called intangible aspects of new ventures.

5.5 Contributions

This study has contributed to the knowledge of both the academic and practitioner (VCs and entrepreneurs) communities. Some of the implications of the study to these stakeholders are described below.

The literature acknowledges that VCs are heterogeneous (Gupta and Sapienza, 1992; Sandberg, Schweiger and Hofer, 1987). This study has described in detail some of the investment criteria for one type of VC investing in technology-based new ventures. These types of ventures are a very important part of the new economy. Through increased understanding, this study makes an important contribution to the venture capital decision-making literature. In addition, by focusing on the evaluation stage, this study has advanced the overall understanding of the investment process used by VCs. The early stages of a new venture are the points at which the largest risk in obtaining financial support exists. This study advances our understanding of this aspect too.

The investment process used by VCs is described in the literature as involving multiple stages (Tyebjee and Bruno, 1984; Wells, 1974; Poindexter, 1976). Bachher (1994) concludes that different investment criteria are used by VCs at the screening and evaluation stages of the process when deciding to invest in technology-based new ventures. With the focus of this study being on the evaluation stage, we have advanced the understanding of the investment criteria within the context of the investment process.

When sizing up a new venture, VCs spend most of their time on the evaluation stage. By focusing this study in an area where VCs spend the bulk of their time in the use of investment criteria, it is hoped that this study will contribute to the efficiency of venture capital allocations.

Previous studies convey the importance of the management team to a VC's investment decision. This study explores the criteria that are of importance to VCs as they focus on the management team. It reveals a set of close to thirty investment criteria that relate to the most

important aspects of the new venture team. As much as three times as many important investment criteria are presented here as compared to previous studies. The salient criteria presented in an earlier study by the author for investing in technology-based new ventures were derived from Canadian VCs. This study presents approximately 70% more criteria (cumulative over all the stages of this study) than the author's previous study. While previous research share aspects of the skills and background of the management team that are important to VCs, this study extends this consideration to include certain abilities of the management team.

The research method used in this study is a combination of real-time and post-hoc recall. By bringing the two types of research methods into one study and building on their strengths, this research contributes to an increased accuracy of investment criteria used by VCs for technology-based new ventures. To the best of the author's knowledge, this study is one of the first to use the case study method in the form of participatory action research to understand the investment criteria used by VCs.

The observations made and emerging patterns identified in this study with respect to the investment criteria used by VCs can be used as a basis to develop hypotheses and propositions and, as a result, test theories. Expanding on this work also could provide the basis for developing new theories in the literature or even confirming existing theories. For example, the investment criteria identified in this study could be used to develop models to predict the success or failure of technology-based new ventures. Shepherd (1999) states that, to his knowledge, his study was the first to use an overarching theory to derive the criteria to be investigated in VCs' assessment of new venture survival. Clearly, more work is called for to make this research more theory driven.

This study demonstrates a scientific basis for explaining the investment criteria used by VCs for technology-based new ventures and, in the process, confirms some industry "folklore" and anecdotal evidence. Due in part to the Internet, the business environment has changed over the last half of the 1990s. This study adds to the literature by extending our knowledge of the investment criteria used by VCs as applied to the current business climate. Both the

academic and VC communities have expressed the need to update the literature on VC's investment criteria to reflect the emergence and rapid global acceptance of the Internet as part of the new economy.

As stated earlier, this study provides VCs with greater insight into how some of their peers make investment decisions and the criteria they consider important to their investment at the evaluation stage. For those VCs that are interested in using a checklist of criteria, this study may provide a starting point, though it will require additional validation over time.

Of course, most entrepreneurs who seek financing for their new ventures approach VCs, as well as other investors. Understanding the process and criteria used by VCs can be beneficial to these entrepreneurs. The very high rejection rate of business plans by VCs (approaching 95%) may be due in part to the fact that entrepreneurs are not providing the information that VCs are seeking. This rejection rate also may reflect a mismatch between the VCs screening criteria and the characteristics of the new venture seeking financing. A better understanding of the investment process used by VCs may reduce some false negatives in this rejection rate.

CHAPTER 6

REFERENCES

Abernathy, W. J., and Clark, K. B. (1985). "Innovation: mapping the winds of creative destruction," *Research Policy*, 14: 3-22.

Babbie, E. (1992). *The practice of social research*. Wadsworth Publishing Company.

Bachher, J. S. (1994). *Decision-making criteria used by Canadian equity investors to evaluate early-stage technology based companies*. Masters Thesis, University of Waterloo.

Bachher, J. S., and Guild, P. D. (1996). "Financing early stage technology based companies: investment criteria used by investors," Frontiers of Entrepreneurship Research: 363-376.

Beck, N. (1992). *Shifting gears: thriving in the new economy*. Harper Collins Publishers Ltd.

Becker, H. S. (1963). *Outsiders*. Free Press.

Behn, R. D., and Vaupel, J. W. (1982). *The basic decision dilemma: the angina/bypass surgery decision. In quick analysis for busy decision makers*. Basic Books.

Bogle, G. T., and Reuber, A. R. (1992). "Issues involved in the financing of Canadian biotechnology firms by venture capitalists," *Journal of Small Business & Entrepreneurship*, 9(2): 2-13.

Brunswik, E. (1956). *Perception and the Representative Design of Experiments*. University of California Press.

Bygrave, W. D. (1987). "Syndicated investments by venture capital firms: a networking perspective," *Journal of Business Venturing*, 2(2): 139-154.

Bygrave, W. D. (1994). *The Portable MBA in entrepreneurship*. John Wiley and Sons.

Bygrave, W. D., and Timmons, J. A. (1992). *Venture capital at the crossroads*. Harvard Business School Press.

Carroll, J. S., and Johnson, E. J. (1990). *Decision research: a field guide*. Applied Social Research Methods Series: Sage Publications.

Cooper, R. G. (1988). "The new product process: a decision guide for management," *Journal of Marketing Management*, 3(3): 19-33.

Cyert, R. M., and March, J. G. (1963). *A Behavioral Theory of the Firm*. Prentice Hall.

Dawes, R. M. (1979). "The robust beauty of improper linear models in decision making," *American Psychologist*, 34(7): 571-582.

Dawes, R. M., Faust, D., and Meehl, P. E. (1989). "Clinical versus actuarial judgment," *Science*, 24(3): 1668-1674.

DeBresson, C., and Amesse, F. (1991). "Networks of innovators: a review and introduction to the issue," *Research Policy*, 20(5): 363-379.

Duncan, R. B. (1972). "Characteristics of organizational environments and perceived organizational uncertainty," *Administrative Science Quarterly*, 17: 313-327

Eisenhardt, K. M. (1989). "Building theories from case study research," *Academy of Management Review*, 14(4): 532-550.

Elango, B., Fried, V. H., Hisrich, R. D., and Polonchek, A. (1995). "How venture capital firms differ," Journal of Business Venturing, 10(2): 157-179.

Fenn, G. W., Liang, N., and Prowse, S. (1995). *The economics of the private equity market*. Washington, DC: Board of Governors of the Federal Reserve System.

Fiske, S. T., and Taylor, S. E. (1991). *Social Cognition*. Random House

Fox, J. (1997). "The next best thing to free money," *Fortune*, 136(1): 52-65.

Fried, V. H., and Hisrich, R. D. (1994). "Toward a model of venture capital investment decision making," *Financial Management*, 23(3): 28-37.

Galante's Venture Capital and Private Equity Directory (1995). Alternative Assets Inc.

Gilder, G. (1996). "The Gilder Paradigm," *Wired*, 1-4.

Groupe Secor. (1998). *Financing knowledge-based small business*. Task Force on the Future of the Canadian Financial Services Sector.

Guild, P. D., and Bachher, J. S. (1996). "Equity investment decisions for technology based ventures," *International Journal of Technology Management*, 12(7/8): 787-795.

Gupta, A. K., and Sapienza, H. J. (1992). "Determinants of venture capital firms' preferences regarding the industry diversity and geographic scope of their investments," *Journal of Business Venturing*, 7(5): 347-362.

Hall, H. J. (1989). *Venture capitalist decision-making and the entrepreneur: an exploratory investigation*. Ph.D. Dissertation, University of Georgia, Athens.

Hall, J., and Hofer, C. W. (1993). "Venture capitalists' decision criteria in new venture evaluation," *Journal of Business Venturing*, 8(1): 25-42.

Hall, R. (1992). "The strategic analysis of intangible resources," *Strategic Management Journal*, 13(2): 135-144.

Hall, R. (1993). "A framework linking intangible resources and capabilities to sustainable competitive advantage," *Strategic Management Journal*, 14(8): 607-618.

Harvey, M. G., and Lusch, R. F. (1995). "Expanding the nature and scope of due diligence," *Journal of Business Venturing*, 10(1): 5-21.

Hisrich, R. D., and Jankowicz, A. D. (1990). "Intuition in venture capital decisions: an exploratory study using a new technique," *Journal of Business Venturing*, 5(1): 49-62.

Hitt, M. A., and Tyler, B. B. (1991). "Strategic decision models: Integrating different perspectives." *Strategic Management Journal*, 12: 327-351.

Jorgensen, D. L. (1989). *Participant observation - a methodology for human studies.* Applied Social Research Methods Series: Sage Publications.

Kahneman, D., and Tversky, A. (1979). "Prospect theory: an analysis of decision under risk," *Econometrica*, 47: 263-291.

Khan, A. M. (1987). "Assessing venture capital investments with noncompensatory behavioral decision models," *Journal of Business Venturing*, 2(3): 193-204.

Knight, R. M. (1994). "Criteria used by venture capitalists: a cross cultural analysis," *Proceedings of ASAC.*

MacMillan, I. C., Siegel, R., and SubbaNarasimha, P. N. (1985). "Criteria used by venture capitalists to evaluate new venture proposals," *Journal of Business Venturing*, 1(1): 119-128.

MacMillan, I. C., Zemann, L., and SubbaNarasimha, P. N. (1987). "Criteria distinguishing successful from unsuccessful ventures in the venture screening process," *Journal of Business Venturing*, 2(2): 123-137.

March, J. G., Sproull, L. S., and Tamuz, M. (1991). "Learning from samples of one or fewer," *Organization Science*, 2(1): 1-13.

Mintzberg, H., Raisinghani, D., and Theoret, A. (1976). "The structure of 'unstructured' decision processes," *Administrative Science Quarterly*, 21(2): 246-275.

MoneyTree Survey. (1999). *PriceWaterhouseCoopers*. Internet WWW page, at URL: http://www.moneytree.com.

Nachmias, C. F., and Nachmias, D. (1992). *Research methods in the social sciences*. New York: St. Martin's Press.

Nisbett, R. E., Borgida, E., Crandall, R., and Reed, H. (1976). "Popular induction: Information is not necessarily normative." In Carrol, J., and Payne, J. (Eds.), *Cognition and Social Behavior*. Erlbaum

Newell, A., and Simon, H. A. (1972). *Human problem solving*. Englewood Cliffs, NJ: Prentice Hall Inc.

NVCA. (1999). *National venture capital association*. Internet WWW page, at URL: http://www.nvca.org.

Pohlmann, C. (1988). *Small business primer*. Canadian Federation of Independent Business Research and Reports.

Poindexter, J. B. (1976). *The efficiency of financial markets: the venture capital case*. Ph.D. Dissertation, New York University.

Porter, M. E. (1992). "Capital disadvantage: America's failing capital investment system," *Harvard Business Review*, 70(5): 65-82.

Prahalad, C. K. and Hamel, G. (1990). "The core competence of the corporation," *Harvard Business Review*, May-June: 79-91.

Pratt's guide to venture capital sources (1995). Securities Data Publishing, Inc.

Riquelme, H., and Rickards, T. (1992). "Hybrid conjoint analysis: an estimation probe in new venture decisions," *Journal of Business Venturing*, 7(6): 505-518.

Roberts, E. B. (1990). "Initial capital for the new technological enterprise," *IEEE Transactions on Engineering Management*, 37(2): 81-94.

Roberts, E. B. (1991). "High stakes for high-tech entrepreneurs: understanding venture capital decision making," *Sloan Management Review*, 32(2): 9-20.

Robinson, R. B., Jr. (1987). "Emerging strategies in the venture capital industry," *Journal of Business Venturing*, 2(1): 53-77.

Rock, A. (1987). "Strategy vs. tactics from a venture capitalist," *Harvard Business Review*, 65(6): 63-67.

Rock, A. (1999). *Telephone conversation between Jagdeep Bachher and Arthur Rock.*

Ruhnka, J. C., Feldman, H. D., and Dean, T. J. (1992). "The 'living dead' phenomena in venture capital investments," *Journal of Business Venturing*, 7(2): 137-155.

Ruhnka, J. C., and Young, J. E. (1991). "Some hypotheses about risk in venture capital investing," *Journal of Business Venturing*, 6(2): 115-133.

Sandberg, W. R., Schweiger, D. M., and Hofer, C. W. (1987). "Determining venture capitalists' decision criteria: the use of verbal protocols," Frontiers of Entrepreneurship Research: 392-407.

Schilit, W. K. (1991). *Dream makers and deal breakers: inside the venture capital industry.* Englewood Cliffs, NJ: Prentice-Hall.

Schilit, W. K., and Chandran, J. (1993). "The venture capital decision process: a reappraisal," *Entrepreneurship, Innovation, and Change*, 2(4): 359-382.

Scott, M. (1968). *The Racing Game*. Chicago: Aldine.

Shepherd, D. A. (1999). "Venture capitalists' assessment of new venture survival," *Management Science*, 45(5): 621-632.

Silver, A. D. (1985). *Venture capital: the complete guide for investors*. John Wiley and Sons.

Silver, A. D. (1994). *The venture capital sourcebook.* Probus Publishing Company.

Simon, H. A. (1955). "A behavioral model of rational choice," *Quarterly Journal of Economics*, 69: 99-118.

Slovic, P., and Lichtenstein, S. (1971). "Comparison of Bayesian and regression approaches to the study of information processing in judgment." *Organizational Behavior and Human Performance*, 6: 649-744.

SBA, (1997). *The facts about small business.* US Office of Economic Research, Office of Advocacy.

Stewart, T. A. (1995). "Trying to grasp the intangible," *Fortune*, 132(7): 157-158.

Stewart, T. R. (1988). "Judgment analysis: procedures," In Brehmer, B., and Joyce, C. (Eds.), *Human Judgment: The SJT View*. Elsevier.

Strong, K. C. (1992). *A cognitive model of downstructuring strategy*. Ph.D. Dissertation, University of Colorado.

Taylor, W. C., and Webber, A. M. (1996). *Going global - four entrepreneurs map the new world marketplace.* Viking.

Thorngate, W. (1976). "In general vs. it depends: some comments on the Gergen-Schlenker debate," *Personality and Social Psychology Bulletin*, 2: 404-410.

Timmons, J. A. (1994). *New venture creation: entrepreneurship for the 21st Century*. Boston, MA: Irwin McGraw-Hill.

Timmons, J. A., Muzyka, D. F., Stevenson, H. H., and Bygrave, W. D. (1987). "Opportunity recognition: the core of entrepreneurship," *Frontiers of Entrepreneurship Research Conference*: 109-123.

Trochim, W. M. (1999). "The research methods knowledge base," Internet WWW page, at URL: http://trochim.human.cornell.edu/kb/index.htm.

Tversky, A., and Kahneman, D. (1974). "Judgment under uncertainty: Heuristics and biases," *Science*, 185: 1124-1131.

Tyebjee, T. T., and Bruno, A. V. (1984). "A model of venture capitalist investment activity," *Management Science*, 30(9): 1051-1066.

Warner, M. (1998). "Inside the silicon valley money machine," *Fortune*, 138(8): 128-140.

Weick, K. E. (1979). *The social psychology of organizing*. Reading, MA: Addison-Wesley Publishing Company.

Weiss, A. R., and Birnbaum, P. H. (1989). "Technological infrastructure and the implementation of technological strategies," *Management Science*, 35(8): 1014-1026.

Wells, W. A. (1974). *Venture capital decision-making*. Ph.D. Dissertation, Carnegie-Mellon University.

Yin, R. K. (1989). *Case study research design and methods*. Applied Social Research Methods Series: Sage Publications.

Zacharakis, A. L. (1995). "Improving the venture capitalist decision process: actuarial decision models." *Proceedings of the Entrepreneurship and Small Business in a Changing Competitive Environment*: 83-92.

Zacharakis, A. L., and Meyer, G. D. (1998). "A lack of insight: do venture capitalists really understand their own decision process?" *Journal of Business Venturing*, 13(1): 57-76.

Zacharakis, A. L., Meyer, G. D., and DeCastro, J. (1999). "Differing perceptions of new venture failure: A matched exploratory study of venture capitalists and entrepreneurs," *Journal of Small Business Management*, 37(3): 1-14.

CHAPTER 7

APPENDICES

7.1 VC's Investment Criteria

Research Study	Investment Criteria
Wells (1974)	1. Management commitment 2. Product 3. Market 4. Marketing skill 5. Engineering skill 6. Marketing plan 7. Financial skill 8. Manufacturing skill 9. References 10. Other participants in the deal 11. Industry/Technology 12. Cash-out method
Poindexter (1976)	1. Quality of management 2. Expected rate of return 3. Expected risk 4. Percentage equity share of venture 5. Management stake in firm 6. Financial provisions for investor rights 7. Venture development stage 8. Restrictive covenants 9. Interest or dividend rate 10. Present capitalization 11. Investor control 12. Tax shelter consideration
Tyebjee and Bruno (1984)	Study I 1. Management skills and history 2. Market size/Growth 3. Rate of return 4. Market niche/Position 5. Financial history 6. Venture location 7. Growth potential 8. Barriers to entry 9. Size of investment 10. Market/Industry expertise 11. Venture stage 12. Stake of entrepreneur

Research Study	Investment Criteria
	Study II 1. Market attractiveness • Size • Growth • Access to customers 2. Product attributes • Uniqueness • Patent • Technical edge • Profit margin 3. Managerial capabilities • Skills in marketing, finance, and management 4. Environment threat resistance • Technical life cycle • Barriers to competitive entry • Insensitivity to business cycle • Down-side risk protection 5. Cash-out potential
MacMillan, Siegel, and SubbaNarasimha (1985)	(#) Signify essential criteria in order of importance; "1" is most important 1. Entrepreneur's personality • Capable of intense, sustained effort (1) • Evaluates risk well (5) • Articulate about venture (9) • Attends to detail • Compatible personality to venture capital 2. Entrepreneur's experience • Familiar with market (2) • Leadership ability (4) • Relevant track record (8) • Referred by trustworthy source • VC already familiar with entrepreneur 3. Product/Service characteristics • Proprietary (10) • Market acceptance • Prototype exists • High tech product 4. Market characteristics • High growth rate (7) • Venture will stimulate the market • VC is familiar with the venture • Little competitive threat

Research Study	Investment Criteria
	• Venture will create a new market 5. Financial considerations • Return of ten times within five to ten years (3) • Liquidity (6) • No follow-on investment required (6) 6. Venture team • Balanced team • One member has relevant experience • All members have similar experience
MacMillan, Zemann, and SubbaNarasimha (1987)	1. Management team • Qualifications • Experience 2. Product/Service characteristics • Viability (market acceptance) 3. Industry/Market characteristics • Exposure to competitive attack 4. Financial characteristics • Level and liquidity of the investment
Robinson (1987)	1. Management team • Personal motivation • Organizational /managerial skills • Executive /managerial experience • Completeness of team 2. Technical skills and industry requirements • Growth industry • Technical skills • Technical job experience 3. Personal skills and motivation • Substantiated growth objectives • Interpersonal 4. Financial track record • Five year liquidity 5. Professional references
Hisrich and Jankowicz (1990)	1. Management • General traits of the entrepreneur • Experience of the principal • Management team • Continuity of company/market 2. Unique opportunity • Product-market uniqueness 3. Appropriate return • Funding base and risk 4. Other

Research Study	Investment Criteria
	• The entrepreneur themselves • Use of technology • Market location
Bogle and Reuber (1992)	1. The entrepreneur's personality • Capable of sustained intense effort • Able to evaluate and react to risk well • Articulate in discussing the venture • Attends to detail • Able to accept criticism • Has personality compatible with mine 2. The entrepreneur's experience • Thoroughly familiar with the product • Thoroughly familiar with the market targeted by the venture • Demonstrated leadership ability in the past • Has a track record relevant to the venture • Has assembled a functionally balanced management team • The entrepreneur was referred to me by a trustworthy source 3. Characteristics of the product or service • The product is proprietary or can otherwise be protected • Product has been developed into a functioning prototype • The product enjoys demonstrated market acceptance • The product fits with the VC's long-term strategy 4. Characteristics of the market • The target market enjoys a significant growth rate • The venture will stimulate an existing market • The venture will create a new market • There is little threat of competition for the first three years • The venture is in a market attractive to my company • There is a well-established distribution system for the product 5. Financial considerations • I require a return equal to at least ten times my investment within five to ten years • I require an investment which can easily be made liquid (e.g. taken public or acquired) • My company will have a minority position in the venture • Size of specific investment should be <10% - 20% of funds available for venture activity • The business stage of the venture
Hall and Hofer (1993)	Key – "S" implies Screening; "A" implies Assessment 1. Venture capital firm requirements • Must fit within lending guidelines of the venture firm for stage and size of investment and kind of industries invested in or else rejected (S)

Research Study	Investment Criteria
	• Proposed business must be within the geographic area of interest (S) • Prefer proposals recommended by someone known to the venture capitalist (S, A) • Proposed industry must be the kind of industry invested in by venture firm or else rejected (A) 2. Characteristics of the proposal • Must have full information or else rejected (S) • Should be a reasonable length. easy to scan. have an executive summary, and professionally presented (S, A) • Proposal contains a balanced presentation or else rejected (A) • Uses graphics, large print to emphasize key points (A) 3. Characteristics of the entrepreneur/team • Relevant experience or else rejected (S, A) • Should have a balanced management team in place (S, A) • Management must be willing to work with venture partners (S) • Entrepreneur who has successfully started a previous business is given special consideration (A) 4. Nature of the proposed business • Projected growth should be relatively large within five years of investment (S, A) 5. Economic environment of proposed industry • Industry is capable of long-term growth and profitability (S) • Economic environment is favorable to a new entrant (A) 6. Strategy of the proposed business • Section of distribution channel(s) must be feasible or else rejected (S) • Product must demonstrate defendable competitive position (A) 7. Financial Information on the proposed business • Financial projections should be realistic (S, A)
Fried and Hisrich (1994)	1. Concept • There must be significant potential for earning growth • The investment must involve a business idea (new product, service, or retail concept) that works already or can be brought to market within two to three years • The concept must offer a substantial "competitive advantage" or be in a relatively non-competitive industry • The concept must have reasonable overall capital requirements 2. Management • Managers must display personal integrity • Managers must have done well at their prior jobs • Mangers must be realistic • Managers need to be hardworking

Research Study	Investment Criteria
	• Managers need to be flexible • Managers need to have a thorough understanding of the business • Managers must exhibit leadership • Managers must have general management experience 3. Returns • The investment must provide an exit opportunity • The investment must offer the potential for a high rate of return • The venture must offer the potential for a high absolute return
Knight (1994)	Capable of sustained intense effort Thoroughly familiar with the market At least ten times return in five to ten years Demonstrated leadership in the past Evaluates and reacts well to risk Significant market growth Track record relevant to venture Investment can be made liquid Articulates venture well Proprietary protection Attends to detail Demonstrated market acceptance Will stimulate existing market Prototype available High tech

7.2 Survey # 1 - Decision-Making Criteria Used by VCs

Survey of Decision-Making Criteria Used by Venture Capitalists

Statement of Confidentiality

The information you provide will be held in the strictest confidence. We will neither publish, release, nor disclose any information on, or identifiable with, individual venture capitalists, or venture capital firms.

This project has been reviewed by, and received ethics clearance through, the Office of Research Ethics at the University of Waterloo. If you have any questions or concerns resulting from your participation, please contact this office at (519) 888-4567 Ext. 6005.

INSTRUCTIONS

Thank you for agreeing to participate in our survey of decision-making criteria used by venture capitalists.

This survey is designed to be answered by venture capitalists. It is comprised of two sections:

- **"Decision-Making Criteria"** asks how you, as a venture capitalist, use specific decision-making criteria when you made an investment decision in an early stage technology-based new venture.
- **"Background Information"** requests that you provide general information about yourself and the investment you made in a new venture.

We define key terms used in this survey as follows:

- Technology-Based New Ventures are companies intending to commercialize a technology-based product or service for the first time and thereby expecting to derive a significant source of competitive advantage from the technology. Examples might include software, communications, or Internet companies.
- Early stages include seed, start-up, and first stages of financing.
    - Seed-stage financing is capital required to prove a concept and is used for developing a prototype.
    - Start-up financing is capital provided for product development and test marketing.
    - First-stage financing is capital required when the company has started to sell its product or service, but requires additional funds to undertake full commercial production and sales.

While completing this survey, please keep in mind any one specific investment you made in a new venture:

- **within the last 12 months,**
- **that is technology-based,**
- **in its early stages of financing.**

Please **characterize the new venture** in less than ten words.

Please provide us with **your email address** so that we may send you a copy of the survey findings.

Please answer each question based on your best estimate of the decision-making criteria associated with the above new venture. On the basis of pretests, we have found that venture capitalists typically require about 30 minutes to complete this survey.

YOUR RESPONSE IS VERY IMPORTANT TO US. If we can assist you in any way, or if you have any questions or comments, please contact:

Jagdeep Bachher
Doctoral Candidate
Department of Management Sciences
University of Waterloo
Waterloo, Ontario
Canada N2L 3G1
Tel. (519) 888-4567 Ext. 5240
jagdeep@uwaterloo.ca

Paul Guild
Director, Institute for Innovation Research
Department of Management Sciences
University of Waterloo
Waterloo, Ontario
Canada N2L 3G1
Tel. (519) 888-4802
guild@iir.uwaterloo.ca

Please select **Submit This Portion of the Survey** now to send your responses to us.

Submit This Portion of the Survey

Section -- Decision-Making Criteria

In this section, please indicate how important the specific decision-making criteria were when you were deciding to make the investment in the early stage technology-based new venture.

Categories of Decision-Making Criteria

The decision-making criteria sometimes used when assessing the new venture have been grouped into six categories. **Please indicate the degree of importance in which you may have considered the six categories when deciding to make the investment in the new venture by:**

- keeping in mind the same investment you selected at the outset of the survey,
- selecting the degree of importance from "Consider it first" to "Consider it last",
- "Consider it first", implies that the category was considered first, and the most important to your decision to invest in the new venture,
- "Consider it last", implies that the category was considered last, and the least important to your decision to invest in the new venture,
- selecting a unique order of importance for each category

Characteristics of the new venture's management team	
Characteristics of the new venture's target market	
Characteristics of the new venture's offering (product or service)	
Characteristics of the new venture's positioning within its competitive environment	
Characteristics of the new venture's capital payback projections	
Characteristics of the new venture's business plan	

Please select **Submit This Portion of the Survey** now to send your responses to us.

Submit This Portion of the Survey

Characteristics of the New Venture's Management Team

The following criteria relate to the ability of the management team.
Please indicate how important these were to you when deciding to invest in the new venture by:

- keeping in mind the same investment you selected at the outset of the survey, and
- assigning a rating on a scale from 1 to 7, where 1 represents "Not Important", 7 represents "Extremely Important" and N/A represents "Not Applicable".

Ability of the management team	**1 Not Important**	**2**	**3**	**4**	**5**	**6**	**7 Extremely Important**	**N/A**
Ability to recruit people for the new venture's team	○	○	○	○	○	○	○	○
Ability to create value for future shareholders	○	○	○	○	○	○	○	○
Ability to create high standards of team performance	○	○	○	○	○	○	○	○
Ability to reward performance fairly	○	○	○	○	○	○	○	○
Ability to manage cash flow conservatively	○	○	○	○	○	○	○	○
Ability to follow through on a strategy	○	○	○	○	○	○	○	○
Ability to be flexible with the new venture's strategy	○	○	○	○	○	○	○	○
Ability to anticipate need for change of strategy in the new venture	○	○	○	○	○	○	○	○
Ability to effectively manage change within the new venture	○	○	○	○	○	○	○	○
Ability to accept a change in roles as the evolving new venture requires	○	○	○	○	○	○	○	○
Ability to respond positively to constructive criticism from others	○	○	○	○	○	○	○	○
Ability to anticipate problems early on in the new venture	○	○	○	○	○	○	○	○
Ability to discuss risks facing the new venture among team members	○	○	○	○	○	○	○	○
Ability to create a work environment that fosters knowledge sharing within the team	○	○	○	○	○	○	○	○
Ability to seek and learn from the competencies of mentors	○	○	○	○	○	○	○	○
Ability to sustain high intensity work in the new venture	○	○	○	○	○	○	○	○
Ability to encourage the team to be decisive on issues	○	○	○	○	○	○	○	○

Ability to encourage the team to be results-oriented	○	○	○	○	○	○	○	○
Ability to learn from mistakes made as the new venture evolves	○	○	○	○	○	○	○	○
Ability to place the new venture in a position of market leadership	○	○	○	○	○	○	○	○
Ability to create a superior product or service compared to that of the competition	○	○	○	○	○	○	○	○
Ability to focus on customers needs	○	○	○	○	○	○	○	○
Ability to reject a deal that may be unfavorable to the new venture	○	○	○	○	○	○	○	○
Ability to adhere to ethical business practices	○	○	○	○	○	○	○	○
Ability to focus the new venture on building "core competencies" that may yield a competitive advantage	○	○	○	○	○	○	○	○

The following criteria relate to the background, experience, and general characteristics of the management team.
Please indicate how important these were to you when deciding to invest in the new venture by:

- keeping in mind the same investment you selected at the outset of the survey, and
- assigning a rating on a scale from 1 to 7, where 1 represents "Not Important", 7 represents "Extremely Important" and N/A represents "Not Applicable".

Background, experience and general characteristics of the management team	**1 Not Important**	**2**	**3**	**4**	**5**	**6**	**7 Extremely Important**	**N/A**
The management team's shared commitment to a vision of the new venture	○	○	○	○	○	○	○	○
The management team's recognition of chances of failure	○	○	○	○	○	○	○	○
The management team's commitment to technical excellence	○	○	○	○	○	○	○	○
The management team's understanding of the instability of new ventures	○	○	○	○	○	○	○	○
The management team's extent of personal contacts within the business community	○	○	○	○	○	○	○	○
The management team's reputation within the business community	○	○	○	○	○	○	○	○
The management team's compatibility with the venture capitalist(s)	○	○	○	○	○	○	○	○
The management team's educational background	○	○	○	○	○	○	○	○

The management team's entrepreneurial experience in a prior venture	○	○	○	○	○	○	○	○
The management team's leadership experience	○	○	○	○	○	○	○	○
The management team's personal accomplishments	○	○	○	○	○	○	○	○
The management team's experience in working together in a prior venture	○	○	○	○	○	○	○	○
The management team's previous related work experience within the industry sector of the new venture	○	○	○	○	○	○	○	○
The management team's willingness to accept risk related to the new venture	○	○	○	○	○	○	○	○
The management team's level of commitment to the success of the new venture	○	○	○	○	○	○	○	○
The management team's sense of urgency regarding the new venture	○	○	○	○	○	○	○	○

The following criteria relate to the skills within the management team.
Please indicate how important these were to you when deciding to invest in the new venture by:

- keeping in mind the same investment you selected at the outset of the survey, and
- assigning a rating on a scale from 1 to 7, where 1 represents "Not Important", 7 represents "Extremely Important" and N/A represents "Not Applicable".

Skills within the management team	**1 Not Important**	**2**	**3**	**4**	**5**	**6**	**7 Extremely Important**	**N/A**
Communication skills	○	○	○	○	○	○	○	○
Marketing skills	○	○	○	○	○	○	○	○
Sales skills	○	○	○	○	○	○	○	○
Technical skills	○	○	○	○	○	○	○	○
Research and development skills	○	○	○	○	○	○	○	○
Product development skills	○	○	○	○	○	○	○	○
Project management skills	○	○	○	○	○	○	○	○
Finance skills	○	○	○	○	○	○	○	○
Negotiation skills	○	○	○	○	○	○	○	○

Please select **Submit This Portion of the Survey** now to send your responses to us.

Characteristics of the New Venture's Target Market

The following criteria relate to the characteristics of the new venture's target market.
Please indicate how important these were to you when deciding to invest in the new venture by:

- keeping in mind the same investment you selected at the outset of the survey, and
- assigning a rating on a scale from 1 to 7, where 1 represents "Not Important", 7 represents "Extremely Important" and N/A represents "Not Applicable".

Characteristics of the new venture's target market	**1 Not Important**	**2**	**3**	**4**	**5**	**6**	**7 Extremely Important**	**N/A**
Potential to be the first within its target market	○	○	○	○	○	○	○	○
Ability to create a new market niche	○	○	○	○	○	○	○	○
Identified the potential customers targeted by the new venture	○	○	○	○	○	○	○	○
Projected the market size to be captured by the new venture	○	○	○	○	○	○	○	○
Projected the new venture's market growth rate	○	○	○	○	○	○	○	○
Ability to develop competitive pricing of product or service	○	○	○	○	○	○	○	○
Ability to generate multiple revenue streams	○	○	○	○	○	○	○	○
Potential to create brand recognition of the new venture's product or service	○	○	○	○	○	○	○	○
Potential to create long-term relationships with customers	○	○	○	○	○	○	○	○
Received positive media coverage	○	○	○	○	○	○	○	○
Access to effective distribution channels	○	○	○	○	○	○	○	○
Recognized the time taken to close a sale with potential customers	○	○	○	○	○	○	○	○
Potential for the new venture to provide a high level of customer service	○	○	○	○	○	○	○	○
Developed a strategy to create "mind share" of the new venture	○	○	○	○	○	○	○	○

Please select **Submit This Portion of the Survey** now to send your responses to us.

Characteristics of the New Venture's Offering (Product or Service)

A venture offering is a product or service that provides customers with a solution.
The following criteria relate to the characteristics of the new venture's offering.
Please indicate how important these were to you when deciding to invest in the new venture by:

- keeping in mind the same investment you selected at the outset of the survey, and
- assigning a rating on a scale from 1 to 7, where 1 represents "Not Important", 7 represents "Extremely Important" and N/A represents "Not Applicable".

Characteristics of the new venture's offering (product or service)	1 Not Important	2	3	4	5	6	7 Extremely Important	N/A
Venture offering has been developed as a functioning prototype	○	○	○	○	○	○	○	○
Venture offering is designed using proprietary core technology owned by the new venture	○	○	○	○	○	○	○	○
Venture offering has or can protect its intellectual property	○	○	○	○	○	○	○	○
Venture offering is designed on clear customers requirements	○	○	○	○	○	○	○	○
Venture offering is driven by market demand	○	○	○	○	○	○	○	○
Venture offering has a well-defined market niche	○	○	○	○	○	○	○	○
Venture offering has the potential to be sold in international markets	○	○	○	○	○	○	○	○
Venture offering is designed to be user-friendly	○	○	○	○	○	○	○	○
Venture offering has a well-defined product launch strategy	○	○	○	○	○	○	○	○
Venture offering can keep pace with changes in market needs	○	○	○	○	○	○	○	○
Venture offering is competitively priced	○	○	○	○	○	○	○	○
Venture offering is superior compared to competition	○	○	○	○	○	○	○	○
Venture offering reaches the market before its competitors	○	○	○	○	○	○	○	○
Venture offering is innovative	○	○	○	○	○	○	○	○

Please select **Submit This Portion of the Survey** now to send your responses to us.

Characteristics of the New Venture's Positioning Within its Competitive Environment

The following criteria relate to the new venture's industry and competition.
Please indicate how important these were to you when deciding to invest in the new venture by:

- keeping in mind the same investment you selected at the outset of the survey, and
- assigning a rating on a scale from 1 to 7, where 1 represents "Not Important", 7 represents "Extremely Important" and N/A represents "Not Applicable".

New venture's industry and competition	1 Not Important	2	3	4	5	6	7 Extremely Important	N/A
General trends within the industry	○	○	○	○	○	○	○	○
Potential to form partnerships with larger companies to accelerate the new venture's growth	○	○	○	○	○	○	○	○
Resources of current competitors	○	○	○	○	○	○	○	○
Ability of potential competitors to arise in the market	○	○	○	○	○	○	○	○
Anticipation of competition's likely response to the new venture's entrance into the market	○	○	○	○	○	○	○	○
Strategy of the new venture to respond to possible attack from competitors	○	○	○	○	○	○	○	○
Macro-economic factors affecting the new venture	○	○	○	○	○	○	○	○
Strategy to contend with changes in macro-economic factors affecting the new venture	○	○	○	○	○	○	○	○
Ability of team to recognize a change in the economic climate affecting the new venture	○	○	○	○	○	○	○	○

Please select **Submit This Portion of the Survey** now to send your responses to us.

Characteristics of the New Venture's Capital Payback Projections

The following criteria relate to the new venture's capital projections, risks and rewards. Please indicate how important these were to you when deciding to invest in the new venture by:

- keeping in mind the same investment you selected at the outset of the survey, and
- assigning a rating on a scale from 1 to 7, where 1 represents "Not Important", 7 represents "Extremely Important" and N/A represents "Not Applicable".

New venture's capital projections, risks and rewards	1 Not Important	2	3	4	5	6	7 Extremely Important	N/A
Projection of amount of venture capital required by the new venture	○	○	○	○	○	○	○	○
Amount of sales at which the new venture is profitable	○	○	○	○	○	○	○	○
Time taken to reach positive cash flow by the new venture	○	○	○	○	○	○	○	○
Projected profit margin of the new venture	○	○	○	○	○	○	○	○
Potential for an initial public offering (IPO) by the new venture	○	○	○	○	○	○	○	○
Potential for an acquisition of the new venture by a larger company	○	○	○	○	○	○	○	○
Agreement between the venture capitalist and management team regarding exit strategy for investors	○	○	○	○	○	○	○	○
Identification of technology related risks associated with the new venture	○	○	○	○	○	○	○	○
Identification of market related risks associated with the new venture	○	○	○	○	○	○	○	○
Identification of management team related risks associated with the new venture	○	○	○	○	○	○	○	○
Contingency plan developed by the new venture	○	○	○	○	○	○	○	○
Estimated cost of research and development	○	○	○	○	○	○	○	○
Estimated cost to acquire a new customer	○	○	○	○	○	○	○	○
Estimated cost to provide support to a new customer	○	○	○	○	○	○	○	○

Please select **Submit This Portion of the Survey** now to send your responses to us.

Characteristics of the New Venture's Business Plan

The following criteria relate to the characteristics of the new venture's business plan.
Please indicate how important these were to you when deciding to invest in the new venture by:

- keeping in mind the same investment you selected at the outset of the survey, and
- assigning a rating on a scale from 1 to 7, where 1 represents "Not Important", 7 represents "Extremely Important" and N/A represents "Not Applicable".

Characterisitcs of the new venture's business plan	**1 Not Important**	**2**	**3**	**4**	**5**	**6**	**7 Extremely Important**	**N/A**
Overall quality of the business plan	○	○	○	○	○	○	○	○
Clarity of the executive summary in the business plan	○	○	○	○	○	○	○	○
Presence of detailed biographies of the management team	○	○	○	○	○	○	○	○
Reflects the true thoughts of the management team	○	○	○	○	○	○	○	○
Describes facts trusted by the venture capitalist	○	○	○	○	○	○	○	○
Level of competitive analysis in the business plan	○	○	○	○	○	○	○	○
Level of customers needs analysis in the business plan	○	○	○	○	○	○	○	○
Level of market analysis in the business plan	○	○	○	○	○	○	○	○
Level of product or service analysis in the business plan	○	○	○	○	○	○	○	○
Presentation of a reasonable business model	○	○	○	○	○	○	○	○
Clarity of communication in the new venture's business plan	○	○	○	○	○	○	○	○
Conciseness of the business plan	○	○	○	○	○	○	○	○
Provision of realistic financial projections in the business plan	○	○	○	○	○	○	○	○

Please select **Submit This Portion of the Survey** now to send your responses to us.

Section -- Background Information

In this final section, you are requested to provide general background information regarding the new venture selected at the outset of this survey and yourself.

Please indicate the degree of importance of the following six categories of decision-making criteria when you were deciding to invest in the new venture by:

- keeping in mind the same investment you selected at the outset of the survey, and
- assigning a rating on a scale of 1 to 10, where 1 represents "Least Important" and 10 represents "Most Important".

Characteristics of the new venture's management team	
Characteristics of the new venture's target market	
Characteristics of the new venture's offering (product or service)	
Characteristics of the new venture's positioning within its competitive environment	
Characteristics of the new venture's capital payback projections	
Characteristics of the new venture's business plan	

What were the **sources from which the new venture's deal originated?** (*select all that apply*)

- ☐ Solicitation by the entrepreneur
- ☐ Networking events where entrepreneurs present their business plans
- ☐ Referral by a trustworthy source to the venture capitalist
- ☐ Entrepreneurs previously funded by a venture capital firm
- ☐ Other venture capitalists with whom co-investments have been made
- ☐ Affiliated venture capital firms
- ☐ Industry conferences
- ☐ Informal networking groups of venture capitalists
- ☐ Networking among venture capital firm's key contacts
- ☐ Senior executives of companies previously funded by a venture capital firm
- ☐ CEO of companies in venture capital firm's portfolio
- ☐ Contact with executives of multi-national companies
- ☐ Other

What were the **method(s) used to assess** the new venture? (*select all that apply*)

- ☐ Reading the business plan
- ☐ Meeting with the management team
- ☐ Comparing this case to cases of investments made previously

- ☐ Seeking advice from personal network of contacts
- ☐ Contacting references provided by the management team
- ☐ Seeking advice from a consultant paid by the venture capital firm
- ☐ Reading industry specific and market research reports
- ☐ Research prepared by an associate in the venture capital firm
- ☐ Using the Internet for research
- ☐ Other

How long did it take you to **informally screen the deal** from the new venture?
Screening is defined here as the stage at which the investment deal is assessed for the first time.

- ○ Minutes
- ○ Hours
- ○ Days
- ○ Weeks

How long did it take you to **formally evaluate the deal** from the new venture?
Evaluation is defined here as the due diligence conducted on an investment deal when deciding to invest in the new venture.

- ○ Days
- ○ Weeks
- ○ 1 Month
- ○ > 1 Month

Which **functional areas** were represented on the new venture's management team? (*select all that apply*)

- ☐ Technology
- ☐ Marketing
- ☐ Sales
- ☐ Finance
- ☐ Operations
- ☐ Business Development
- ☐ Other

Which individuals comprised the new venture's **Board of Directors**? (*select all that apply*)

- ☐ Founder(s) or Entrepreneur(s)
- ☐ CEO or President
- ☐ Management Team Member(s)
- ☐ Business Angel(s)
- ☐ Outside Director(s)

- ☐ Other Venture Capitalist(s)
- ☐ Other

What is your **age** range (in years)?

- ○ 20-30
- ○ 31-40
- ○ 41-50
- ○ 51-60
- ○ > 60

What is your **gender**?

- ○ Male
- ○ Female

How many years have you been **practicing as a venture capitalist?** (*select only one*)

- ○ 1-5
- ○ 6-10
- ○ 11-15
- ○ 16-20
- ○ > 20

What is your **level of education?** (*select all that apply*)

- ☐ Doctorate
- ☐ MD
- ☐ MBA
- ☐ Master's in Engineering
- ☐ Master's Degree
- ☐ Law Degree
- ☐ Bachelor's Degree
- ☐ College Degree
- ☐ Other

If there is anything else you would like to tell us about your decision-making criteria or about the process used in making investment decisions or if you have other comments, please use the space provided below.

Please provide us with your personal contact information so that we may send you a copy of the survey findings.

First Name

Last Name

Venture Capital Firm

E-mail Address

Telephone

Address

City

State

Zip Code

Country

Please select **Submit This Portion of the Survey** now to send your responses to us.

Survey Completed

Thank you for your participation in our research. Upon completion of the study, an executive summary will be developed and sent to you.

7.3 Telephone Script For Survey Recruiting

Hello Mr./Ms. [*Name of Venture Capitalist*]

I am Jagdeep Bachher, a Ph.D. Candidate in the Department of Management Sciences at the University of Waterloo in Canada.

I met you at [*state location and date of meeting*].

My purpose for calling you is to request your participation in a survey, which will form the basis of my doctoral thesis.

I am attempting to further the understanding of the investment criteria used by VCs.

You have been selected as one of the VCs.

My focus is on your decision to invest in technology-based new ventures at their early stages of financing.

Upon completion of the study, an executive summary will be developed and sent to you.

The survey will take approximately 30 minutes and can be completed online at www.VentureCapital2000.com.

Your answers will be kept strictly confidential. Individual identities and opinions will remain anonymous and all information collected will be presented in an aggregate manner.

This project has been reviewed by, and received ethics clearance through, the Office of Research Ethics at the University of Waterloo.

Thank you for agreeing to participate in this study.

7.4 Survey Email Letter

[Insert Date]

[Insert Name of Venture Capitalist]
[Insert Title]
[Insert Name of Venture Capital Firm]
[Insert Address]

Dear [Mr./Ms.] [Last Name of Venture Capitalist]:

Survey of Decision-Making Criteria Used by Venture Capitalists

Thank you for agreeing to participate in this survey. The objective of this study is to further the understanding of the decision-making criteria used by venture capitalists. Our focus is on your decision to invest in technology-based new ventures at their early stages of financing. Upon completion of the study, an executive summary will be developed and distributed to the study's participants. We will notify you when this document becomes available.

I am a Doctoral Candidate in the Department of Management Sciences at the University of Waterloo and am conducting this research with Dr. Paul Guild, Director of the Institute for Innovation Research (IIR). The results of this research will serve as the basis for my Doctoral thesis.

The survey will take approximately 15-30 minutes and can be completed online by directing your web browser to the following URL - http://www.VentureCapital2000.com. Of course, you can omit any question you prefer not to answer, but for the survey to be helpful, it is important that you answer each question as carefully and as frankly as possible. We are interested in your opinions.

Your answers will be kept strictly confidential. Individual identities and opinions will remain anonymous and all information collected will be presented in an aggregate manner.

Please feel free to contact me with any questions concerning the research process or scope of the work. This project has been reviewed by, and received ethics clearance through, the Office of Research Ethics at the University of Waterloo. If you have any questions or concerns resulting from your participation, please contact this office at (519) 888-4567 Ext. 6005.

Thank you for participating in our research.

Sincerely,

Jagdeep Bachher
Doctoral Candidate
Department of Management Sciences
(519) 741-6874
jagdeep@uwaterloo.ca

Dr. Paul Guild
Professor of Management Sciences
Director, Institute for Innovation Research
University of Waterloo
Waterloo, Ontario
Canada N2L 3G1
(519) 888-4802

7.5 Follow Up Thank You Card

Thank you for participating in the
"Survey of Decision-Making Criteria Used by
Venture Capitalists"

@

www.venturecapital2000.com

Please complete the survey by Friday, July 16, 1999.

Jagdeep Bachher
Doctoral Candidate
(519) 741-6874
jagdeep@uwaterloo.ca

University of Waterloo

7.6 Survey # 2 – Tangibility of Investment Criteria

Survey of Decision-Making Criteria Used by Venture Capitalists

Statement of Confidentiality

The information you provide will be held in the strictest confidence. We will neither publish, release, nor disclose any information on, or identifiable with, individual venture capitalists, or venture capital firms.

This project has been reviewed by, and received ethics clearance through, the Office of Research Ethics at the University of Waterloo. If you have any questions or concerns resulting from your participation, please contact this office at (519) 888-4567 Ext. 6005.

INSTRUCTIONS

Thank you for agreeing to participate in our survey of decision-making criteria used by venture capitalists.

This survey is designed to be answered by venture capitalists. It is comprised of two sections:

- **"Decision-Making Criteria"** asks how you, as a venture capitalist, use specific decision-making criteria when you made an investment decision in an early stage technology-based new venture.
    - For each of the criterion presented, please select it as either being more tangible or more intagible in nature.
- **"Background Information"** requests that you provide general information about yourself and the investment you made in a new venture.

We define key terms used in this survey as follows:

- Technology-Based New Ventures are companies intending to commercialize a technology-based product or service for the first time and thereby expecting to derive a significant source of competitive advantage from the technology. Examples might include software, communications, or Internet companies.
- Early stages include seed, start-up, and first stages of financing.
    - Seed-stage financing is capital required to prove a concept and is used for developing a prototype.
    - Start-up financing is capital provided for product development and test marketing.
    - First-stage financing is capital required when the company has started to sell its product or service, but requires additional funds to undertake full commercial production and sales.
- Tangible criterion implies an aspect of the new venture that can be readily perceived, or is capable of being appraised at an actual or approximate value.
- Intagible criterion implies an aspect of the new venture that **can not** be readily perceived, or is **not** capable of being appraised at an actual or approximate value.

While completing this survey, please keep in mind any one specific investment you made in a new venture:

- **within the last 12 months,**
- **that is technology-based,**
- **in its early stages of financing.**

Please provide us with **your email address** so that we may send you a copy of the survey findings.

Please answer each question based on your best estimate of the decision-making criteria associated with the above new venture. On the basis of pretests, we have found that venture capitalists typically require about 30 minutes to complete this survey.

YOUR RESPONSE IS VERY IMPORTANT TO US. If we can assist you in any way, or if you have any questions or comments, please contact:

Jagdeep Bachher
Doctoral Candidate
Department of Management Sciences
University of Waterloo
Waterloo, Ontario
Canada N2L 3G1
Tel. (519) 888-4567 Ext. 5240
jagdeep@uwaterloo.ca

Paul Guild
Director, Institute for Innovation Research
Department of Management Sciences
University of Waterloo
Waterloo, Ontario
Canada N2L 3G1
Tel. (519) 888-4802
guild@iir.uwaterloo.ca

Please select **Submit This Portion of the Survey** now to send your responses to us.

Section -- Decision-Making Criteria

In this section, please indicate how tangible or intagible the specific decision-making criteria were when you were deciding to make the investment in the early stage technology-based new venture.

Categories of Decision-Making Criteria

The decision-making criteria sometimes used when assessing the new venture have been grouped into six categories. **Please indicate the degree of importance in which you may have considered the six categories when deciding to make the investment in the new venture by:**

- keeping in mind the same investment you selected at the outset of the survey,
- selecting the degree of importance from "Consider it first" to "Consider it last",
- "Consider it first" implies that the category was considered first, and the most important to your decision to invest in the new venture,
- "Consider it last" implies that the category was considered last, and the least important to your decision to invest in the new venture,
- selecting a unique order of importance for each category

Characteristics of the new venture's offering (product or service)	
Characteristics of the new venture's capital payback projections	
Characteristics of the new venture's management team	
Characteristics of the new venture's business plan	
Characteristics of the new venture's positioning within its competitive environment	
Characteristics of the new venture's target market	

Please select **Submit This Portion of the Survey** now to send your responses to us.

Characteristics of the New Venture's Offering (Product or Service)

A venture offering is a product or service that provides customers with a solution.
The following criteria relate to the characteristics of the new venture's offering.
Please indicate how tangible or intangible these were to you when deciding to invest in the new venture by:

- keeping in mind the same investment you selected at the outset of the survey, and
- assigning a rating on a scale from 1 to 7, where 1 represents "Extremely Intangible", 7 represents "Extremely Tangible" and N/A represents "Not Applicable".

Characteristics of the new venture's offering (product or service)	**1 Extremely Intangible**	**2**	**3**	**4**	**5**	**6**	**7 Extremely Tangible**	**N/A**
Venture offering has been developed as a functioning prototype	○	○	○	○	○	○	○	○
Venture offering is designed using proprietary core technology owned by the new venture	○	○	○	○	○	○	○	○
Venture offering has or can protect its intellectual property	○	○	○	○	○	○	○	○
Venture offering is designed on clear customer requirements	○	○	○	○	○	○	○	○
Venture offering is driven by market demand	○	○	○	○	○	○	○	○
Venture offering has a well-defined market niche	○	○	○	○	○	○	○	○
Venture offering has the potential to be sold in international markets	○	○	○	○	○	○	○	○
Venture offering is designed to be user-friendly	○	○	○	○	○	○	○	○
Venture offering has a well-defined product launch strategy	○	○	○	○	○	○	○	○
Venture offering can keep pace with changes in market needs	○	○	○	○	○	○	○	○
Venture offering is competitively priced	○	○	○	○	○	○	○	○
Venture offering is superior compared to that of the competition	○	○	○	○	○	○	○	○
Venture offering reaches the market before that of its competitors	○	○	○	○	○	○	○	○
Venture offering is innovative	○	○	○	○	○	○	○	○

Please select **Submit This Portion of the Survey** now to send your responses to us.

Characteristics of the New Venture's Capital Payback Projections

The following criteria relate to the new venture's capital projections, risks, and rewards. Please indicate how tangible or intangible these were to you when deciding to invest in the new venture by:

- keeping in mind the same investment you selected at the outset of the survey, and
- assigning a rating on a scale from 1 to 7, where 1 represents "Extremely Intangible", 7 represents "Extremely Tangible" and N/A represents "Not Applicable".

New venture's capital projections, risks, and rewards	1 Extremely Intangible	2	3	4	5	6	7 Extremely Tangible	N/A
Projection of amount of venture capital required by the new venture	○	○	○	○	○	○	○	○
Amount of sales at which the new venture is profitable	○	○	○	○	○	○	○	○
Time taken to reach positive cash flow by the new venture	○	○	○	○	○	○	○	○
Projected profit margin of the new venture	○	○	○	○	○	○	○	○
Potential for an initial public offering (IPO) by the new venture	○	○	○	○	○	○	○	○
Potential for an acquisition of the new venture by a larger company	○	○	○	○	○	○	○	○
Agreement between the venture capitalist and management team regarding exit strategy for investors	○	○	○	○	○	○	○	○
Identification of technology related risks associated with the new venture	○	○	○	○	○	○	○	○
Identification of market related risks associated with the new venture	○	○	○	○	○	○	○	○
Identification of management team related risks associated with the new venture	○	○	○	○	○	○	○	○
Contingency plan developed by the new venture	○	○	○	○	○	○	○	○
Estimated cost of research and development	○	○	○	○	○	○	○	○
Estimated cost to acquire a new customer	○	○	○	○	○	○	○	○
Estimated cost to provide support to a new customer	○	○	○	○	○	○	○	○

Characteristics of the New Venture's Management Team

The following criteria relate to the ability of the management team.
Please indicate how tangible or intangible these were to you when deciding to invest in the new venture by:

- keeping in mind the same investment you selected at the outset of the survey, and
- assigning a rating on a scale from 1 to 7, where 1 represents "Extremely Intangible", 7 represents "Extremely Tangible" and N/A represents "Not Applicable".

Ability of the management team	1 Extremely Intangible	2	3	4	5	6	7 Extremely Tangible	N/A
Ability to recruit people for the new venture's team	○	○	○	○	○	○	○	○
Ability to create value for future shareholders	○	○	○	○	○	○	○	○
Ability to create high standards of team performance	○	○	○	○	○	○	○	○
Ability to reward performance fairly	○	○	○	○	○	○	○	○
Ability to manage cash flow conservatively	○	○	○	○	○	○	○	○
Ability to follow through on a strategy	○	○	○	○	○	○	○	○
Ability to be flexible with the new venture's strategy	○	○	○	○	○	○	○	○
Ability to anticipate need for a change of strategy in the new venture	○	○	○	○	○	○	○	○
Ability to effectively manage change within the new venture	○	○	○	○	○	○	○	○
Ability to accept a change in roles as the evolving new venture requires	○	○	○	○	○	○	○	○
Ability to respond positively to constructive criticism from others	○	○	○	○	○	○	○	○
Ability to anticipate problems early in the new venture	○	○	○	○	○	○	○	○
Ability to discuss risks facing the new venture among team members	○	○	○	○	○	○	○	○
Ability to create a work environment that fosters knowledge sharing within the team	○	○	○	○	○	○	○	○
Ability to seek and learn from the competencies of mentors	○	○	○	○	○	○	○	○
Ability to sustain high intensity work in the new venture	○	○	○	○	○	○	○	○
Ability to encourage the team to be decisive on issues	○	○	○	○	○	○	○	○

Ability to encourage the team to be results-oriented	○	○	○	○	○	○	○	○
Ability to learn from mistakes made as the new venture evolves	○	○	○	○	○	○	○	○
Ability to place the new venture in a position of market leadership	○	○	○	○	○	○	○	○
Ability to create a superior product or service compared to that of the competition	○	○	○	○	○	○	○	○
Ability to focus on customer needs	○	○	○	○	○	○	○	○
Ability to reject a deal that may be unfavorable to the new venture	○	○	○	○	○	○	○	○
Ability to adhere to ethical business practices	○	○	○	○	○	○	○	○
Ability to focus the new venture on building "core competencies" that may yield a competitive advantage	○	○	○	○	○	○	○	○

The following criteria relate to the background, experience, and general characteristics of the management team.
Please indicate how tangible or intangible these were to you when deciding to invest in the new venture by:

- keeping in mind the same investment you selected at the outset of the survey, and
- assigning a rating on a scale from 1 to 7, where 1 represents "Extremely Intangible", 7 represents "Extremely Tangible" and N/A represents "Not Applicable".

Background, experience, and general characteristics of the management team	**1 Extremely Intangible**	**2**	**3**	**4**	**5**	**6**	**7 Extremely Tangible**	**N/A**
The management team's shared commitment to a vision of the new venture	○	○	○	○	○	○	○	○
The management team's recognition of chances of failure	○	○	○	○	○	○	○	○
The management team's commitment to technical excellence	○	○	○	○	○	○	○	○
The management team's understanding of the instability of new ventures	○	○	○	○	○	○	○	○
The management team's extent of personal contacts within the business community	○	○	○	○	○	○	○	○
The management team's reputation within the business community	○	○	○	○	○	○	○	○
The management team's compatibility with the venture capitalist(s)	○	○	○	○	○	○	○	○
The management team's educational background	○	○	○	○	○	○	○	○

The management team's entrepreneurial experience in a prior venture	○	○	○	○	○	○	○	○
The management team's leadership experience	○	○	○	○	○	○	○	○
The management team's personal accomplishments	○	○	○	○	○	○	○	○
The management team's experience in working together in a prior venture	○	○	○	○	○	○	○	○
The management team's previous work-related experience within the industry sector of the new venture	○	○	○	○	○	○	○	○
The management team's willingness to accept risk related to the new venture	○	○	○	○	○	○	○	○
The management team's level of commitment to the success of the new venture	○	○	○	○	○	○	○	○
The management team's sense of urgency regarding the new venture	○	○	○	○	○	○	○	○

The following criteria relate to the skills within the management team.
Please indicate how tangible or intangible these were to you when deciding to invest in the new venture by:

- keeping in mind the same investment you selected at the outset of the survey, and
- assigning a rating on a scale from 1 to 7, where 1 represents "Extremely Intangible ", 7 represents "Extremely Tangible" and N/A represents "Not Applicable".

Skills within the management team	1 Extremely Intangible	2	3	4	5	6	7 Extremely Tangible	N/A
Communication skills	○	○	○	○	○	○	○	○
Marketing skills	○	○	○	○	○	○	○	○
Sales skills	○	○	○	○	○	○	○	○
Technical skills	○	○	○	○	○	○	○	○
Research and development skills	○	○	○	○	○	○	○	○
Product development skills	○	○	○	○	○	○	○	○
Project management skills	○	○	○	○	○	○	○	○
Finance skills	○	○	○	○	○	○	○	○
Negotiation skills	○	○	○	○	○	○	○	○

Please select **Submit This Portion of the Survey** now to send your responses to us.

Characteristics of the New Venture's Business Plan

The following criteria relate to the characteristics of the new venture's business plan. Please indicate how tangible or intangible these were to you when deciding to invest in the new venture by:

- keeping in mind the same investment you selected at the outset of the survey, and
- assigning a rating on a scale from 1 to 7, where 1 represents "Extremely Intangible", 7 represents "Extremely Tangible" and N/A represents "Not Applicable".

Characteristics of the new venture's business plan	**1 Extremely Intangible**	**2**	**3**	**4**	**5**	**6**	**7 Extremely Tangible**	**N/A**
Overall quality of the business plan	○	○	○	○	○	○	○	○
Clarity of the executive summary in the business plan	○	○	○	○	○	○	○	○
Presence of detailed biographies of the management team	○	○	○	○	○	○	○	○
Reflects the true thoughts of the management team	○	○	○	○	○	○	○	○
Describes facts trusted by the venture capitalist	○	○	○	○	○	○	○	○
Level of competitive analysis in the business plan	○	○	○	○	○	○	○	○
Level of customer needs analysis in the business plan	○	○	○	○	○	○	○	○
Level of market analysis in the business plan	○	○	○	○	○	○	○	○
Level of product or service analysis in the business plan	○	○	○	○	○	○	○	○
Presentation of a reasonable business model	○	○	○	○	○	○	○	○
Clarity of communication in the new venture's business plan	○	○	○	○	○	○	○	○
Conciseness of the business plan	○	○	○	○	○	○	○	○
Provision of realistic financial projections in the business plan	○	○	○	○	○	○	○	○

Please select **Submit This Portion of the Survey** now to send your responses to us.

Characteristics of the New Venture's Positioning Within its Competitive Environment

The following criteria relate to the new venture's industry and competition.
Please indicate how tangible or intangible these were to you when deciding to invest in the new venture by:

- keeping in mind the same investment you selected at the outset of the survey, and
- assigning a rating on a scale from 1 to 7, where 1 represents "Extremely Intangible", 7 represents "Extremely Tangible" and N/A represents "Not Applicable".

New venture's industry and competition	1 Extremely Intangible	2	3	4	5	6	7 Extremely Tangible	N/A
General trends within the industry	○	○	○	○	○	○	○	○
Potential to form partnerships with larger companies to accelerate the new venture's growth	○	○	○	○	○	○	○	○
Resources of current competitors	○	○	○	○	○	○	○	○
Ability of potential competitors to arise in the market	○	○	○	○	○	○	○	○
Anticipation of the competition's likely response to the new venture's entrance into the market	○	○	○	○	○	○	○	○
Strategy of the new venture to respond to possible attack from competitors	○	○	○	○	○	○	○	○
Macro-economic factors affecting the new venture	○	○	○	○	○	○	○	○
Strategy to contend with changes in macro-economic factors affecting the new venture	○	○	○	○	○	○	○	○
Ability of the team to recognize a change in the economic climate affecting the new venture	○	○	○	○	○	○	○	○

Please select **Submit This Portion of the Survey** now to send your responses to us.

Characteristics of the New Venture's Target Market

The following criteria relate to the characteristics of the new venture's target market. Please indicate how tangible or intangible these were to you when deciding to invest in the new venture by:

- keeping in mind the same investment you selected at the outset of the survey, and
- assigning a rating on a scale from 1 to 7, where 1 represents "Extremely Intangible", 7 represents "Extremely Tangible" and N/A represents "Not Applicable".

Characteristics of the new venture's target market	**1 Extremely Intangible**	**2**	**3**	**4**	**5**	**6**	**7 Extremely Tangible**	**N/A**
Potential to be the first within its target market	○	○	○	○	○	○	○	○
Ability to create a new market niche	○	○	○	○	○	○	○	○
Identified the potential customers targeted by the new venture	○	○	○	○	○	○	○	○
Projected the market size to be captured by the new venture	○	○	○	○	○	○	○	○
Projected the new venture's market growth rate	○	○	○	○	○	○	○	○
Ability to develop competitive pricing of product or service	○	○	○	○	○	○	○	○
Ability to generate multiple revenue streams	○	○	○	○	○	○	○	○
Potential to create brand recognition of the new venture's product or service	○	○	○	○	○	○	○	○
Potential to create long-term relationships with customers	○	○	○	○	○	○	○	○
Received positive media coverage	○	○	○	○	○	○	○	○
Access to effective distribution channels	○	○	○	○	○	○	○	○
Recognized the time taken to close a sale with potential customers	○	○	○	○	○	○	○	○
Potential for the new venture to provide a high level of customer service	○	○	○	○	○	○	○	○
Developed a strategy to create "mind share" of the new venture	○	○	○	○	○	○	○	○

Please select **Submit This Portion of the Survey** now to send your responses to us.

[redacted]

Section -- Background Information

In this final section, you are requested to provide general background information regarding both the new venture selected at the outset of this survey and yourself.

Please indicate the degree of importance of the following six categories of decision-making criteria when you were deciding to invest in the new venture by:

- keeping in mind the same investment you selected at the outset of the survey, and
- assigning a rating on a scale of 1 to 10, where 1 represents "Least Important" and 10 represents "Most Important".

Characteristics of the new venture's target market	
Characteristics of the new venture's business plan	
Characteristics of the new venture's positioning within its competitive environment	
Characteristics of the new venture's management team	
Characteristics of the new venture's offering (product or service)	
Characteristics of the new venture's capital payback projections	

What were the **sources from which the new venture's deal originated?** (*select all that apply*)

- ☐ Solicitation by the entrepreneur
- ☐ Networking events where entrepreneurs present their business plans
- ☐ Referral by a trustworthy source to the venture capitalist
- ☐ Entrepreneurs previously funded by a venture capital firm
- ☐ Other venture capitalists with whom co-investments have been made
- ☐ Affiliated venture capital firms
- ☐ Industry conferences
- ☐ Informal networking groups of venture capitalists
- ☐ Networking among the venture capital firm's key contacts
- ☐ Senior executives of companies previously funded by a venture capital firm
- ☐ CEO of companies in the venture capital firm's portfolio
- ☐ Contact with executives of multi-national companies
- ☐ Other

What were the **method(s) used to assess** the new venture? (*select all that apply*)

- ☐ Reading the business plan
- ☐ Meeting with the management team
- ☐ Comparing this case to cases of investments made previously

- ☐ Seeking advice from a personal network of contacts
- ☐ Contacting references provided by the management team
- ☐ Seeking advice from a consultant paid by the venture capital firm
- ☐ Reading industry specific and market research reports
- ☐ Research prepared by an associate in the venture capital firm
- ☐ Using the Internet for research
- ☐ Other

How long did it take you to **informally screen the deal** from the new venture?
Screening is defined here as the stage at which the investment deal is assessed for the first time.

- ○ Minutes
- ○ Hours
- ○ Days
- ○ Weeks

How long did it take you to **formally evaluate the deal** from the new venture?
Evaluation is defined here as the due diligence conducted on an investment deal when deciding to invest in the new venture.

- ○ Days
- ○ Weeks
- ○ 1 Month
- ○ > 1 Month

Which **functional areas** were represented on the new venture's management team? (*select all that apply*)

- ☐ Technology
- ☐ Marketing
- ☐ Sales
- ☐ Finance
- ☐ Operations
- ☐ Business Development
- ☐ Other

Which individuals comprised the new venture's **Board of Directors**? (*select all that apply*)

- ☐ Founder(s) or Entrepreneur(s)
- ☐ CEO or President
- ☐ Management Team Member(s)
- ☐ Business Angel(s)
- ☐ Outside Director(s)

- [ ] Other Venture Capitalist(s)
- [ ] Other

What is your **age** range (in years)?

- ○ 20-30
- ○ 31-40
- ○ 41-50
- ○ 51-60
- ○ > 60

What is your **gender**?

- ○ Male
- ○ Female

How many years have you been **practicing as a venture capitalist?** (*select only one*)

- ○ 1-5
- ○ 6-10
- ○ 11-15
- ○ 16-20
- ○ > 20

What is your **level of education?** (*select all that apply*)

- [ ] Doctorate
- [ ] MD
- [ ] MBA
- [ ] Master's in Engineering
- [ ] Master's Degree
- [ ] Law Degree
- [ ] Bachelor's Degree
- [ ] College Degree
- [ ] Other

If there is anything else you would like to tell us about your decision-making criteria or about the process used in making investment decisions or if you have other comments, please use the space provided below.

Please provide us with your personal contact information so that we may send you a copy of the survey findings.

First Name

Last Name

Venture Capital Firm

E-mail Address

Telephone

Address

City

State

Zip Code

Country

Please select **Submit This Portion of the Survey** now to send your responses to us.

Survey Completed

Thank you for your participation in our research. Upon completion of the study, an executive summary will be developed and sent to you.

7.7 Investment Technology Network Inc.

Investment Technology Network Inc. (ITN), a private venture capital firm located in Waterloo, Ontario, focuses on investing in technology-based new Internet companies. ITN was founded on March 11, 1994 to create a network of entrepreneurs, investors, and others interested in the issues related to financing the "new economy." Decision-makers in organizations financing technology-based new ventures identified the need to better understand the investment criteria. This need stemmed from the fact that the assets of this type of company were primarily intangible and thus difficult to measure and evaluate.

The firm, originally named Investment and Technology Forum (ITF) was set up as a partnership among Doug Bierer, Abdul Kassim, and the author (founder). The organization's mission was:

> *To create, educate, inform, and provide services to a strategic network of entrepreneurs, investors, and organizations interested in the financing of knowledge-intensive and technology-based ventures in the new economy.*

The company provided a monthly seminar with a keynote speaker who addressed a topic related to the organization's mission. ITF held 16 seminars from March 1994 to January 1996. Attendees included investors (business angels, private VCs, public venture capital funds), academics, entrepreneurs, and representatives from banks and other organizations who acted as intermediaries between investors and entrepreneurs such as accountants, consultants, and lawyers. The network grew from just over 20 people to over 1000 people by January 1996 (those who had attended the networking events during this period). ITF was the first of its kind in Canada's Technology Triangle (CTT), the "high-tech areas" bounding Kitchener, Waterloo, Cambridge, and Guelph in Ontario.

The company was financed by the partners and generated revenues from registration fees for the seminars. In June 1995, ITF entered into a strategic alliance with Osler, Hoskin and Harcourt (Ottawa), one of Canada's larger law firms. Kent Plumley, the Chairperson of

Osler's intellectual property group, was organizing similar networking events in Ottawa, known as Technology Law Group. He first learned about ITN through an article on the company in *Canadian R&D News* and flew in from Ottawa to specifically attend an ITN event in Waterloo. He later approached ITF with the idea of forming an alliance with TLG. Both groups had similar ideas yet a different geographic focus. The alliance made sense to both groups, and after ITN's presentation of the concept of a merged company to other partners of Osler, the initiative was approved. This alliance enabled an expansion of the networking events across Canada in an attempt to create a more national network. Osler, Hoskin & Harcourt, who lent credibility to ITF's events, sponsored the network's launch in Ottawa (another high-tech center in Canada).

As a result of networking events, the partners of ITF also received an average of ten potential deals per month from entrepreneurs of technology-based new ventures that were seeking financing for their companies. In September 1995, ITF's partners began to develop a strategic plan for the company with the help of the Advisory Board. They reached the conclusion that there was a need for a private venture capital firm in the CTT, which would focus on technology-based new ventures. Consequently, ITF developed a second business plan over the next few months (September 1995 to December 1995). During the networking events, the author focused on better understanding the investment criteria used by leading Canadian and international investors in technology-based and knowledge-intensive companies.

In January 1996, ITF was renamed "Investment Technology Network" (ITN). As a venture capital firm, this network's mandate was to invest in technology-based new ventures. The firm's mission was:

To become the KPCB of the North.

Developing the business plan for ITN required:

- A management team (the general partners of the firm)
- An investment fund
- A deal flow of investment opportunities.

One of the main responsibilities of the founders of ITN was to recruit the managing general partners of the firm. A general partner is responsible for managing the fund, seeking deals, screening and evaluating investment opportunities, recommending deals to the other general partners, and managing their investments. The firm needed a group of partners with the following:

1. An understanding of new and emerging technologies
2. An understanding of corporate governance
3. Credibility in the investment community
4. An understanding of the Internet and its associated business models
5. Previous experience investing in private companies at the early stages
6. Management experience in large technology-based ventures
7. Extensive networking experience in the business community.

The founders approached each member of the advisory board individually and, having worked with them for six months to one year, discussed the possibility of him/her becoming a general partner. In February 1996, in addition to one of the three original founders of ITN, each of the three advisory board members became general partners of ITN.

On June 28, 1996, ITN was incorporated. Doug Bierer (one of the three early partners of ITF) resigned from all operational duties, and remained a shareholder in the fund. The second partner of ITF, Abdul Kassim, continued to be involved in ITN until August 1996, at which time he resigned. The three partners of ITF who started the company owned just over 51% of ITN. Two of the general partners were appointed to manage all day-to-day operations. The shareholders nominated and approved a slate of directors including Patrick Lavelle, Kent Plumley, Malcolm Gissing and the remaining founder.

ITN developed a business model for raising investment capital for its portfolio companies on a case basis from its network of preferred investors. Each of the preferred investors would subscribe to ITN and pay fees for being part of the preferred network of investors. The operations of ITN would be funded by the subscription fees and the firm would retain 30% of the capital gains realized from its investments after returning the principal to limited partners.

ITN was responsible for managing all its investments. In order to execute this plan, ITN approached potential investors between November 1995 and May 1996. The business plan presented to potential investors described the objectives of the firm and a strategic plan to create a return on their investment; it clearly expressed the risks involved. The firm was created as a limited partnership and a total of $100,000 was raised from six individual preferred investors in subscription fees by May 1996.

The individuals invested in the fund based on the:

- Prior working relationships with the partners of ITN
- Credibility of the Advisory Board of ITN
- Knowledge of the firm in the area of investment decision making in technology-based new ventures
- Attractiveness of the opportunity to invest in technology-based new ventures (high return potential)
- Willingness and ability to risk 100% loss of their investment in ITN
- Trust and integrity placed in the partners and Board of ITN
- Technical knowledge of the partners of ITN
- Experience of Malcolm Gissing, the former Chairman and CEO of Canadian Venture Founders, a $20 million early-stage venture capital firm
- Interest in investing in early-stage technology-based companies
- Participation in an exclusive group that had an attractive deal flow from entrepreneurs
- Willingness to take advantage of a network already created by the partners of ITN
- Perceived success of ITN in attracting a network and the attention of entrepreneurs.

Some investors did not invest in ITN for the following reasons:

- Perceived lack of experience and track record of some of the partners who were investing
- Perceived risk involved in investing at the early stages
- Perceived lack of knowledge in making investment decisions in technology-based new ventures
- Lack of comfort in the skills of some of the partners.

The network of the partners of ITN was the single largest source of deals. Deals were referred to ITN from business angels, banks, universities, entrepreneurs (in the CTT, Ottawa, Toronto and surrounding areas), and research organizations. The firm started to receive an average of five potential deals daily in the Internet area. In mid-1993, the commercial acceptance of the Internet began to emerge. Entrepreneurs were creating Internet companies on a global basis and challenging larger well-established companies. Young entrepreneurs in their late 20s and early 30s were starting many of these Internet companies. Consequently, in 1996, the partners at ITN began to focus exclusively on deals in the Internet space and to seek out investment opportunities.

7.8 Salient Investment Criteria Based on Stage # 2

The investment criteria summarized below reflect the learning from the case study of Avenir Internet Solutions Inc. and the investments from Investment Technology Network Inc. and ITEX Corporation.

1. Knowledge of potential customers' needs
2. Understanding of market trends, size, growth rate, and potential competition
3. Flexibility with strategy based on rapidly changing market needs
4. Passion and confidence in a vision for the new venture
5. Willingness to take risks in the new venture
6. Personal compatibility with the VCs
7. Strong people networking skills
8. Negotiation skills
9. Reputation within the business community
10. High level of commitment to the success of the new venture
11. Ability to generate excitement about the new venture among potential customers
12. Ability to develop a unique business model which differentiates the venture in the market
13. Ability to recognize an opportunity in the market and exploit it
14. Ability to develop effective barriers to entry for potential competition
15. Ability to develop clear competitive advantages in the market
16. Ability to sell the value proposition of the venture offering to potential customers
17. Ability to position the new venture as first-to-market
18. Ability to attract positive media coverage on the new venture
19. Ability to establish the new venture as a leader in its industry
20. Ability to communicate the risks to investors, employees, and customers
21. Ability to develop realistic financial projections for the new venture
22. Ability to involve the investors actively in the new venture
23. Ability to build a credible Board of Advisors and Directors
24. Ability to motivate employees through stock option programs
25. Ability to develop a prototype based on customer requirements

26. Ability to learn from mentors
27. Ability to manage challenging situations presented in the new venture
28. Ability to understand the dynamics of the entrepreneurial work environment
29. Ability to provide references to customers, employees, and potential investors
30. Ability to manage the expectations of investors, customers, and employees
31. Ability to recruit a qualified and impressive management team
32. Ability to recruit an outstanding development team
33. Ability to treat team members fairly
34. Ability to enforce ethical business practices
35. Ability to set up strategic partnerships with larger companies
36. Ability to communicate the importance of the Board of Directors credibility.