VENTURE CAPITAL:

THE DECISION TO FINANCE

TECHNICALLY-BASED ENTERPRISES

by

EUGENE FREDERICK BRISKMAN

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Signature of Author..
Alfred P. Sloan School of Management, May 20, 1966

Certified by..
Thesis Supervisor

Accepted by..
Chairman, Departmental Committee on Graduate Students

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Submitted to the Alfred P. Sloan School of Management on May 20, 1966, in partial fulfillment of the requirements for the degree of Master of Science.

ABSTRACT

This thesis is a study of the decision-making process of a venture capitalist in financing technically-based enterprises. The study examines the sources of the venture capitalist's investment opportunites, the information sought in evaluating the investment opportunities, the sources of this information, the methods by which the venture capitalist evaluates the information and the criteria with which the venture capitalist makes the investment decision. The thesis also compares the venture capitalist's decision criteria with criteria found meaningfully related to technical enterprise success, by two studies of M.I.T. "spin-off" companies.

This thesis provides all participants in the venture capital industry with a better understanding of the factors that influence the venture capital investment decision. It provides the entrepreneur with information which will allow him to make better decisions on when to enter the financial market and on how to ensure success in securing capital support. It provides the venture capitalist with information from which he can better evaluate the competence of his decision-making process.

The venture capitalist studied has a two-phase decision process. In the initial phase, the search procedure is centered around determining if the market and product are of interest and if the entrepreneurs are capable. Little time is spent in the investigation and the decision of whether to reject the investment opportunity or continue into the second-phase investigation is made rather informally by the investigator and his supervisor.

The second-phase investigation involves an in depth study of the educational and career background of the entrepreneur, the entreprenuer's personality characteristics, the technical capabilities of the company's product, the quality of its personnel, its approach to marketing, the product's ability to serve the intended market, the market's growth potential both from a technical and sales volume standpoint, the intended uses of the financing and the risk associated with the investment.

To obtain this information the venture capitalist meets with the entrepreneurs, contacts the entrepreneur's former supervisors and industrial peers, speaks to company customers, contacts competitors, when possible, has competent technical people evaluate the product and internally evaluates the investment opportunity. Based on information thus obtained, the venture capitalist's operating management makes the invest-no invest decision and then seeks final approval from the board of directors.

Fron an examination of twenty-four of the venture capitalist's second-phase investment decisions, the author has determined characteristics which differentiate accepted companies from rejected companies. It appears that the frequency with which a source brings investment opportunies to the venture capitalist plays a part in the investment decision. That is, a company brought by a frequent source is more likely to receive the financial backing of this venture capitalist.

The venture capitalist prefers companies having a group rather than a single founder. The entrepreneurs should have had previous industrial experience in technical areas closely related to the areas of interest of the new company. It is preferred that some of this experience be in administrative and managerial activities. The venture capitalist wants the entrepreneurs to consider capital appreciation as the primary reason for going into their own businesses.

This venture capitalist will not consider a company that is not in production. It expects the company's product to be derived from new technology and for the company to maintain a service oriented approach to marketing. The venture capitalist prefers that a company concentrate on the development and marketing of one product at a time.

The venture capitalist requires some form of equity participation, either immediate of in the future through convertible debentures or notes with warrants. It prefers investments for product development needs.

The venture capitalist's criteria for investment, in general, agree with the criteria found by previous studies to be meaningfully related to technical company success.

Thesis Advisor: Edward B. Roberts

Title: Associate Professor of Industrial Management

May 20, 1966

Professor William C. Greene
Secretary of the Faculty
Massachusetts Institute of Technology
Cambridge, Massachusetts 02139

Dear Professor Greene:

In accordance with the requirements for graduation, I herewith submit a thesis entitled "Venture Capital: The Decision to Finance Technically Based Enterprises".

I would like to take this opportunity to thank the management and staff of Venture Capital Incorporated for allowing me to make the study and also for the full cooperation extended to me during the data gathering phase. Former V.C.I. personnel were also extremely helpful in the data gathering phase of the study.

I am indebted to Professor Edward B. Roberts, my thesis supervisor, for his enthusiasm, counsel and supervision during all phases of the study. Thanks are also due Mr. Richard S. Morse, my thesis committeeman, for his many suggestions and for his genuine interest.

Mr. Herbert A. Wainer contributed greatly to this study, from its inception to this final presentation. Mr. Dean A. Forseth was of great help in the statistical analysis phase. To them both I owe a great deal. I would also like to thank Miss Cynthia Schneider for her secretarial assistance.

Finally, I wish to dedicate this thesis to my parents, Max and Frances Briskman. Their enthusiasm and interest will always be remembered.

Sincerely yours,

Eugene F. Briskman

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CHAPTER 1

INTRODUCTION

In recent years, the business-oriented academic community has been increasingly concerned with two rather unrelated subjects: managerial decision-making and the formation and financing of technically-based enterprises. To a large extent, those academicians studying in the first area have adopted a descriptive rather than a normative approach. That is, the emphasis has been on describing the decision-making process and the factors that influence the decision rather than on attempting to develop strategies for making optimal decisions.[1] In the area of new enterprise formation and financing, the work done in the past has tended to be concerned with general, broadly defined analyses.[2] There has been relatively little concern for narrowing the scope of the endeavors so as to provide answers to the more specific problems that entrepreneurs are facing.

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[1]See, for example, Cyert, Richard M., and March, James G., "A Behavioral Theory of the Firm," Englewood Cliffs, New Jersey: Prentice Hall, 1963; Clarkson, G. P. E., "Portfolio Selection: A Simulation of Trust Investment," Englewood Cliffs, New Jersey: Prentice-Hall, 1962; Simon, Herbert A., "The New Science of Management Decision," New York: Harper, 1960.

[2]See, for example, Baty, Gordon M., "Initial Financing of the New Research-Based Enterprise in New England," Federal Reserve Bank of Boston, Research Report No. 25, 1964; Rubinstein, Albert H., "Problems of Financing and Managing New Research-Based Enterprises in New England," Federal Reserve Bank of Boston, Research Report No. 3, 1958.

This thesis attempts to combine both of the above-mentioned areas of academic interest. To this end, a study of the decision making process of a single venture capitalist[3] has been made. To restrict the study, the decision process is looked at only in regard to financing decisions involving new technically-based enterprises.

The study is divided into three phases. Initially, a description of the venture capitalist's decision-making process is undertaken. In other words, results are presented of an examination of what happens to a company's request for financing after it is brought to the venture capitalist's attention. This necessitates an investigation of the kinds of information the venture capitalist seeks, the sources of this information and its uses once obtained.

The second phase is a study of the content of the decision-making process. By looking at many of the venture capitalist's investment decisions, certain characteristics are determined that differentiate the companies selected for investment from those companies that did not receive financial support from this venture capitalist. These differences are discussed,and a rank ordering of the important decision variables is developed.

While the first two phases of the study should prove of value to the entrepreneur seeking financial help, the third phase should be of much greater importance to this particular venture capitalist, specifically,

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[3] For the purpose of this study venture capital will be taken to include 1) investments in any high risk financial venture, 2) the investment of seek capital, i.e. investing in unproven ideas or in companies just being formed, 3) investments in going concerns that have been unable to raise capital from the more conventional sources. This might include investments in a company that is unable to obtain an underwriting, cannot get additional bank credit or whose short run financial position requires longer term financing unavailable from banks.

and the venture capitalist industry, in general. During the past year two thesis reports have been prepared on the formation and growth of new technical companies founded by people who had been employed at M.I.T. laboratories.[4] Upon analyzing the entrepreneurs and the companies (twenty-seven companies in the Teplitz study of the M.I.T. Instrumentation Laboratory and forty-seven companies in the Wainer study of the M.I.T. Lincoln Laboratory) several differences between successful and unsuccessful new technical enterprises were uncovered. Since it is reasonable to assume that a venture capitalist makes investment decisions on the basis of what he sees as the potential success of the company, one can definitely see where the Teplitz-Wainer findings might be useful to the venture capitalist. The third phase of the study presents a comparative analysis of the findings of the above-mentioned studies and the venture capitalist's criteria for investment and decision variables ranking.

1.1 Objectives

The main objective of this study is a pragmatic one. It is to make those who are presently involved and those who shall become involved in the venture capital industry better aware of how the industry operates, how decisions within the industry are made and the effects of these decisions on both the source and the seeker of venture capital.

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[4] Teplitz, Paul V., "Spin-off Enterprises from a Large Government Sponsored Laboratory," (Unpublished Master's Thesis, M.I.T. Sloan School of Management) June, 1965 and Wainer, Herbert A., "The Spin-off of Technology from Government-Sponsored Research Laboratories: Lincoln Laboratory" (Unpublished Master's Thesis, M.I.T. Sloan School of Management) September, 1965.

Sources of venture capital should find the study valuable in assessing the adequacy of their present decision-making process and in redefining, where necessary, the criteria that they use to make decisions. Present and future entrepreneurs of technically-based companies should find the study useful as a guide for preparation and action in attempting to secure financial backing and advice. Each should find it helpful in developing understanding of the other.

The venture capital decision process is not one-sided. The entrepreneur must also make decisions concerning the time and place to seek financial assistance. Occasionally, he must even make a decision as to which offer of financial assistance to accept. Since this study restricts itself to one particular venture capitalist, these problems cannot be answered explicitly. However, it is hoped that from this thesis the entrepreneur can glean information helpful in solving these problems.

As a study of a particular venture capital firm, the results and findings to be presented should not be considered as universally applicable. Although the criteria for venture capital investment might generally be the same, the weights attached to each by different venture capitalists probably will vary. This is to be expected since the motivations, needs and constraints of each venture capitalist are probably dissimilar. This thesis, then, is an exploratory study into the venture capital decision-making process which, it is hoped, lays the foundation for further research.

1.2 Organization of the Thesis

The thesis is organized as follows. Chapter 2 presents a description of the research methods employed in the study and briefly characterizes the sample of decisions studied. Chapter 3 is a discussion of the organizational structure and information systems of the venture capitalist and also discusses the initial decision-making process. Chapter 4 looks at a sample of the venture capitalist's second phase decisions and presents the rank ordering of decision variables important to the venture capitalist. Chapter 5 compares the venture capitalist's criteria for investment with other studies, namely those of Teplitz and Wainer. From these comparisons, the author suggests modifications or additions to the venture capitalist's decision-making process. Chapter 6 presents a summary of the study's findings and suggests areas for further research.

CHAPTER 2

METHODOLOGY

At the outset, the study was broken down into three stages:

1. an examination of the organization structure, information flow and decision-making process of the venture capitalist;

2. in-depth studies of a sample of second-phase financing decisions to develop the rank ordering of decision variables important to the venture capitalist; and

3. a comparative analysis of this venture capitalist's decision criteria with criteria found in other studies to be meaningfully related to new enterprise success.

2.1 Selecting the Venture Capitalist

The necessity for frequent contact with the venture capitalist and the desire to compare its investments with M.I.T. spinoff companies indicated that a venture capitalist be studied who is located in the northeastern part of the United States. The company that was approached and that agreed to cooperate in the study has, in recent years, been an active participant in the venture capital industry. It has invested in a relatively large number of companies, a good portion of them being technically based.

Because of a desire for anonymity, the company will henceforth be referred to as Venture Capital Incorporated (V.C.I.). Occasionally it will be necessary to omit certain relevant data because its inclusion might reveal the venture capitalist's true identity. It should be pointed out that this desire for anonymity was prompted primarily by the venture capitalist's feeling that knowledge of his decision-making process by entrepreneurs might limit the firm's effectiveness in analyzing future investment opportunities.

2.2 Initial Information Sources

Following the initial meeting with the venture capitalist and after permission was obtained to study his decision making process, it was necessary to obtain information concerning the general nature of the firm's activities. This was done in two ways. Informal discussions with several of the people in the organization were held. These were extremely useful, in that they gave the author a good understanding of the philosophy of the firm and the relationship between this venture capitalist and the rest of the industry. Aside from these intangible aspects, data were collected concerning the general procedures followed in obtaining, analyzing and using information and the organizational aspects of the decision making.

A careful examination of the company files was undertaken to supplement the above-mentioned discussions. This served to verify the procedures used by the firm in analyzing investment opportunities and gave the researcher an opportunity to develop a sample of investment decisions to be used in a later part of the study.

From these initial investigations it was found that this venture capitalist employed a two-phase decision process. In the initial phase, a decision was made on whether the particular investment opportunity should be discarded or whether it should be closely examined. The second phase, for those prospects that had successfully passed phase one, involved the final investment decision.

Because very little information was available on those companies that were rejected in phase one and because it was felt that the very limited amount of time put in by V.C.I. personnel on these companies would make it highly unlikely that detailed information could be obtained, it was decided to study this decision-making process on a macroscopic view. To do this, Questionnaire I (See Appendix A) was developed. It was intended that deviations from the questionnaire would not be necessary during the interviewing. However, for the researcher to get a clear understanding of the decision process additions occasionally had to be made. It had also been the researcher's intention to interview all of the firm's decision-makers using this questionnaire. However, because ot its length and breadth this became infeasible, and instead, a different interview scheme was undertaken. The complete questionnaire was administered to the president of V.C.I., and relevant portions of the questionnaire were administered to a financial and a technical member of the firm.

2.3 Choosing the Sample of Companies[1]

After obtaining a macroscopic view of the initial "screening" process, it was decided to investigate, in depth, several of the second phase decisions. To do this it was necessary to set certain criteria for inclusion in the sample of companies. The criteria decided upon

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[1] The terms project, investment opportunity, and company will be used interchangeably throughout this thesis, to refer to a company V.C.I. is investigating.

were:

1. The company must be technically based.

2. The company must be located in the northeastern area of the United States.

3. The company must have been classified and, thus, carefully investigated, by the venture capitalist.

4. At the time it came into contact with the venture capitalist the company must have been either newly founded or an existing, but young firm seeking growth capital.

Using these criteria, an initial sample of twenty-seven companies was obtained. However, three of the twenty-seven subsequently had to be eliminated, one because, although classified, it was not carefully investigated by V.C.I., a second because the V.C.I. investigators could not be contacted, and a third because of the inability of the investigator to recall the situation in detail. Of the remaining twenty-four companies, Venture Capital Incorporated invested in eleven and did not invest in thirteen. However, of these latter thirteen, V.C.I. made two offers that were rejected by company management. Thus, for the purposes of this study, these two companies will be included with those that had received favorable investment actions from V.C.I. The twenty-seven companies comprise the total number of V.C.I.'s investment opportunities that met the criteria.

2.4 General Sample Characteristics

The twenty-four decisions considered in this study were made by V.C.I. at various times throughout its life. In many cases "yes" decisions correspond quite closely to "no" decisions, with respect to time of decision. This can be seen by referring to the classification numbers assigned by V.C.I., in sequential order, to projects that were closely investigated.

TABLE 2-1

CLASSIFICATION NUMBERS

Companies Chosen for Investment	Companies Not Chosen for Investment
24	14
34	26
43	38
57	53
67	55
77	84
96	85
99	87
114	92
124	97
130	106
132	
137	

The companies in the sample represent a wide range of technical fields. That it was not specifically planned that this occur suggests the wide range of fields that V.C.I. has considered in the past. Among the technical fields engaged in by companies in the sample are:

Computing systems-digital and analog
Peripheral data processing equipment
Power supplies
High temperature materials
Crystal technology
Electronic test equipment
Vacuum process equipment
Plastics

With the exception of one company that was founded eight years prior to the V.C.I. investigation, none of the companies was more than five years old when it came into contact with V.C.I.

TABLE 2-2

AGE DISTRIBUTION OF SAMPLE COMPANIES

New, start-up companies	7
One year old	4
Two years old	6
Three years old	2
Four years old	3
Five years old	1
Eight years old	1
TOTAL	24

2.5 Investigating the Sample Decisions

Following the development of the sample, the V.C.I. investigator responsible for obtaining the information on each company was interviewed through the use of a second questionnaire (See Appendix B). From previous discussions with V.C.I. personnel, it was felt that five general areas were important to the final decision. The questionnaire attempted to ascertain the investigator's subjective feelings on the company for each of the important variables as well as the objective findings uncovered during the search procedure. The questionnaire was also designed to get at possible changes in the importance of decision variables over time. To do this, the investigator was asked to rate several aspects of the company under consideration both as of the time of the investigation and as of the present. The completed questionnaires were then analyzed to determine the importance of each decision variable and for comparison with previous studies of entrepreneurship.

It should be pointed out that in the case of some of the companies in the sample, V.C.I. held investigations at more than one time. In the case where the company was looked at but not classified initially, but investigated and classified later, the second investigation was studied. Where the company was classified initially, rejected then reexamined and rejected again, the initial investigation was studied. These were the only types of situations of multiple investigations that arose in this sample.

CHAPTER 3

VENTURE CAPITAL INCORPORATED'S STRUCTURE, INFORMATION SYSTEMS AND DECISION PROCESS

This chapter presents a macroscopic view of Venture Capital Incorporated and its decision process. It focuses on the sources of company information and the entrepreneurial, company, market, and financial characteristics that V.C.I. prefers. The chapter also presents V.C.I.'s initial (screening) decision process in detail. V.C.I.'s preferences discussed here were obtained through the use of Questionnaire I and from the informal discussions with V.C.I. personnel.

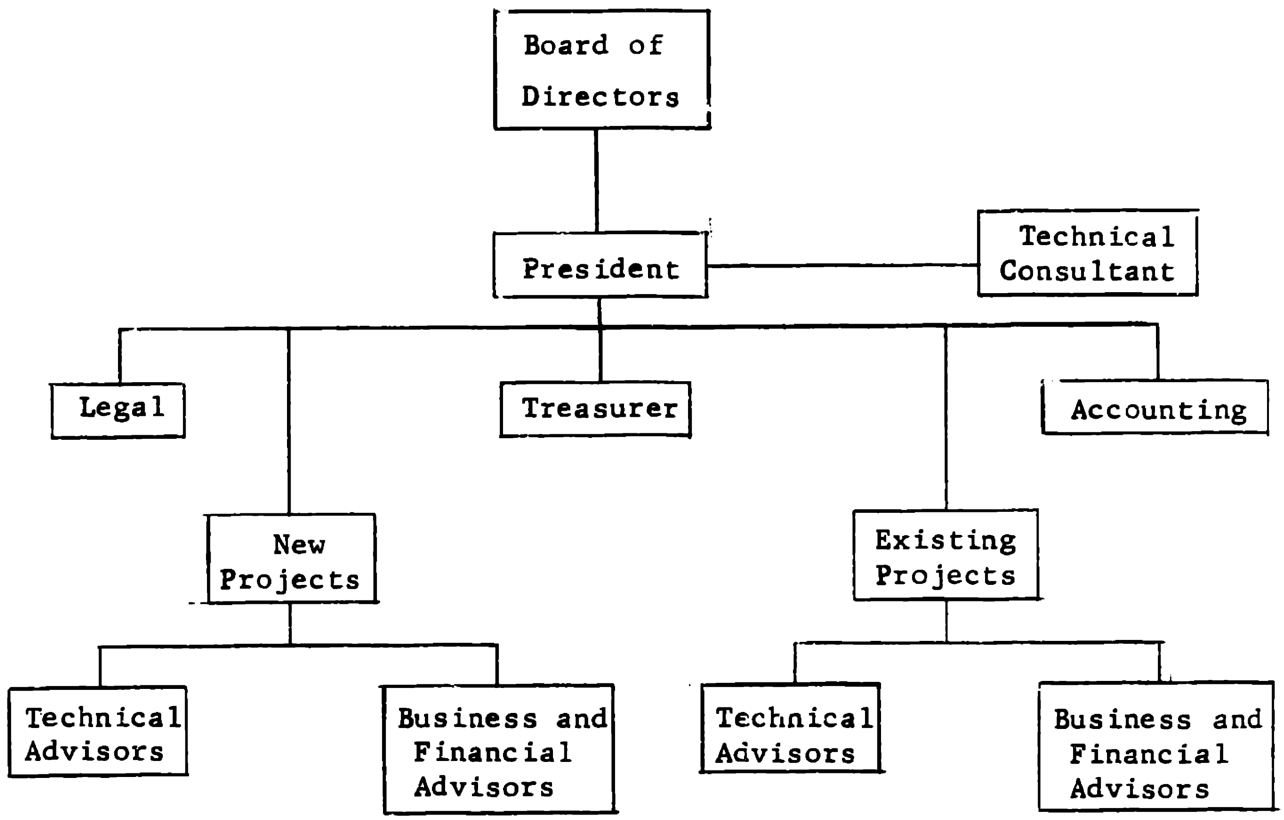
3.1 Corporate Structure

Venture Capital Incorporated has a very informal corporate structure. Although no organization chart exists, the author has been able to formalize the organization along the lines of Figure 3-1.

The "operating" divisions of the firm are the new project and existing project groups. These groups' tasks are self-explanatory with the existing project group administering to the companies already in the V.C.I. portfolio and the new project group investigating new V.C.I. investment opportunities. The makeup of each of these groups varies depending mainly on the quantity and types of investment opportunities being investigated. It could be said that all of V.C.I.'s people are primarily in the existing project group and are shifted into and out of

FIGURE 3-1

V.C.I. ORGANIZATION CHART



the new project group on the basis of their familiarity with the industry and products of the investment opportunities being investigated.

The staff positions in the organization (i.e. legal, treasurer, accounting) play a small part in the investigations and final decisions on the investment opportunities, but are consulted when questions in their areas of competence arise. For instance, the firm's lawyer would be called in when a question involving the legality of patents arises. Members of the staff groups have occasionally been involved in new project investigations when they have had experience with the entrepreneurs or with the industry or product area.

The president of Venture Capital Incorporated is involved in all of the firm's new investment decisions. In many investigations, he is an active member of the investigating team, while in others his advice and counsel are sought to varying degrees throughout the investigation. In both cases the decision to present the investment opportunity to the Board of Directors for final approval is made jointly by the investigating team and the president.

Although it is difficult to determine the relative weights attached to the opinions of the president and the team members in the final (invest-not invest) decisions, it is this researcher's opinion that when the president is part of the investigating team his opinion outweighs those of the other team members. When he is not a member of the team, however, the opinions of the team members tend to outweigh those of the president.

The technical consultant's role in V.C.I. is somewhat obscure. Although he is always available for consultation, it appears that he is only called upon when the company under investigation is made up of people with whom the consultant is familiar or is in the technical consultant's principal area of technical interest. It is the author's opinion that the consultant plays a minor role in the organization's decision processes.

The Board of Directors of V.C.I. makes the final investment decision and also decides the amount of money to be offered to the future portfolio company. Although it was the author's initial impression that the Board merely acted as a "rubber stamp", always accepting operating management's decisions, this is not really accurate. When the investigating team and the president meet to make the final decision on a company, two members of the Board are also present. These board members do not explicitly take part in the decision at this level, but it seems reasonable to expect them to have an effect on what operating management decides. By answering the questions of these directors, who are only slightly familiar with the company being investigated, operating management is able to get a good feel for the Board's probable attitude toward the project and so will inevitably make a decision largely based on this. Thus, although the Board of Directors has very rarely overruled a decision of operating management, it is safe to assume that this is primarily because of the above-mentioned interaction. However, although the Board has very rarely overruled an operating management decision because of technical, industry or personality reasons, the V.C.I. Board has occasionally modified the financial arrangements proposed by management. This is explained in several ways:

1. The Board is much more financially oriented than technically oriented. Thus, it might not understand the technical aspects of the management presentation it certainly understands the financial aspects.

2. Closely aligned with the above, the Board, being financially oriented, has a good understanding of what constitutes a reasonable financial arrangement.

3. Having close contact with the financial community, the Board is able to compare V.C.I. investment opportunities with investments made by other institutions in financial terms rather than in technical terms and so is able to determine more easily if V.C.I. is offering a deal too attractive in comparison to what other financial sources might offer.

3.2 V.C.I.'s Investment Objectives and Philosophy

V.C.I.'s investment objectives are directed at being of benefit to three groups: the V.C.I. stockholders, the entrepreneur and the nation. V.C.I. management hopes to provide capital appreciation for its investors. To do this it attempts to finance profitable growth companies through equity rather than debt. To obtain the greatest opportunities for this capital appreciation, V.C.I. prefers investing in the very early stages of a company's development. Although this investment attitude carries with it certain inherent risks it is felt that the potential for substantial capital gains justifies this attitude.

V.C.I. aims to give potential scientific and business leaders an opportunity to appreciate the ultimate rewards of their own efforts. To do this it will not obtain a majority interest in its portfolio companies and is always aware of the possible need for future additional investment. Thus the entrepreneur initially is stimulated because of the future capital appreciation he might achieve. However, the entrepreneur is not forced to follow an overly conservative path, often detrimental to young, growing companies, since he knows that additional money is available if its need is reasonable.

V.C.I.'s third investment objective is to stimulate this nation's development of new products and services through the support of small businesses. Although the question of innovative progress in small versus large companies is highly controversial, this controversy is of no importance here. It is only necessary to point out that the above is a stated V.C.I. investment objective.

V.C.I. has a six-fold investment philosophy.

1. It hopes to invest in companies that have unusual growth potential and technical leadership.

2. Prior to investment, it carefully analyzes the company placing particular attention on management capabilities.

3. It seeks companies with which a close and effective working relationship can be maintained.

4. It seeks to acquire a significant equity interest either immediately or in the future.

5. Realizing that developing companies need to conserve all funds possible for expansion and growth, V.C.I. sets interest rates that emphasize long range capital appreciation rather than current income.

6. It believes that no public sale of a company's stock should take place until the company has shown a record of growing and profitable sales.

3.3 The Decision Process

Before discussing each phase of the decision process in detail, it would be useful to outline briefly the steps of the process. After an investment opportunity is brought to the attention of V.C.I. it is assigned to a staff member. Brief discussions, usually by telephone, are then held with people who are familiar with either the entrepreneur or the industry. Based on these discussions, a meeting with the entrepreneur, an assessment of the potential of the industry in general and the company in particular (as to both managerial and technical competence), and an assessment of the reasonableness of the financial deal the company is seeking, a decision is made either to continue the investigation or to end it at this point.

If the decision is made to continue the investigation, the company's past history is carefully examined, present and potential company customers are contacted, further discussions with the entrepreneurs are held, thorough investigations of the entrepreneurs are undertaken, a visit to the company's facilities is made, and additional product and industry information is obtained and analyzed.

It appears that only after these above activities are completed to V.C.I. satisfaction is the question of the financing arrangement brought up. By this time, V.C.I.'s operating management has just about decided that the company under investigation is an acceptable investment opportunity and the only matter that must be settled is that of reaching a mutually satisfactory financing arrangement. If this can be achieved, the project is then referred to the V.C.I. Board of Directors for the final decision.

3.4 Sources of V.C.I.'s Investment Opportunities

Possible investment opportunities are brought to V.C.I.'s attention by a great variety of people and organizations including investment bankers, commercial bankers, other institutionalized venture capitalists, individual venture capitalists, private individuals, and V.C.I. portfolio companies.

Often the entrepreneur will bring his company to V.C.I.'s attention directly. This might occur if the entrepreneur is friendly with a V.C.I. staff member or if the entrepreneur has heard of V.C.I. through his activities in the venture capital industry. The fact that the company is brought to V.C.I.'s attention directly rather than through one of the above-mentioned sources seems to have little averse effect on the eventual financing decision.

In fact, it is the author's feeling that there is a greater likelihood of eventual V.C.I. backing if the company is brought directly. If based on past experience, V.C.I. feels that a particular source is unreliable, the chances are that the project will not even be considered. If it is assumed that 10 per cent of the projects brought to V.C.I. by sources are brought by unreliable ones, the probability of any company brought by a source being considered is .90. However, if the company is brought directly and if V.C.I. does not have an a priori negative opinion about the entrepreneur then the probability of being considered is 1.0. If as mentioned above, the probability of final acceptance once considered is not a function of the source, then it is seen that a company would have a better chance of receiving a favorable investment decision from V.C.I. if it is brought directly.[1]

Although information on the breakdown of sources for all of V.C.I.'s projects is not available, the breakdown for the twenty-four sample companies is available and indicates the general nature of sources for technically based projects (see Table 3-1).

V.C.I. tends to stay away from companies that are brought to them by other institutionalized venture capitalists except if a joint venture is involved. This is primarily because V.C.I. feels that the other sources have made a negative investment decision based on similar investigation techniques.

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[1]This analysis assumes that the entrepreneur has no knowledge of the relationship between V.C.I. and any source.

TABLE 3-1

SOURCES OF SAMPLE COMPANIES

Source	No. of Companies
Direct	4 companies
Investment Banker	8 companies
Institutionalized Venture Capitalist	3 companies
Individual Venture Capitalist	1 company
Private Individual	4 companies
Commercial Banker	3 companies
Portfolio Company	1 company
	24 companies

3.5 Entrepreneurial Characteristics

V.C.I. prefers companies founded and operated by a group rather than by a single entrepreneur. This preference is based on the belief, probably valid, that business is too complicated for a single individual. V.C.I. would like to see a group composed of two or three people each having both a technical and business oriented background.

As is to be expected, V.C.I. looks very closely at the people who run the company. This is stated to be the most important decision variable since it is felt that if the entrepreneur(s) is good enough he will be able to build a business by changing directions should the company's present direction prove inadequate. In gathering information on the people, V.C.I. hopes to answer two questions: 1) Does his (their) educational background and work experience provide him (them) with a good base for taking on the responsibilities of a small business executive? and, 2) How closely does his personality agree with V.C.I.'s conception of the ideal entrepreneurial personality?

It is this researcher's opinion that the second question is effectively more important to V.C.I. than the first. This is because the technical field of the company is generally quite similar to the technical specialities of the entrepreneurs. Also, although V.C.I. is interested in investing in people who have a reasonable degree of business acumen, the desire is for this business experience to be closely related to the company's particular technical field. In fact, throughout the discussions with V.C.I. personnel, no mention was ever made of the need for the entrepreneurs to have had business school training.

From discussions with V.C.I. personnel, the author has been able to develop a reasonable entrepreneur background scheme for a three-man group seeking V.C.I. investment support. The president of the company should have a technical education. However, his work experience should be concentrated primarily in administrative areas, i.e. budget responsibility, technical management, personnel supervision. The second group member should be a high level technical person with R. & D. experience in technologies closely related to the company's area of interest. The third member should have a technical education but with work experience in the marketing of closely related technical products.

The personality characteristics that V.C.I. feels are important seem to center around the need for the entrepreneur to understand and to react competently to the small business environment. The entrepreneur should display an understanding of his limitations and those of his company. The brilliant scientist who automatically assumes that he can become a brilliant businessman should not expect a favorable reaction from V.C.I.; nor, for that matter, should the man who believes that he can run a business singlehandedly; nor should the man who overrates his product, believing that customers will beat their way to the company's door.

The entrepreneur must exhibit the realization that running a young small business requires much effort in a well thought-out direction. Operating a small business requires, in V.C.I.'s opinion, dealing constantly with crises each of which cannot be put off. This means that the entrepreneur cannot expect to have a forty hour workweek. Instead, he must display the capacity for working many more hours under constant pressure. However, unless the intended direction of the company is well planned, specific and realistic, no amount of hard work will be of any use. The company should be dedicated to a particular product line or area of concentration. It should have built its plans around growth and leadership in its own specialized field. Otherwise, it would fall prey to today's competitive market which leads overdiversified small companies with no proprietary product lines into trouble.

The entrepreneur must also show organizational ability. A growing business almost inevitably reaches a point where the president has to begin to delegate responsibilities to others. The successful entrepreneur should incorporate this into his plans early since increasing the management team will require expenditures well before results can be seen.

3.6 Entrepreneurial Information Sources

The preceding section described the kinds of information about the entrepreneur that V.C.I. seeks and what the author has gleaned to be satisfactory answers to the questions put to the information sources by V.C.I. This section will discuss the information sources.

Undoubtedly the most important source of entrepreneurial information is the entrepreneur himself. If the company is brought to V.C.I. directly, V.C.I. becomes acquainted with the entrepreneur immediately. If an outside source suggests the company, V.C.I. usually meets with the entrepreneur shortly thereafter.[2] This meeting(s) between the entrepreneur and the V.C.I. staff member assigned to the project is not for the sole purpose of obtaining entrepreneurial information. However, by discussing the company's plans and goals as well as the entrepreneur's attitude towards the business and its relationship with the capital source, the V.C.I. staff member is usually able to judge the entrepreneur's personality characteristics.

For further information in this area, V.C.I. contacts the entrepreneur's former supervisors, industrial peers and mutual acquaintances or friends. However, these are secondary sources and would only affect the decision if the responses from them are highly negative.

3.7 Company Characteristics

V.C.I. prefers investing in companies that are in an early stage of operation. However, in the past their investments have tended to be evenly divided between new companies, companies one to three years old and more mature situations. The optimal age of the company from V.C.I.'s view seems at present to be between two and five years. Primarily, this is because companies within this age range still possess much of the

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[2] This might not occur if: (1) the source is unreliable; (2) V.C.I. is not at all interested in the company's market area; (3) V.C.I. is, at the time, not seeking new prospects; or (4) much negative information on the company or entrepreneur has become available. In these cases, V.C.I. might reject the project prior to any personal contact.

growth potential of a new company but allow V.C.I. to make more thorough investigations since data on past performance are available. This lessens the risk concerning the existence of a market, the ability of the company's product to satisfy the demands of the market and any doubts concerning the technical capabilities of the product.

V.C.I. will no longer deal with ideas or prototypes but requires a working product[3] as a minimum. This attitude has been prompted by the extra risk inherent in companies not yet in production and also the inability to get reasonably accurate market studies.

Company facilities play a very minor role in V.C.I.'s investigation. Functional efficiency is expected and other than that little attention is given this aspect of the company. On the other hand, company personnel, aside from the entrepreneur(s), are of great importance. The quality of personnel reflects management's ability to acquire good people and also is an indication of the technical growth and expansion that the company can expect. V.C.I. will usually investigate second line management, with reference to educational and industrial background, in much the same way as it investigates the entrepreneur.

As is to be expected, the most important company characteristic is its product. V.C.I. prefers that the product be technically better than anything presently on the market, or in the case of a new market it be a technical leader. The preference for the former situation exists because of the feeling that the only way for a small company to enter a market already being served by larger competitors is through technical

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[3]This would also include a standard service, such as computer services.

superiority. In the latter case, the feeling is based on the premise that unless the product represents a significant technical advance, larger companies might enter the market.

The marketing ability of the company is also quite important to V.C.I. However, the author was unable to determine V.C.I.'s preference for various marketing techniques. Since most small companies can afford only technical brochures and sales through manufacturer's representatives, the marketing variable probably examined is market penetration.

3.8 Sources of Company Information

V.C.I. obtains information on the company from several sources in addition to the entrepreneur. Company technical brochures are analyzed primarily by the technical staff members and in some instances consultants are contacted and asked to evaluate the product from a technical standpoint.

The company's customers are the prime source of information regarding the suitability of the product and the marketing ability of the company. Customers are usually able to estimate their future needs for the product and technical changes which might be desirable. Utilizing this information V.C.I. is able to supplement the forecasts presented to it by the investment opportunity and is able to get a feel for whether the company will be able to meet future technical requirements.

Another source of company information is the company's written presentation to V.C.I. Although the information in the presentation is checked through the means presented in this chapter, its realism strongly influences V.C.I. decisions. Unrealistic sales and profit forecasts tend to be viewed unfavorably as an indication of management inability.

3.9 Market Characteristics

Unlike some venture capitalists, V.C.I. does not specialize in any particular technical areas. It prefers investing in a company that is in an established market in which there appears to be an opportunity for an aggressive, well-managed small business. This has been a change from V.C.I.'s earlier preference for companies in new and undeveloped markets.

V.C.I. appears to have no preference for a particular type of competition. Thus its investments have been in industries with both large and small competitive firms.

At various points in time certain markets have been of prime interest to V.C.I. While efforts were made to enter these markets, the quality of the individual projects was far more important than the desire to force participation within an industry.

Since V.C.I. is interested in investing in rapidly growing markets it realizes that radical changes are to be expected. For this reason, it is usually ready to give additional financial support to its portfolio companies should a legitimate need arise. It is not averse to a government dominated market although it does desire that the company have plans for entrance into commercial markets.

While some venture capitalists prefer to make significant investments in one industry before moving on to another, V.C.I. from its inception has followed a policy of spreading out based solely on the nature and quality of the individual companies seeking its financial support.

3.10 Sources of Market Information

Market information is usually obtained from the company's customers, from its competitors when possible, from manufacturer's representatives and from any others familiar with the requirements and workings of the industry. From these sources V.C.I. hopes to learn how the market views the company's product, what the future of the particular market might be, what the expected growth of the market will be, to what degree the market is dependent on a few large customers and other pertinent facts or forecasts.

3.11 Financial Characteristics

V.C.I. will not consider an investment opportunity unless some form of equity participation is involved. This participation need not necessarily be immediate so long as it can be obtained in the future through convertible debentures or notes with warrants. This desire for equity interest is easily understood. Because of the risky nature of the companies invested in, V.C.I. feels that it must have an equity holding so as to increase the expected value of the return. That is, a company's ability to meet its note payments is contingent on it being a "reasonable" success. If the company is a "reasonable" success, the return to stockholders should be significantly better than the note interest rate. Since the downside return for both stock and note holders is the same, namely zero, the expected return on equity is higher. This attitude toward equity is also present because of V.C.I.'s objective of capital appreciation for its stockholders.

V.C.I.'s investments have served a variety of the financial needs of a small business, with working capital being the most prevalent. V.C.I.

will not extend financial help to companies that intend to use the money for advertising, acquisitions (without anything specific in mind) or for capital investments to try to prove an unproven process. Although the reasons for staying away from the latter two needs seem reasonable the author questions whether V.C.I. is really acting correctly in its aversion to supporting the first, especially if the company being considered is at a point where advertising might ensure success. In presenting funds allocation plans to V.C.I., entrepreneurs should be rather specific although it is recognized that a certain amount of flexibility is necessary.

V.C.I. prefers second or third stage financing although it has invested in start up as well as later stage situations. Preferring investments in the $250,000 to $1,000,000 range it nonetheless realizes that some projects will require more money than expected because of opportunities for acquisitions or unusual growth. V.C.I. will not, generally, make investments of less than $250,000. Since the cost of investigating the company is not a function of the dollar amount invested, V.C.I. feels that its investigation expenses would become excessive if small investments were often made.

V.C.I. classifies companies into three risk levels. A low risk venture is expected to return twice the V.C.I. investment in five years, a medium risk venture is expected to return three times the investment also in five years, and a high risk venture is expected to return ten times the investment in ten years. Risk is evaluated on the basis of the calibre, ability and reputation of the entrepreneur, the status of product development and the status of the market.

Investment Attitudes No. 1 on Questionnaire I (See Appendix A) was administered in an attempt to obtain the decision maker's utility function for risk taking.[4] The results indicated that a venture must have at least a five in ten chance of success regardless of the magnitude of the investment or of the return. This was quite surprising and seemed to be caused by the V.C.I. decision maker's feeling that he must be extremely careful since he is investing other people's money.

3.12 The Existing Portfolio's Effect on the Decision

It appears that V.C.I.'s existing portfolio has an effect on a present decision only if the project being considered is in the same industry as a portfolio company. If this is the case, V.C.I. attempts to determine just what degree of competition exists between the two companies and how an investment in the new opportunity might effect the success of the prior investment. To reduce the significance of this problem, V.C.I. has recently attempted to arrange for a merger of the two companies in question in such a situation. In fact, it is expected that this attitude toward mergers will continue not only in the case of intra-industry conflict but also in cases of somewhat overlapping technologies.

Perhaps surprisingly, other than in this respect the portfolio has little influence on the investment decision. V.C.I. does not attempt to spread its investment over the risk continuum, nor does it attempt to vary the financial instrument used to make the investment. Preference for company age or location is also not a function of the existing port-

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[4]For a complete discussion of this format as a research tool, see Baty, Gordon M., op. cit.

folio.

Thus it can be said that V.C.I. looks at each investment opportunity independently considering only possible industry or technical tie-ins with existing portfolio companies. Of course, it should be pointed out, past experience, either through previous investigations or portfolio inclusion, undoubtedly affects V.C.I.'s methods of search and analysis.

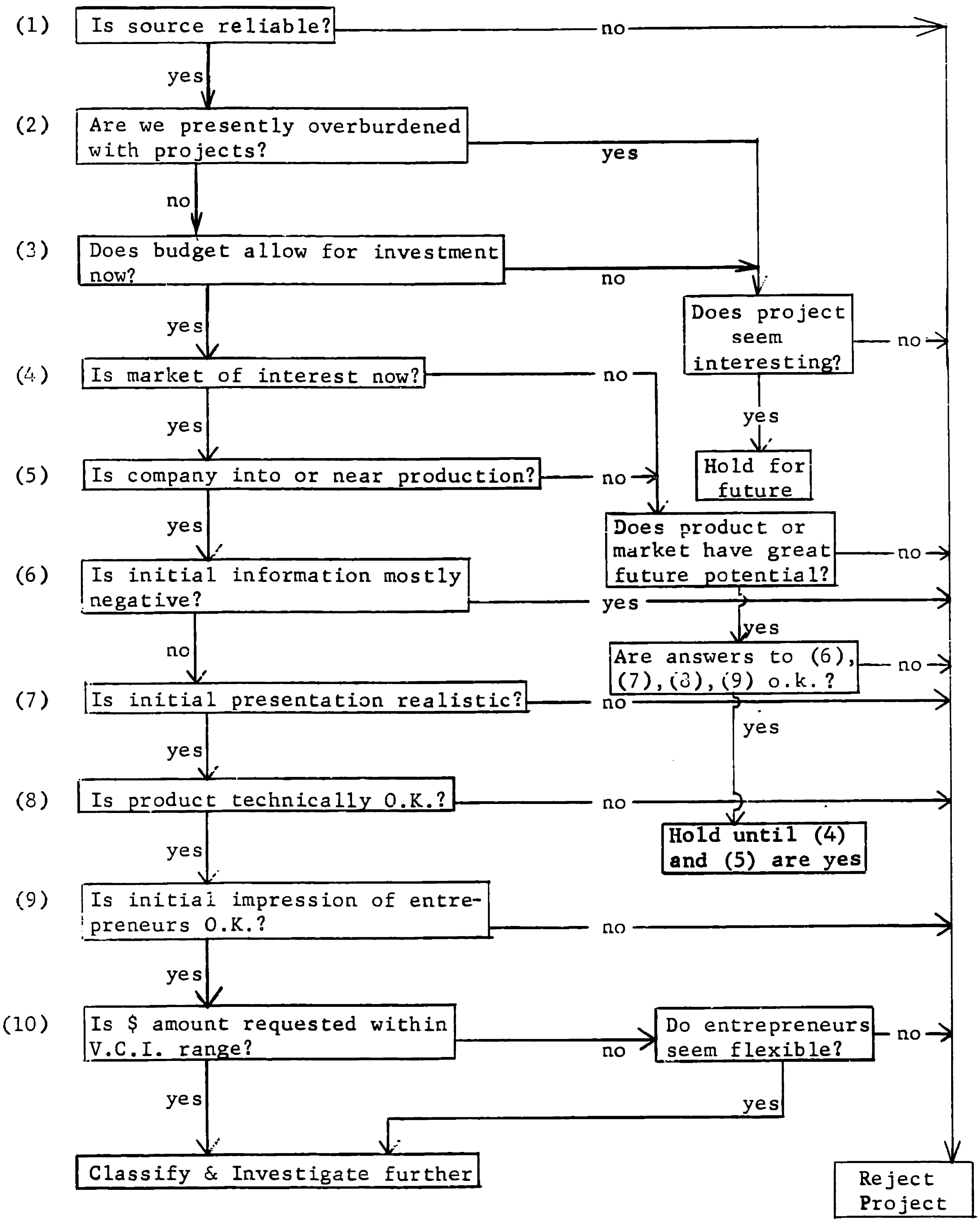
3.13 The Initial Decision

The previous sections in this chapter have been concerned with the information sought by V.C.I. in investigating a company and the sources of this information. The kinds of information discussed are sought both prior to the initial screening decision and following it if the company being investigated passes the initial decision. This section will discuss the process and content of the initial (screening) decision. The importance of this first phase decision becomes apparent when the relative number of rejections in the two phases are considered. While about 2000 companies have been brought to V.C.I.'s attention, only about 150 have passed the first phase. Of these 150, V.C.I. chose to invest in about 45. Thus, the probability of a company passing the initial decision phase is much lower than the probability of passing the second (invest-no invest) phase.

It is the author's opinion that the decision flow chart below accurately depicts V.C.I.'s initial decision process. The flow chart should not be taken to represent a strict adherence to the sequential ordering of the questions considered. In many cases the sequence of particular questions might be considered in random order. This is true

FIGURE 3-2

THE INITIAL DECISION



for questions (2) and (3), (4) and (5), and (6), (7), (8), (9), and (10).

As discussed earlier, if the source is unreliable the company will not even be considered. If the source is reliable, questions as to the organizational and operational abilities of V.C.I. to investigate the project arise. If V.C.I. is at the time overburdened with investigations, the project might be held for future investigation, provided that V.C.I. has a general interest in the industry, product or people. If this interest does not exist the project might very possibly be rejected. Occasionally, because of budget constraints or problems with existing portfolio companies, V.C.I. might decide to cease new company investigations for a short period. In this case, the general interest criteria also holds in deciding whether to reject or hold a company.

If the project is not rejected or held by this point a brief investigation of the market and company product development is made. While this investigation is going on V.C.I. will usually meet with the entrepreneurs and briefly consider the financial arrangements. Thus questions (4) through (10) are answered almost simultaneously. Thus if questions (4) and/or (5) are answered negatively, the project will only be held if questions (6) through (10) are answered satisfactorily.

As can be seen in the flow chart, projects are often held for future investigation. From an operational standpoint this is quite useful. If companies were rejected instead of held they would be lost to V.C.I. as future investment opportunities. However, by informing the entrepreneur that his company is being held for future consideration V.C.I. is given the opportunity to make a future investment if the company should prove worthwhile. Of course it is possible that during this hold period the entrepreneur will obtain financing elsewhere. It is difficult to generalize on the length of the hold period. It has ranged from one week to over a year.

The questions in the decision flow chart are descriptive rather than quantitative. This is because the initial decision is made by the staff member assigned to the project after brief discussions with his supervisor. Thus, the weight attached to each parameter of the decision is different since it is expected that different people will see things differently. The nature of the study prevented any attempt from being made in determining the weights for any single staff member.

The informational inputs to the initial decision are obtained from several sources. People familiar with the market are contacted and a technical staff member is consulted. However, the major sources of information are the initial company presentation and discussions with the entrepreneurs themselves. A minimum amount of information is sought and processed because of the great number of projects that are considered in this initial phase.

CHAPTER 4

CHARACTERISTICS OF THE COMPANY INVESTMENT OPPORTUNITIES

This chapter will examine the sample of twenty-four V.C.I. second-phase investment decisions in order to determine any differences between companies in which V.C.I. chose to invest and those which did not receive V.C.I. backing. From these differences and the descriptions in Chapter 3, a rank ordering of the decision variables will be obtained from which statements about the content of the decision process can be made. This rank ordering will also provide a basis on which comparisons can be made to previous studies of new company formation and entrepreneurship.

The statistical results to be presented were obtained through the use of three statistical tests. The total sample was split into two independent samples, one being those companies in which V.C.I. chose to invest in and the other being those companies in which V.C.I. chose not to invest in. Therefore, the Fisher Exact test and the Chi-square test were used with nominal data and the Mann-Whitney U test was used with ordinal data.[1]

4.1 Sources of Companies

In Chapter 3, it was stated that if the source of a project was unreliable, the project was immediately rejected. Since all of the

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[1] Siegel, S., "Nonparametric Statistics for the Behavioral Sciences," New York: MCGraw-Hill Book Company, 1956.

companies in the sample passed the initial "screening" decision and were henceforth carefully examined, it would be reasonable to expect that the sources of the sample companies were reliable. This proves to be the case, with one exception. Excluding the four companies that were brought to V.C.I.'s attention directly, seventeen companies were referred by sources considered to be at least of average reliability and one company's source was considered unreliable at the time of the investigation.[2]

TABLE 4-1

RELIABILITY RATINGS OF SOURCES

	1	2	3	4	5	6	7	Mean
Accepted	1	0	0	1	3	3	1	5.0
Rejected[3]	0	0	0	4	2	1	2	5.1

As can be seen from the above chart (Table 4-1), V.C.I.'s. reliability rating of sources of projects does not appear to have any significant effect on the final investment decision. In fact, the mean reliability rating for sources of companies rejected was higher than the mean for sources of companies accepted. Although data were not available to determine how a company whose source was considered unreliable was still able to obtain V.C.I. financing, a possible reason is that at the time this company was brought to V.C.I., investigating activities were

[2]On the scale of question 7 of Questionnaire II, a rating of 4 would be average reliability. Reliability ratings were not obtained in two cases so the total is 18. Because of missing data, sample sizes will occasionally be less than twenty-four.

[3]"Accepted" means companies in which V.C.I. chose to invest. "Rejected" means companies in which V.C.I. chose not to invest.

relatively low and so V.C.I., having this slack, investigated. The investigation obviously showed the company to be a good investment opportunity.[4]

V.C.I.'s evaluation of the reliability of the sources in the sample has not changed significantly from the time of investigation of the sample company until today. Changes occurred in only three cases, two of which showed a shift downward of one rating point while the third showed a downward movement from a six rating to a rating of one. The reason given for the shifts was misinformation supplied by the source.

Aside from the reliability of the source, it might be reasonable to assume that the type of source might affect the final decision. However, this does not appear to be the case.

TABLE 4-2

SAMPLE COMPANY'S SOURCES

Source	Number Accepted	Number Rejected
Direct	3	1
Investment Banker	5	3
Institutionalized Venture Capitalist	1	2
Individual Venture Capitalist	0	1
Private Individual	1	4
Commercial Bank	3	0
	13	11

While there seems to be a tendency in favor of companies brought to V.C.I. by commercial banks and those brought directly and a tendency against companies brought by private individuals, these results were not

[4]This might lead one to conclude that the timing of the initial introduction to V.C.I. plays a part in at least the screening decision. No data were available to either support or reject this conclusion other than the statements made in reference to the flow chart in Chapter 3.

statistically significant (at the 10 per cent level).

TABLE 4-3

ACCEPTANCE vs. SOURCE OF PROJECT

Source	Accepted	Rejected
Commercial Bank	3	0
Non-Commercial Bank	10	11

Source	Accepted	Rejected
Direct	3	1
Non-Direct	10	10

Source	Accepted	Rejected
Individuals	1	4
Non-Individuals	12	7

The frequency with which a source brings projects to V.C.I.'s attention is significant (at the 10 per cent level, one-tailed) in determining if a project is accepted or rejected. At the same time it was found that sources of accepted companies had significantly larger per cent acceptance results than did sources of rejected companies (significant at the 1 per cent level, one-tailed). Table 4-4 indicates the number of projects brought to V.C.I. by each source (in random order) and the per cent of these projects in which V.C.I. invested.

These findings indicate a rather interesting relationship between V.C.I. and its sources of investment opportunities. It appears that, for other than direct sources, V.C.I.'s relationship with its sources is one of growing compatibility. That is, as a particular source continues to bring V.C.I. investment opportunities, the companies brought tend more toward V.C.I.'s liking and so they are accepted. This implies that the source undergoes a learning process. As he brings more and more companies to V.C.I.'s attention he develops a better understanding of what V.C.I.'s requirements are. With this increased understanding, it is expected that the quality of the projects he brings will increase. Thus the probability of a company being accepted by V.C.I. is a function of the number of projects previously brought to V.C.I. by the company's source. It must be pointed out that this increased understanding does not have a great effect on V.C.I.'s reliability rating of the source. Reliability is a function of the information supplied by the source and the esteem in which the source is held by the financial community. Thus a source could be rated very reliable although it does not have a clear understanding of V.C.I.'s needs and requirements.

TABLE 4-4

FREQUENCY OF SOURCES

	Number of Projects Brought by Sources of Accepted Companies	Percent of Projects Invested in	Number of Projects Brought by Sources of Rejected Companies	Percent of Projects Invested in
	6	0	3	0
	12	0	7	15
	1	100	6	0
	1	100	1	0
	5	20	10	15
	30	10	5	15
	4	25	3	0
	1	100	2	0
	4	50	3	0
	5	20	1	0
	2	50		
	1	100		
Mean	6.0	48%	4.1	3%

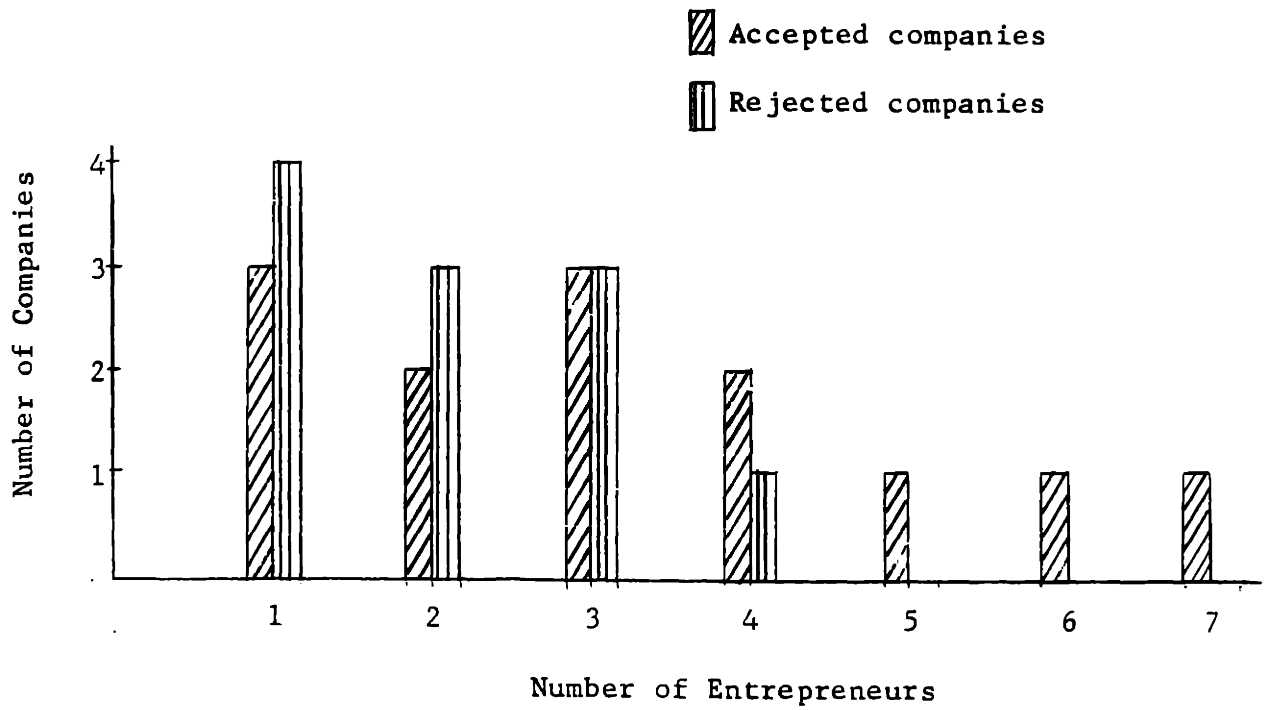
4.2 Entrepreneurial Considerations

4.2.1 Size of Entrepreneurial Group

As mentioned in Chapter 3, discussions with V.C.I. personnel indicated that entrepreneurial groups composed of two or three members were considered optimal. Figure 4-1 shows that of the sample companies accepted only five had entrepreneurial groups of two or three while one company had as many as seven persons. This finding cannot, in itself, be

FIGURE 4-1

SIZE OF ENTREPRENEURIAL GROUP



taken to negate the earlier statement since it is impossible to determine what V.C.I. perceived to be the role of each person. For example, if six people approached V.C.I. seeking money with which to purchase the division of a larger company in which they are presently being employed, this study considered the entrepreneurial team to number six. However, three of the members might have had only technical roles in the new organization and so V.C.I. might have considered the entrepreneurial team to be composed of only three. Because V.C.I. investigators were often unable to recall this type of breakdown exactly, the researcher frequently used the files to obtain this seemingly objective information. However, as in the example above this information was somewhat subjective, so that it becomes impossible to make any definite statements about the optimal size of the group. Indications are that this variable is of minor importance to the final decision.

4.2.2 Educational Background

Because of the technical nature of the companies in the sample, it is to be expected that the educational background of the entrepreneurs would be above average. This proves to be the case, only one entrepreneur not having at least a bachelor's degree. Table 4-5 gives the educational background for the entrepreneurs of both the accepted and rejected companies. The heading B.S. indicates that all of the entrepreneurs in the company have a bachelor's degree as their highest degree. The heading B.S. + Ph.D. indicates that at least one member of the company's entrepreneurial team has a bachelor's degree and at least one has a Ph.D. The table seems to indicate that V.C.I. is not strongly demanding of high levels of education for the entrepreneurs. Whereas 50 per cent of the companies invested in do not have entrepreneurs with more than a bachelor's degree, only 25 per cent of the rejected projects had entrepreneurs with this educational background. This fact can be explained by considering the direction V.C.I. prefers its portfolio companies to follow. Since this preference is toward a market-oriented development path rather than a research-oriented path it is reasonable to expect V.C.I. not to particularly want Ph.D.'s. However, this does not seem to be true. Thus assuming this desired market orientation, it appears that V.C.I. has decided that an educational background up to a bachelor's degree best assures this.

TABLE 4-5

EDUCATIONAL LEVEL-SAMPLE COMPANY ENTREPRENEURS

Level Attained	Accepted	Rejected
B.S.	6	2
M.S.	0	0
Ph.D.	1	1
B.S. + M.S.	3	4
B.S. + Ph.D.	1	0
M.S. + Ph.D.	1	1
	12	8

At least one entrepreneur in every sample company, with the exception of one, had a technical education. In the one exception, none of the entrepreneurs had technical degrees although several had minored in engineering disciplines. Of the accepted companies, five had at least one entrepreneur with a business or economics degree. This was true for only two of the rejected companies. Although not statistically significant, this might lead one to conclude that this educational factor is important.

4.2.3 Employment Experience

Prior to founding their own companies, the entrepreneurs had been engaged in work closely related to the areas their companies would be in. Because of insufficient data it is impossible to determine just what kinds of work each company's entrepreneurs had been doing but it seems that most were involved either directly in R & D or in R & D supervision.

Table 4-6 shows the average number of years of commercial experience, the average number of commercial companies worked for and the average length of service per company for the entrepreneurs of each company for which data is available. There appears to be no important differences along these dimensions for companies accepted or rejected. There were also no significant differences in the deviations from average for each company in these dimensions.

TABLE 4-6

COMMERCIAL EMPLOYMENT HISTORY-SAMPLE COMPANY ENTREPRENEURS[5]

	Accepted Companies			Rejected Companies		
	Aver. Yrs. Commercial Experience	Av. No. Commercial Companies	Av. Stay Per Company	Aver. Yrs. Commercial Experience	Av. No. Commercial Companies	Av. Stay Per Company
	15	3	5	13	1	13
	7	1	7	7	1	7
	12	3	4	5	3	1.7
	12	3	4	18	3	6
	10	2	5	5	1	5
	26	3	8.7	10	1	10
	12	2	6	10	2	5
	12	1	12	25	3	8.3
	12	2	6	15	4	3.75
	20	2	10	—	—	—
Mean	13.8	2.2	6.67	12	2.1	6.64

In the case of four companies (two were accepted and two were rejected) V.C.I. felt that the entrepreneurs were not sufficiently business-oriented. In these cases, it was felt that additional business experience rather than business education was needed. Since the situation arose equally in accepted and rejected companies, lack of business experience is probably evaluated in the initial rather than the final decision.

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[5]Companies are listed in random order within subsample.

4.2.4 Age of Entrepreneurs

It was found that there was a significant relationship (at the 1 per cent level, one-tailed) between the average age of the entrepreneurial group and the accept-reject decision of V.C.I. This relation indicated that V.C.I. accept decisions tended toward companies whose entrepreneurs, on the average, were older. However, no relationship existed between the decision and either oldest or youngest entrepreneur in the company group.

Table 4-7 shows that the mean age spread of entrepreneurs of accepted companies was much higher than the mean age spread of rejected company entrepreneurs. Although this was not statistically significant (at the 10 per cent level, one-tailed), it is the author's opinion that this finding, nonetheless, indicates that V.C.I. prefers a non-homogeneous entrepreneurial group with respect to age. Since this difference in age spread occurred because accepted company entrepreneurial teams had, on the average, an oldest member of 42.8 years versus 38.8 years for rejected company entrepreneurial teams, it is possible to conclude that V.C.I. prefers at least one rather mature entrepreneurial team member. This maturity implies less reckless company policies and strategies, thus, it follows that a certain degree of conservatism is desired.

The most plausible reason for the existence of the above-mentioned average age relationship is that increased age might be highly related to increased levels of business oriented experience. Although data were not available to test the existence of this relationship, it seems obvious that for technical people increased experience (in terms of years) leads to increased supervisory and administrative duties. Since the average number of years of commercial experience for entrepreneurs of accepted companies was 13.8 versus 12.0 for entrepreneurs of rejected companies it follows that the former group of entrepreneurs had slightly (but not significantly) greater supervisory and administrative responsibilities.

The lack of significance along the oldest or youngest entrepreneur dimension was to be expected. V.C.I. tends to consider the entrepreneurial team as a whole and so is probably more concerned with the average ability in or experience with administrative duties than with the individual breakdowns of this experience. If one is unwilling to accept this tendency toward conglomeration but instead believes that V.C.I. puts almost complete emphasis on the leading entrepreneur, it is still reasonable to expect no significance along the youngest and oldest dimensions.

TABLE 4-7

AGE OF ENTREPRENEURS[6]

Accepted				Rejected			
Avg. Age	Oldest	Youngest	Spread	Avg. Age	Oldest	Youngest	Spread
43	--	--		38	38	38	0
35	--	--		36	36	36	0
38	41	37	4	32	33	31	2
42	42	42	0	42	45	40	5
39	39	39	0	28	31	25	6
35	38	33	5	35	35	35	0
36	36	36	0	32	--	--	
38	40	35	5	37	38	36	2
51	67	42	25	49	53	45	8
37	42	33	9	40	40	40	0
35	42	28	14				
35	35	35	0				
45	50	37	13				
Mean=39	42.8	36.1	6.5	36.9	38.8	36.2	2.6

[6]Companies listed randomly within subsample.

In the case of five companies, the V.C.I. investigator felt that the entrepreneurial group was too young. Two of the five were companies invested in and three were rejected. The companies invested in had average entrepreneurial ages of thirty-five and thirty-six. The companies rejected had average ages of twenty-eight, thirty-two and thirty-seven. In all but one of these cases the answer "too young" was accompanied by a statement that the entrepreneurs were too inexperienced. Yet in only one case of the four for which data were available was the average years commercial experience less than ten. The statement about lack of experience therefore seems to refer to administrative or supervisory experience. This tends to support the earlier statement about V.C.I.'s emphasis on business-oriented experience.

4.2.5 Personality Characteristics

In Chapter 3 it was stated that V.C.I. felt that it was important for an entrepreneur to solve any problems that arose immediately. Thus it would be expected that answers to question 25, part 4 of Questionnaire II should tend to be lower for accepted companies than for rejected companies.[7] However, it was found that answers to this question for rejected companies were significantly lower than for accepted companies (at the 1 per cent significance level, two-tailed). This raises a very interesting question. If a realization of the need for urgency is as important as V.C.I.'s statements indicate, why were alternative investment

[7] Question 25, part 4 asks the investigator to rate the entrepreneur on a scale from 1 to 7, 1 being "realized the need for urgency", and 7 being "somewhat procrastinating".

opportunities whose entrepreneurs were lacking this realization selected over companies whose management did not lack this realization? One possible answer is that other factors significantly outweighed the importance of this one. Another is that this factor is really not that important. The author tends to feel that the answer is a combination of the two. That is, V.C.I. can live with an entrepreneur who lacks this realization initially if other factors prove to indicate that the company will be successful regardless. It is felt by V.C.I. that through its consulting services and board representation this lack will be corrected. Indications are that this feeling is substantiated since the same question asked as of the present failed to indicate that any significant differences still existed (Part 4, Question 26).

Two other parts of question 25 seemed to indicate that V.C.I. acted in a manner that was inconsistent with statements previously made. Entrepreneurs of companies that were rejected were considered to be more aware of their personal limitations than were the entrepreneurs of companies that received V.C.I. financial support. Of the eleven companies in the rejected sample, the entrepreneurs of seven were given ratings of 4 or above while in the sample of thirteen accepted companies only 4 received ratings of 4 or above. A similar situation arose on the question of awareness of direction. In this case, nine of the eleven rejected companies were given ratings of 4 or above while only seven of the thirteen accepted companies received similar ratings.

These findings further substantiate the above statement and also expand upon it, to the extent that it might be applicable to almost all of the entrepreneur's personality characteristics. Provided that the entrepreneur is open to criticism and change (the data gathered tend to support this), V.C.I. feels that these personality characteristic shortcomings can be overcome by the close working relationship between V.C.I. and the company. And if this proves impossible, V.C.I. is still often able to replace the entrepreneur. This might indicate, contrary to V.C.I. statements, that the product or market is more important to the decision than is the entrepreneur.

4.2.6 Factors Influencing Entrepreneurship

V.C.I. considers future capital appreciation to be the most important reason entrepreneurs should have for going into business for themselves. Almost all of the entrepreneurs were considered to be concerned with this. However, being technical people, the entrepreneurs felt that other features were often more important. Nineteen were perceived to consider independence as being very important and twelve felt that the challenge to do what others could not was also a very important feature. The fact that only four were thought by V.C.I. to be interested in the freedom to explore new areas lends support to the earlier statement that the technical areas the new companies were in were closely related to the areas the entrepreneurs had been working in previously. No differences were apparent between the entrepreneurial interests of the accepted and rejected companies.

4.3 Company Characteristics

4.3.1 Initial Presentation

The initial written presentation of companies that were eventually accepted tended to be better than the presentations of those companies that were rejected. Thus, six of the twelve presentations of accepted companies, recalled by the investigator, were rated (in question 29)[8] at 5 or better while only one of the six by rejected companies received a rating as high as 5.

This seems reasonable in view of the initial presentation's contents. An initial presentation should be an objective evaluation of the future market potential and the future place of the company in the market. It should evaluate the product in light of others in the market and should consider the accomplishments of the entrepreneurs objectively. A good initial presentation reflects on the good common sense and reasonable expectations of the entrepreneur and reduces the chance that further V.C.I. investigations might uncover information which is in direct disagreement with statements made.

In general, the factual material in the initial presentation by accepted companies were supported by later investigations whereas those presentations by rejected companies were not supported later. This is quite consistent with the above and indicates that V.C.I. considers an honest appraisal of worth to be important.

4.3.2 Company Age

As mentioned earlier, the companies in the sample ranged in age from new, start-ups to eight years old, at the time of investigation by V.C.I.

Figure 4-2 shows the distribution of companies by age for both the accepted and rejected samples. As can be seen, no significant

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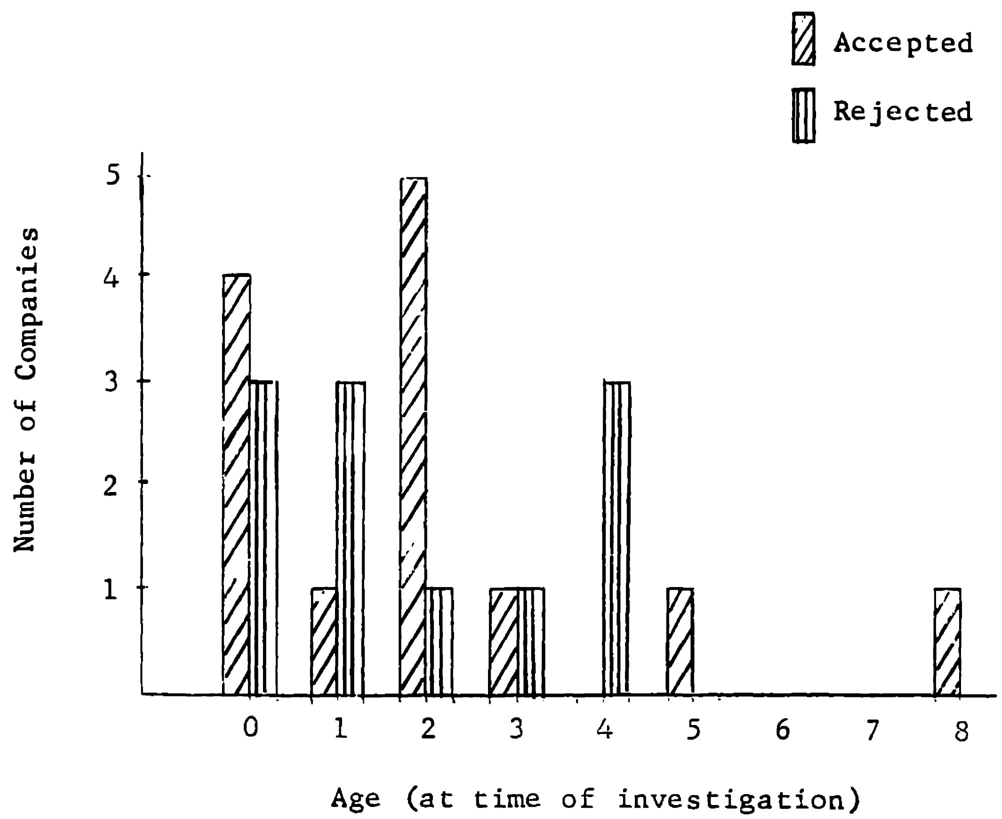
[8]Question 29 asks the investigator to rate the quality of the initial presentation on a scale from 1 to 7, 1 being "poorly done" and 7 being "well done".

differences exist between the accepted and rejected companies, the mean age of accepted companies being 2.1 years and the mean age of rejected companies being 1.8.

FIGURE 4-2

AGE OF COMPANIES



4.3.3 The Company's Product

In Chapter 3, it was stated that V.C.I. will not invest in a company that is not in production. Thus a product is a prerequisite. But given this as fact the question of the importance of different product characteristics arises. However, these characteristics are only important in terms of the value customers place on them. Therefore, the customer is asked to supply the answers. These answers and their relationship to the V.C.I. decision seem to indicate that V.C.I. places varying degrees of importance on each product characteristic.

V.C.I.'s perception of the rating customers attached to the importance of new technology as an important factor in purchasing the company's product seems to be quite important in making a final decision. This rating was significantly higher for companies V.C.I. accepted than for companies it rejected (at the 10 per cent significance level, one-tailed). One would expect this to occur based on V.C.I.'s investment philosophy which in part attempts to help society by providing support for small businesses to develop new products and services. At the same time, this finding lends support to the argument that venture capital is supporting innovation rather than just supporting more efficient companies involved in less technically advanced activities.

This latter statement is further supported by considering the customer's rating on the importance of price as a factor in purchase. The findings here indicate that price was a greater purchase factor of customers of rejected companies than it was of customers of accepted companies (at the 5 per cent significance level, one-tailed). Thus, V.C.I. is not interested in companies that rely heavily or probably even moderately on price as a means of obtaining sales.

The analysis also revealed that customers of accepted companies considered the special purpose or special specifications of the product to be a more important factor of purchase than did customers of rejected companies (significant at the 10 per cent level, one-tailed). This finding leads to a conclusion that V.C.I. is interested in a company whose product is rather specific and that caters to the special needs of customers. Of course, one would expect V.C.I. to feel that a mass market also exists for either the product or the related technology.

Service of the company also proved to be an important factor in purchase. Customers of accepted companies considered it more important than customers of rejected companies (significant at the 10 per cent level, one-tailed). This factor is tied quite closely to the above-mentioned special specifications factor. Designing a product to meet special specifications requires a close coordination between producer and customer. It often involves modifications and reassessment of purpose so that a prompt, capable intercompany working relationship is needed.

This necessity for close coordination implies customer dependence on producer personnel. It would,therefore,be expected that the quality of the company personnel would be a factor of purchase. This proves to be the case. Customers of accepted companies were perceived to consider the quality of personnel as a far more important factor in the purchase decision than did customers of rejected companies (significant at the 1 per cent level, one-tailed).

Table 4-8 summarizes the findings on customer attitudes toward purchase of the product. A plus (+) indicates that set of companies (accepted or rejected) for which the customers felt the factor was important in the purchase decision.

These factors can be combined into two major considerations: innovation and method of market penetration.

V.C.I. appears to consider the degree of innovation as an important decision variable. It believes that its technically oriented portfolio companies must be creative, research and development oriented, and able to exert effort toward the always changing new technical

TABLE 4-8

FACTORS IN CUSTOMER PURCHASE DECISION

Factor	Accepted Companies	Rejected Companies	Significance Level (one-tailed)
New Technology	+		.10
Price		+	.05
Special Specifications	+		.10
Service	+		.10
Quality of Personnel	+		.01

requirements. With the high costs that accompany continuous and strenuous research and development activities, V.C.I. does not expect its companies to engage in price competition, nor would this be realistic. It might be said that V.C.I. seeks companies that hold a price umbrella over an industry, the umbrella being supported by technological innovation.

V.C.I. wants its portfolio companies to satisfy the market's needs not by altering those needs to fit its product but instead by altering the product to satisfy the needs. This approach requires a very close coordination with the customer so that the latter's needs can be redefined when necessary. This close coordination can only be realized if the company has high quality personnel who are well versed in all aspects of the customer's business and the technical requirements of the business. It also requires a service oriented attitude toward marketing as a means of ensuring greater contact with the customer. As mentioned earlier, the factors that accepted company customers felt were important in the purchase decision tend to support this approach to market penetration.

4.3.4 Company Marketing Strategies

Almost all of the sample companies, except for the new ones, advertised to some degree. Generally this advertising was in the form of technical bulletins and/or trade show participations. However, V.C.I. did not consider promotion to be of any importance in the overall evaluation of the company.

Sales ability was considered to be an important marketing variable in eight of the accepted companies and five of the rejected companies. Since the companies did not have established sales organizations but rather used manufacturer's representatives and possibly had the sales manager call on local customers occasionally, this variable seems to refer to the sales and marketing acumen of the entrepreneurs and also relates back to the service consideration of the customer purchase decision.

4.3.5 Company Sales

While V.C.I. makes investments on the basis of a company's expected sales and profits in the future, it is reasonable that past sales information would be used as a possible indicator of market penetration ability and market size. Table 4-9 presents the sales of each of the sample companies in the year prior to V.C.I.'s investigation. Although in several instances these data were unavailable to the researcher, at the time of the investigation V.C.I. had it available as an input to the decision.

Results of the statistical analysis showed that the sales of rejected companies were significantly higher than those of accepted companies (at the 10 per cent level, one-tailed). Even with deleting start-up companies from the sample, rejected companies' sales were significantly higher (at the 15 per cent level). This finding is, indeed, surprising since one would expect that the past performance of a company to be on important decision criterion. Since this study is descriptive, rather than normative, the implications of this finding on the success of V.C.I.'s decision making process will not be discussed.

TABLE 4-9

COMPANY SALES AT TIME OF INVESTIGATION

Accepted Company's Sales	Rejected Company's Sales
$3,000,000	$1,150,000
1,500,000	800,000
137,000	600,000
0	1,750,000
650,000	1,700,000
180,000	0
250,000	126,000
168,000	1,175,000
0	
0	
240,000	
700,000	

4.3.6 Employees

Table 4-10 presents a breakdown of number of employees for a sample of eleven accepted and seven rejected companies. It was found that accepted companies had significantly more employees at the time of the V.C.I. investigation than did rejected companies (at the 10 per cent level, one-tailed).

This finding is to be expected since earlier analyses indicated that the accepted companies were service and special order oriented. Since sales for rejected companies were significantly greater than for accepted companies, it follows that sales per employee for accepted companies were much lower than for rejected companies. Indeed, one would expect a service and special order market orientation to require greater human effort per sales dollar than would a mass market or price competition orientation.

TABLE 4-10

COMPANY EMPLOYEES AT TIME OF INVESTIGATION

Accepted Companies	Rejected Companies
90	0
230	12
60	12
7	32
12	0
6	11
100	125
0	
16	
35	
35	
Mean 53.7	Mean 27.4

4.3.7 Technical Specialization

Generally, all the companies in the sample had narrow technically specialized areas. The sample of rejected companies had an average rating of 5.8 on question 43[9] while the accepted sample averaged 5.6. A majority of the companies in both samples were rated at 6 or above. This finding might lead to the conclusion that V.C.I. generally feels that new technical companies must master a very small piece of technology before it can move intobroader technical areas. Although this might be important, it appears that its effect is accounted for in the initial

[9]Question 43 asks the investigator to rank how technically specialized the company was at the time of the investigation on a scale from 1 to 7, 1 being "very broad" and 7 being "very narrow".

rather than the final decision.

4.4 Market and Industry Considerations

4.4.1 Degree of Technical Development

The analysis indicates that accepted companies were in markets that were more highly technically developed than were rejected companies (at the 10 per cent significance level, one-tailed). This finding points out V.C.I.'s preference for companies that are able to profitably cut off a portion of an existing market rather than enter a completely undeveloped area. This preference leads to a question about the innovative philosophy of V.C.I. If V.C.I. is interested in innovation should it not prefer undeveloped rather than highly developed technologies?

The answer to this question depends on whether applying existing technology to new market areas or expanding upon existing technology can be accepted as being innovation. If, as the author believes, it can, then the question can be answered in the negative since the companies invested in are innovative.

By investing in highly developed markets, V.C.I. is able to eliminate part of the risk associated with new company investment. Investing in companies in undeveloped markets requires accepting the risk that both the market will develop and the company will be able to obtain an adequate piece of the market. If the market is already developed only the latter risk need be accepted. Since expecting the latter requires the acceptance of high risk in itself it is not surprising that V.C.I. attempts to hedge the market risk.

4.4.2 Competition

Significantly more of the companies V.C.I. invested in faced competition composed at least in part by large companies than did companies V.C.I. rejected. Using the Fisher-Exact test this was significant but only at the 15 per cent level. Table 4-11 presents the nature of each sample company's competition.

TABLE 4-11

SAMPLE COMPANY'S COMPETITION

Nature of Competition	Accepted	Rejected
No competition	0	1
A few small companies	1	3
Many small companies	0	0
A few large companies	4	1
Many large companies	0	0
Both large and small companies	8	6
	13	11

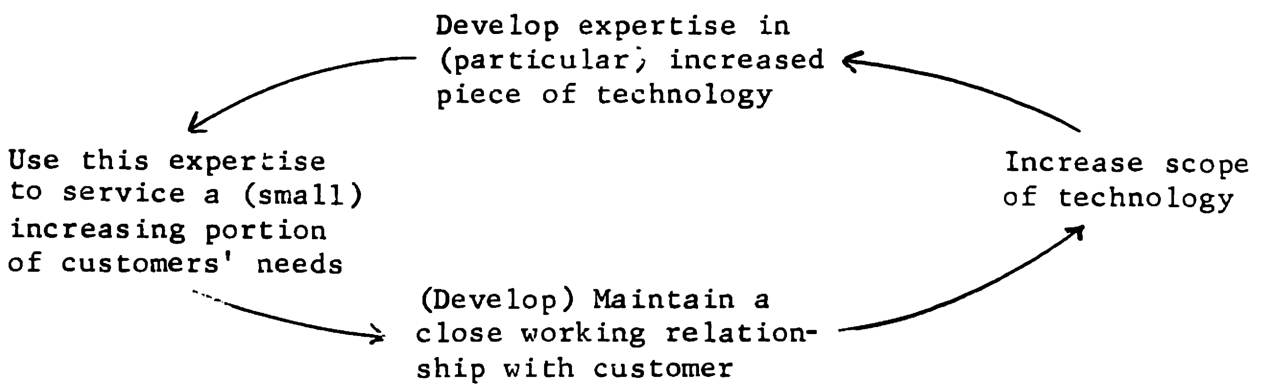
This finding is consistent with V.C.I.'s preference for its companies to carve out a chunk of an existing market rather than entering a new market and with its concept of the proper method of market penetration. If competition consists of large companies, the small company usually must initially concentrate on a rather narrow piece of the involved technologies so as to establish a technical superiority which can be used as a building block. With this technical superiority, the small company still usually finds itself financially incapable of rapid expansion but must concentrate on developing a strong compatibility with a customer so as to slowly obtain a large portion of his business.

The above indicates that a small company's technology expansion and marketing approach are linked together through a feedback loop.

Figure 4-3 is an attempt to illustrate this. Parenthesized words refer to the initial entrance, unparenthesized words indicate the expansion. This model of new technical company expansion, as preferred by V.C.I., is quite consistent with the finding that most companies were involved in rather narrow fields of technical specialization.

FIGURE 4-3

SMALL TECHNICAL COMPANY EXPANSION



4.4.3 Market Growth Potential

Based on V.C.I.'s investment objectives, it was to be expected that all of the accepted companies would be in rapidly growing industries. However, this did not hold true universally although a majority of accepted, as well as rejected, companies were in high growth industries. For three of the accepted companies, the market was felt to be rather stable and the investment here was based on increased market share expectations. From this it is possible to draw the conclusion that V.C.I. is interested in investing in high potential growth companies and is not too concerned about whether the growth is generated by overall market growth or by company market share growth.

4.4.4 Market's Future Changes and Problems

Generally, V.C.I. felt that radical changes in the markets of accepted companies were more likely than in the markets of rejected companies. In seven of thirteen accepted cases radical changes were expected while only in three of ten rejected cases were radical changes expected. These expected changes ranged from things that could ensure company success to things that might mean disaster so that very little of a specific nature can be gleaned. In the main, V.C.I. expected the market to suddenly grow very rapidly or for competition to increase significantly.

V.C.I. did not foresee any future problems arising because of the nature of the market other than those cited above. It is felt that if V.C.I. foresaw any major problems this was considered in the initial decision which would have made the company's market uninteresting.

4.5 Financing Characteristics

4.5.1 Amount of Financing

All of the sample companies' financial requirements fell below the maximum limit V.C.I. had placed. In some cases the requirement also fell below the minimum limit, however, in these cases it was expected that additional funds would be required later or V.C.I. was investing as part of a group. Generally, the accepted and rejected companies requested quite similar amounts of financial help as indicated in Table 4-12.

TABLE 4-12

AMOUNTS OF FINANCING DESIRED

Amount, $	Accepted	Rejected
0 - 99,999	1	0
100,000 - 199,999	2	3
200,000 - 299,999	1	4
300,000 - 399,999	4	1
400,000 - 499,999	1	2
500,000 - 599,999	4	1
	13	11

4.5.2 Use of Financing

Table 4-13 indicates the companies' intended uses for the V.C.I. investment. While the intended uses of funds varied, half of the total sample and approximately half of each subsample intended at least part of the funds to be used for working capital.

Only one rejected company intended to use the money for product development while six accepted companies had this intention. This was found to be significant at the 10 per cent level. This finding indicates a possible V.C.I. feeling that a small company can only be successful by constantly developing new and better products. Of course, it could also be taken to indicate that the products of rejected companies were more highly developed. However, no data or indications exist to support this.

TABLE 4-13

INTENDED USES OF FUNDS

Use	Accepted	Rejected
Capital Equipment	1	2
Product Development	6	1
Working Capital	7	5
Acquisitions	1	1
Pay off Debt	2	2
Growth	2	1
Start-up	1	1
Sales Activity	3	1

4.5.3 Form of Investment

Of the sample companies, twelve of those accepted entered the negotiations with V.C.I. wanting a particular form of investment while only five of the rejected companies wanted a particular form. This proved to be statistically significant as the 5 per cent level. This significance indicates that V.C.I. prefers companies with explicit investment form desires. Most of the companies desiring a particular form of investment preferred straight equity. Therefore, it becomes reasonable to conclude that 1) V.C.I. has a preference for equity financing, as it states, and 2) definite preferences for investment forms indicate an entrepreneurial characteristic of which V.C.I. approves. It is difficult however, to determine if this characteristic is financial acumen or possibly something else.

4.5.4 Risk

As is to be expected from V.C.I.'s stated commitment to high risk ventures, almost all of the sample companies were rated at or close to high risk. Rejected companies, however, tended to be of higher risk than accepted companies (nine rejected companies were rated at 6 or 7 on question 62 while only seven accepted companies were similarly rated).

The cause of the risk varied but seemed to center around three areas: the product, the market, and the company personnel. In attempting to determine if any particular cause of risk led to rejection of a project it was found that for rejected companies the product as a cause appeared significantly more often than it did for accepted companies (at the 15 per cent significance level). This finding when combined with the earlier stated findings in reference to the intended uses of financing produces interesting results. Since the accepted companies intended to use the V.C.I. financing partly for product development their products would be changed hopefully for the better. Thus,V.C.I. was unable to evaluate the product's performance and acceptance since it was still being developed or modified. V.C.I. could only look at the company's earlier products from which no conclusions about the future could be made. This inability to investigate resulted in risk being evaluated on product expectations only. The rejected companies, on the other hand, could have their products evaluated on past performance as well as future expectations. Thus unless the past performance had been excellent, a component of risk can be attached to these products that could not be attached to the accepted companies' products.

4.6 Rank Ordering of Decision Variables

This chapter has been concerned with discussing the differences between companies accepted and rejected by V.C.I. in the second-phase (invest-no invest) decision. These discussions have also attempted to explain why the differences occurred and the rationale behind V.C.I.'s decision based on these differences. However, the main purpose of this chapter is to develop the rank ordering of decision variables, which will now be presented.

Contrary to V.C.I.'s statements that the people are more important than the idea or product in the final decision, this study has found that the product and the company's approach to marketing the product plays the foremost part in the V.C.I. second-phase decision.

This is based on the fact that differences between accepted and rejected companies were much greater for product and marketing characteristics than for the people characteristics. It is possible that the entrepreneur is more important in the first-phase decision although data are not available to prove this. The entrepreneurs and the company's market potential are also important but somewhat below the product in significance. Financing arrangements appear to be the next important factor with the sources of the company the least important in this second decision.

The explanations from which this ordering has been developed were given throughout the chapter and so will not be repeated here. However, from the statistical findings as well as supporting data and comments the following rank ordering of decision variables seems reasonably correct.

Rank Ordering of Decision Variables

1. Service oriented marketing approach emphasizing special orders initially, to be followed by mass marketing after satisfactory market penetration.
2. Dependence on development of new products based on increasingly sophisticated technologies in order to maintain and increase market coverage.
3. Large company competition to compel following approach 1 and 2.
4. Highly technically developed markets.
5. Entrepreneurial teams with business and administrative oriented backgrounds in companies of closely related

technologies.

6. Entrepreneurs with basic, rather than in depth, technical education.

7. A well done, honest initial presentation.

8. Sales ability of at least one entrepreneur.

9. Financial requirements for product development.

10. Source with previous experience with V.C.I.

CHAPTER 5

COMPARISON OF DECISION CRITERIA

In Chapter 4, the criteria V.C.I. uses to make a decision were presented. This chapter will compare these decision criteria with findings of previous studies that are concerned with the new technical enterprise spin-off process. These studies found certain characteristics that differentiated successful from unsuccessful young technical enterprises.

Wainer,[1] in his thesis, developed a rating scheme that evaluates each company in his sample with regard to three criteria:

1) Sales Growth Group
2) Number of years in business
3) Whether or not the company is profitable

The Sales Growth Group for each company in his sample was based on a time series of its sales. A regression line was calculated for each company's sales and based on its slope the company was placed in one of four groups. A fifth group was specified for companies that went out of business or had a declining rate of sales. These sales growth groups when combined with age and profitability of the company resulted in a performance rating that ranged from one to fifteen. A rating of

[1]Wainer, op. cit., pp. 22-33.

one indicates high success and a rating of fifteen indicates low company success.

Teplitz[2] divided his sample companies into three different growth patterns. Group A, the early successes had sales of at least $200,000 after two years in business and continued past $500,000 in the third year. Group B, the slower successes had reaches sales of $300,000 per year by the time of the study. Group C, the marginal successes or failures, include the remaining firms in the Teplitz sample.

Based on these success ratings, both studies were able to determine, at least partially, reasons for success or failure of a new technically based company. However, because the studies concentrated on the entrepreneur and the company, little objective data relevant to the market were obtained. Therefore, market comparisons, unless otherwise noted will be based on the previous authors' subjective judgments.

5.1 Entrepreneurial Characteristics vs. Success

5.1.1 Size of Group

Both Wainer and Teplitz found that the size of the entrepreneurial group was related to eventual company success. Teplitz determined that companies founded by groups were more successful than companies founded by individuals,[3] while Wainer found that success was directly related to the number of entrepreneurs.[4]

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[2]Teplitz, _op. cit._, p. 34.

[3]_Ibid_., p. 54.

[4]Wainer, _op. cit._, p. 70.

V.C.I.'s decision criteria seem to agree with these findings. Only three of the thirteen accepted companies had single entrepreneurs while four of the eleven rejected companies were founded by a single individual. Also, five of the accepted companies in the sample had more than three persons in the entrepreneurial team as compared with only one rejected company having more than three entrepreneurs.

5.1.2 Age

Whereas the analysis of the sample of V.C.I. decisions indicated that V.C.I. tends to invest in companies in which the average age of the entrepreneur is higher, Wainer found that younger entrepreneurs were more successful. However, the V.C.I. sample entrepreneurs seem to be much older than those in Wainer's sample, only one company having an average age below 30 in the V.C.I. sample while Wainer found nine of under 30.[5]

Because of this rather large age difference in the two samples, the above finding is not necessarily an indication of a shortcoming in the V.C.I. decision process, although it might indicate that V.C.I. should have accepted only a few of those companies it rejected and should have rejected all the rest. The author can only suggest that Venture Capital Incorporated be less adverse to younger entrepreneurs and also place less emphasis on supervisory or administrative duties in the entrepreneur's previous experience. Neither of the earlier studies found any relationship between success of a company and the

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[5] _Ibid_, p. 68.

entrepreneur's responsibility level in the laboratory in which he had been previously employed.

5.1.3 Industrial Experience

Wainer found that having commercial experience between leaving Lincoln Laboratory and the formation of the new company was inversely related to the success of the entrepreneur's company. This arose because of the direct relationship that existed between the degree of Lincoln technology transferred and the success of the company. That is, commercial experience reduced the degree of technology transfer that in turn reduced company success.[6]

While this study did not attempt to determine technology transfer, it is the author's opinion that in general the entrepreneurs in the V.C.I. sample transfered much technology from their former employers. This is because the new companies generally entered markets that were either the same as or closely related to the markets of their previous employers. This was true for both accepted and rejected entrepreneurs so it appears that V.C.I. may implicitly consider the degree of technology transfer in the first-phase decision. If this is the case, then it also appears that in the second-phase V.C.I. only considers technical companies that have a high degree of technology transfer. This is reasonable since one would expect an entrepreneur to be more competent in a familiar technical area than in an unfamiliar one. This finding compares favorably with Wainer's finding that the degree of technology transfer was directly related to company success.

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[6] *Ibid*, p. 61.

To further support this, Teplitz found that companies that were in areas unrelated to the work the entrepreneur had been doing at the Instrumentation Laboratory were not as successful as companies in areas in which the entrepreneur had worked.[7]

Wainer found that an optimal length of service at the Laboratory relative to entrepreneurial success probably existed.[8] That is, an entrepreneur's probability of success was somehow related to his length of stay at Lincoln. This goes back to the idea that the entrepreneurial character is not content to stay at one job very long. He must stay long enough to gain expertise in the technology but after that must either start a business or go to another organization.

While, the optimal length of service was not quantified it is this author's opinion that the 6.67 years found as the average length of service for entrepreneurs accepted by V.C.I. is somewhat above the optimal. This relates to age of the entrepreneur and so here again the author suggests that V.C.I. consider these findings.

5.1.4 Personality Characteristics

Based on his own subjective evaluation, Teplitz maintained that:[9]

> " . . . it appears that the slow and easy-going man is much less likely to push his firm to the limit of its growth capacity than does an ambitious man. In fact, all of the top six, Group A, firms were headed by people who appeared to the interviewer to be hard-driving entrepreneurs. Three of them were somewhat egocentric."

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[7] Teplitz, _op. cit._, p. 41.

[8] Wainer, _op. cit._, p. 114.

[9] Teplitz, _op. cit._, p. 54.

This statement supports V.C.I.'s feeling that the founder of a small technical company must realize the need for urgency in handling the problems that arise. However, as mentioned earlier, the statistical analysis of the sample companies showed that in V.C.I.'s opinion the accepted company entrepreneurs procrastinated more than rejected company entrepreneurs. This author can only comment that V.C.I. would be wise to act in a manner more closely representing its stated desires.

Teplitz's statement also refers to egocentricity. While Teplitz found that three of the six Group A entrepreneurs in his sample possessed this characteristic, V.C.I. contends that it prefers not to deal with egocentric entrepreneurs. However, the analysis of the sample of V.C.I. decisions indicated a V.C.I. preference for this type of entrepreneurial characteristic. Thus, here V.C.I. says it does not want this type of entrepreneur and acts as if it does. Indications are that V.C.I. should continue to act as it is presently doing.

5.1.5 Reasons for Going into Business

Earlier it was stated that most of the entrepreneurs in the V.C.I. sample were perceived to feel that capital appreciation was one of the foremost reasons for his going into business. While Wainer, in his study, did not list capital appreciation as a possible reason for going into business he did find that entrepreneurs who considered salary as an important reason were generally successful.[10]

Since capital appreciation is more closely related to salary

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[10]Wainer, op. cit., p. 112.

than to any of the other features Wainer considered, it is reasonable to expect that the respondents in the Wainer study included capital appreciation in the salary feature. This being the case it follows that entrepreneurs who considered capital appreciation as important were more successful. In the V.C.I. sample, almost all of the entrepreneurs considered capital appreciation important. Therefore, V.C.I. probably takes this into consideration quite early in the decision process and only passes into the second phase those entrepreneurs with this preference.

5.2 Company Characteristics vs. Success

5.2.1 Personnel

Earlier, it was found that V.C.I. considered the quality of a company's employees to be a factor in the investment decision. This finding was, in turn, related to the market orientation that V.C.I. preferred.

Wainer found two significant relationships that tend to support V.C.I.'s preference for a company having highly qualified personnel. First, he found that those companies that hired people to handle business matters did substantially better than those that did not do so. Second, he found that those companies which indicated that personnel was their main business problem performed better than companies which indicated another problem as being primary.[11] This leads to the conclusion that the more successful companies were more aware of the need for both good technical and managerial people.

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[11]*Ibid*, pp. 98-99.

5.2.2 Product

The investigation of the V.C.I. sample of investment opportunities revealed that Venture Capital Incorporated 1) only considered companies already in the production stage, 2) preferred companies involved in new technology, 3) preferred those companies that were meeting customers' special specification, and 4) preferred companies that were service oriented.

In general, the Wainer and Teplitz studies showed that a new technical company producing a product that satisfied these criteria tended to be more successful. Wainer indicated that a company must develop a product or standard service to be successful.[12] He also found that success was related to the degree of technology transfer from Lincoln Laboratory.[13] Because of the nature of the work at Lincoln, the degree of technology transfer is directly related to the newness of the technology. Thus, the more successful "spin-offs" were more involved in new technologies.

Teplitz found that some of the successful companies in his sample were producing to meet customer requirements although the underlying product was the same.[14] This form of production, in the author's opinion, implies a service orientation.

5.2.3 Marketing Strategies

From his close contact with the forty-seven Lincoln Laboratory

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[12]Ibid, p. 73.

[13]Ibid, p. 64.

[14]Teplitz, op. cit., p. 33.

"spin-offs", Wainer made certain recommendations regarding a small technically-based enterprise's marketing activities.[15] These recommendations included:

1. Acquire information concerning customer needs.
2. Direct all promotional effort toward the isolated market.
3. Concentrate most effort on one product once it has been established as marketable.

In general, V.C.I. appears to base its decision partly on a company's engagement in these aforementioned marketing activities. To a large degree, the merit of a company's initial presentation to V.C.I. is based on a complete and accurate statement of the potential market for the company's product. Since accepted companies generally had better initial presentations than rejected companies, indications are that the accepted companies obtained more complete and accurate market information.

The use of technical bulletins and trade show advertising by almost all companies in the V.C.I. sample might indicate V.C.I.'s interest in company promotional activities, although data to support any statement about the direction of this promotional activity is not available.

The preferred method of expansion described in Chapter 4 is quite closely related to Wainer's third recommendation. This method suggests that a small technical company develop one product, concentrate on it meeting customer needs and only after a close working relationship

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[15] Wainer, op. cit., p. 96-97.

with the customer is established begin work on another product.

5.3 Miscellaneous Comparisons

5.3.1 Supervisor Discussions

Wainer found a significant relationship between company success and evaluations of the entrepreneurs by their Laboratory supervisors.[16] It was felt that the measuring technique used to obtain these evaluations was rather crude and so Wainer tended to minimize the significance. However, this finding causes the author to suggest that V.C.I. pay a reasonable amount of attention to former supervisor's evaluation of the entrepreneur's technical and managerial ability.

5.3.2 Relationship with the Capital Source

The major problem that entrepreneurs in Wainer's sample encountered in dealing with sources of capital was one of communication. Although it is primarily the responsibility of the entrepreneur to become educated in the language of the businessman some responsibility for reducing the communication barrier rests with the capital source. To do this, the author suggests that V.C.I. become more concerned with the technical activities of a company. This could be accomplished through increased technical investigation by the V.C.I. staff rather than by relying on outside opinions or by strengthening its technical consultant's activities.

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[16] Ibid, p. 72.

5.3.3 Factors that Influence Entrepreneurship

It appears that V.C.I. does not give much consideration to factors which might influence entrepreneurship, in general, and successful entrepreneurship, in particular. These factors include family background, father's occupation, and religion. A paper by Roberts and Wainer, soon to be published, goes into great detail on the effects of these factors on technical entrepreneurship.[17] It is suggested that V.C.I. begin to consider these factors in its decision process.

[17] Roberts, E. B., and Wainer, H. A., "The Characteristics of Technical Entrepreneurs: A Preliminary Report," (M.I.T. Unpublished working paper), April, 1966.

CHAPTER 6

CONCLUSIONS AND SUGGESTIONS FOR FURTHER STUDY

This thesis has studied the decision-making process of a venture capitalist as it relates to technically-based companies. The study has attempted to determine the internal workings of the venture capital firm, the sources and uses of its information, and through an investigation of twenty-four sample decisions has attempted to determine the firm's investment criteria. It has not attempted to justify the criteria but has instead compared the criteria with previous studies of entrepreneurship and new company formation in order to serve as a possible aid to the investment decision process.

The conclusions drawn from the study can be summarized as follows:

1. V.C.I. has a two-phase decision process, the first involving a relatively small amount of investigation and the second involving a much more intensive investigation.

2. The investigations are concerned with five general areas: the entrepreneur, the source of the company, the company and its products, the market and the financial arrangements.

3. Information about the company is obtained through discussions with the entrepreneurs themselves, their former employers, company customers, people familiar with the market, and people in related technical areas.

4. The reliability of the source of the investment opportunity has an immediate effect on whether V.C.I. will even consider the project.

5. The better the relationship between the source and V.C.I. the more likely that a source's project will be accepted.

6. V.C.I. prefers groups rather than single entrepreneurs. It prefers that the entrepreneurs have had some supervisory and administrative duties in technical areas closely related to the intended area of the company.

7. V.C.I. will not invest in a company unless it has a working product or standard service.

8. V.C.I. prefers a creative, research and development oriented company that emphasizes service and meeting customer's special requirements.

9. Past performance of the company seems to have a negative, if any, effect on the V.C.I. decision.

10. V.C.I. prefers a company in a highly technically developed industry in which at least part of the competition is composed of large companies.

11. V.C.I. prefers that its investment serve a product development need and has little restrictions on the range of amounts of money it will invest.

12. V.C.I. will invest only if either an immediate or future equity position is established.

13. In general, V.C.I.'s investment criteria agree with criteria established in earlier studies as indications of small technical enterprise success, as can be seen from Table 6-1.

TABLE 6-1

COMPARISON OF V.C.I. PREFERENCES WITH M.I.T. STUDIES

V.C.I. Preference[1]	Agreement of V.C.I. Practices with M.I.T. Studies
1. Entrepreneurial group	agree
2. Older entrepreneurs	disagree
3. High degree of technology transfer	agree
4. Entrepreneurial procrastination	disagree
5. Entrepreneurial egocentricity	agree
6. Capital appreciation as primary reason for going into business	agree
7. High quality company personnel	agree
8. Company in production	agree
9. Company involved in new technology	agree
10. Company initial concentration on one product	agree

6.1 V.C.I. Cooperation

This thesis would not be complete without a brief statement of gratitude to V.C.I. for allowing the study to be made. The author is greatly indebted to the management and staff of Venture Capital Incorporated for their enthusiasm and cooperation during the many months of the study. The author was given the freedom to examine all V.C.I. documents and was never hindered from asking any questions he felt were relevant. Without this complete cooperation the study would not have been possible. It is the author's hope that this thesis proves of some value to V.C.I.

6.2 Suggestions for Future Study

This thesis has examined the decision making process of a particular venture capitalist. To get a better understanding of the venture capital industry, two types of further studies are suggested.

[1] Based on statistical analysis.

1. Additional Venture Capitalist Studies.--It would be extremely valuable to examine the decision-making processes of several other venture capitalists. This would allow for more general statements to be made concerning the investment criteria of the industry. These studies would then serve to give the future entrepreneur deeper understanding of the requirements and expectations of the sources of venture capital.

2. A Study of the Capital Seeking Behavior of Entrepreneurs.--Early in this thesis it was stated that the entrepreneur seeking capital must also make certain decisions. A study examining how these decisions are made would certainly be useful. This study would give venture capitalists a better understanding of the desires and fears of the entrepreneur in seeking capital support and should result in a more workable financing relationship. By examining the various strategies, both successful and unsuccessful, followed by entrepreneurs, it should also serve to give future entrepreneurs a better understanding of the relative merits of various approaches to securing financial aid. In his continuing study of entrepreneurship, Professor Roberts has begun a study of this nature.

Appendix A

QUESTIONNAIRE I

The Source:

1. From which sources do V.C.I.'s leads usually come?

2. Do you prefer contact through a source or direct contact?

3. Which sources have proven to be best?

worst?

4. What effect does the reliability of the source have on V.C.I.'s initial screening decision?

The Entrepreneur(s):

5. Is a group of entrepreneurs preferable to an individual entrepreneur?______
Why?

6. What is the optimal size of a group?______________________

7. What type of background should he (they) have?

8. What personality characteristics do you like to see in the man?

9. What personal characteristics cause you concern?

10. To what extent are you concerned about the physical appearance of an entrepreneur?

11. Do you feel that VCI would rather invest in an excellent man with a good idea than a good man with an excellent idea?

Why?

The Company:

12. To what extent are you concerned about the company's corporate objectives? their degree of definition or vagueness? their flexibility or rigidity?

13. How is your initial information on the company obtained?

14. How much emphasis do you place on the company's initial written presentation?

Why?

15. What parts of the presentation do you consider important?

16. Which parts are unimportant?

17. How do you go about checking the contents of a company's initial presentation?

18. Do you stay away from companies intending to do government contract work exclusively?

Why?

19. To what extent do you want the company's products to be developed? (i.e. idea, prototype, etc.)

20. Can a company with only the idea for a product expect to be considered?

Why?

21. What geographic locations do you prefer that the company be in?

Why?

22. How much emphasis do you place on company held patents in investigating a situation?

23. How do you analyze the technical importance of these patents?

24. How well developed must the company's facilities be before you consider it?

25. Is the physical appearance, rather than functional ability, of the facilities important?

For what reasons?

26. In what stage of operations would you like the company to be? Why?

27. How does the quantity and quality of the company's employees enter your decision?

The Industry and Market:

28. Does V.C.I. specialize in any technical areas?

If so, which ones?

29. Does V.C.I. shy away from any technical areas? If so which ones?

30. How technically specialized do you want the company to be?

31. Generally, how developed would you like to see the market the company is in?

32. What competitive environment do you feel best serves V.C.I.'s desires?

33. How do you learn of the market the particular company is in or hopes to enter?

34. Are attempts made to diversify by industry?

How is this done?

35. Would you prefer making significant investments in one industry before tackling another one rather than spread out immediately? Why?

Financing:

36. What forms of investments (deals) does V.C.I. prefer?

Why?

37. What particular needs of the company (i.e. plant, equipment) do you prefer your investment to serve?

38. Which needs do you shy away from?

39. How definite should the funds allocation plans of the entrepreneur be?

40. Within what investment dollar range does V.C.I. like to invest?

41. For what reasons might you go above this range?

below this range?

42. In which stage of financing does V.C.I. prefer being involved?

Why?

43. Do you prefer other financial sources to have invested in the company?

Why?

44. Would you prefer investing as part of on investment group rather than alone? Why?

45. What factors influence your relative preference for equity or debt financing?

In what ways?

46. On what bases is your dollar to percent equity preference made?

47. On what bases is risk evaluated?

48. How is the information relating to these bases obtained? What information is sought?

49. How is the information obtained used?

50. In what "terms" do you consider risk?

51. Does V.C.I. concentrate on companies in a particular risk class?

If so which class and why?

52. What factors would constitute a highly risky venture?

53. What time limit do you see as reasonable before considering liquidating your holding?

54. By what methods would you prefer liquidating?

55. How do you analyze the ability to liquidate your holdings at any time?

56. Under what circumstances would you finance a venture without gaining some management or board representation?

V.C.I. Operations:

57. Do period budget constraints exist for V.C.I.?

If so how are these constraints arrived at?

58. How does "timing" effect the decision to consider a company (i.e. in relation to other investment opportunities)?

59. How do economic trends effect your decision about an industry? company?

60. Which economic trends are important?

61. Does V.C.I. ever solicit companies?

Why?

62. Do these companies have a better chance of receiving V.C.I. financing?

63. How does V.C.I. decide which member of the staff will handle the investigation?

64. How are you affected in your decision process by previous successes or failures?

65. How is the initial screening decision made?

Investment Attitudes #1

Let's say you are currently looking for a promising venture situation. A colleague suggests this one: A group of well qualified engineers and managers has left a large electronics manufacturer. They hold several patents on a new technology and plan to sell proprietary devices to the civilian market. They estimate that it will be 2 years before they show a profit. They need $500,000 but if the product performs to promise you estimate an after tax return to you in 3 years of $2,000,000. If the product misses, you will probably lose the $500,000.

Would you take the venture if you estimated it had
1 chance in 10 to hit?
2 chances in 10?
3 chances in 10?
4 chances in 10?
5 chances in 10?

Suppose the venture required an investment of $100,000 with the payoff still $2,000,000.

Would you take the venture if it has
1 chance in 10 to hit?
2 chances in 10?
3 chances in 10?
4 chances in 10?
5 chances in 10?

Let's change the situation once again. Suppose $100,000 was required but the return was now only $500,000 instead of $2,000,000. Again you estimate the chances of success.

Would you take the venture if your estimate was
1 chance in 10 to hit?
2 chances in 10?
3 chances in 10?
4 chances in 10?
5 chances in 10?

Investment Attitudes #2

1. Assume you have $10,000,000 to initially invest in ventures. You are presented with 3 situations each requiring a $1 million investment. They are quite similar except for degree of risk. "A" is of "high" risk, "B" average risk, "C" low risk. Which would you choose?

   *

2. Following the above decision, the two companies not chosen and a third quite similar to you first choice company are presented. Which would you choose A,B, or C?

3. The same situation arises again. Which would you choose now having $8,000,000 to invest?

   $7,000,000?
   $6,000,000?
   $5,000,000?
   $4,000,000?

* (Risk is defined here as probability of success times expected payoff. Thus high risk would have a lower probability of success but a higher expected payoff.)

1. Given \$10,000,000 to invest. Three companies all quite similar and satisfactory except for the type of financing desired. "A" wants \$1,000,000 for common stock only. "B" for 6% notes only. "C" for convertible debentures. Which would you choose?

   Having made the above choice you now have \$9,000,000 left. You are again faced with the same three alternatives.

   Which would you now choose?

   \$8,000,000 left?
   \$7,000,000 left?
   \$6,000,000 left?
   \$5,000,000 left?

Investment Attitudes #4

1. Again assume you have $10,000,000 to invest. Four companies that you consider satisfactory each seek $1,000,000. They are similar except for age. "A" has just been started and is seeking initial financing. "B" is 2 years old, "C" is 5 years. "D" is 15 years old. Which would you invest in?

2. Having made this first decision, 4 companies are again presented. Having $9,000,000 to invest which would you now choose?

   With $8,000,000 left?
   $7,000,000 left?
   $6,000,000 left?
   $5,000,000 left?

Investment Attitudes #5

1. You have 10,000,000 to invest. You are considering 3 similar companies each seeking $1 million. "A" located in New England. "B" in the Midwest. "C" is in California. Which would you choose to invest in?

2. Given the above decision, you are again faced with A,B, and C but you now have $9,000,000 to invest.

   Which do you choose?

   with $8,000,000 left?
   with $7,000,000 left?
   with $6,000,000 left?
   with $5,000,000 left?

Appendix B

QUESTIONNAIRE II

V.C.I. Questionnaire

Company:______________________ Date of Investigation:______________________

Key Investigators:______________________ Interview with:______________________

SOURCE

1. Who brought this company to the attention of V.C.I.?

2. How often has this particular source brought companies to V.C.I.'s attention?

3. What percentage of the companies brought to your attention by this source have eventually been financed by V.C.I.?

4. What $ volume has been invested in companies brought to you by this source?

5. How do you judge the value of a source's suggestion?

6. Why do you feel that this source brought this particular company to V.C.I.'s attention?

7. Rate, with reference to all of your sources and experience up to the time of investigation of this company, your evaluation of this source:

   1 2 3 4 5 6 7

   unreliable — very reliable

8. As of the present, how would you rate this source?

   1 2 3 4 5 6 7

   unreliable — very reliable

9. Why has your rating changed over time?

10. At the initial contact, how many men composed the entrepreneurial team?

11. What were their (his) backgrounds?

Name	Age	Education	Work experience

12. What characteristics of the men's (man's) backgrounds were particularly encouraging?

13. What characteristics tended to discourage you?

14. At the time of the investigation, would you have preferred fewer or more people in the entrepreneurial team? How many? Would you have preferred any differences in its composition of skills, temperaments, etc.?

15. As you now look at the company, what would you prefer to have been the size and makeup of its entrepreneurial group?

16. Why has this opinion changed, if it has?

17. At the time of the investigation, did you in any way feel that the age and maturity of the members of the entrepreneurial group left something to be desired? Explain, please.

18. Have your feelings about the age and maturity of the group members changed since the time of investigation? Why?

19. At the time of the investigation, did you feel that the education of the entrepreneurs could have been better in relation to their anticipated duties (i.e., too technically oriented)?

20. Has your opinion of this changed? Why?

21. To the best of your ability, please try to estimate for each of the entrepreneurs, the % of his time in his work experience immediately prior to founding the company that was spent on:

_______________ Technical report writing
_______________ Administrative duties
_______________ Research
_______________ Development
_______________ Personnel Supervision
_______________ Market Research
_______________ Sales
_______________ Financial matters
_______________ Legal
_______________ Production

22. In the activities of the company, how was each man's time spent:

_______________ Technical report writing
_______________ Administrative duties
_______________ Research
_______________ Development
_______________ Personnel Supervision
_______________ Market Research
_______________ Sales
_______________ Financial matters
_______________ Legal
_______________ Production

23. What personality characteristics (i.e., aggressiveness, know-it-all) of the entrepreneur(s) were encouraging?

24. What personality characteristics caused you concern?

25. At the time of investigation did you feel that the entrepreneurs were:

1	2	3	4	5	6	7
open to criticism and change						closed-minded

1	2	3	4	5	6	7
broadly experienced						narrow in scope

1	2	3	4	5	6	7
organization minded						individual minded

1	2	3	4	5	6	7
realized the need for urgency						somewhat procras-tinating

1	2	3	4	5	6	7
felt they could do anything						aware of personal limitations

1	2	3	4	5	6	7
concerned only with short run						aware of the direction they would follow

26. Please answer question 25 as of your opinions today.

1	2	3	4	5	6	7
open to criticism and change						closed-minded

1	2	3	4	5	6	7
broadly experienced						narrow in scope

1	2	3	4	5	6	7
organization minded						individual minded

1	2	3	4	5	6	7
realized the need for urgency						somewhat procrastinating

1	2	3	4	5	6	7
felt they could do anything						aware of personal limitations

1	2	3	4	5	6	7
concerned only with short run						aware of the direction they would follow

27. What features of going into business for themselves did you feel these entrepreneurs considered most attractive?

_________ Salary
_________ Being own boss, independence
_________ Challenge - do something that others could not
_________ Challenge - taking on and meeting broader responsibilities
_________ Freedom to explore new areas
_________ Future capital appreciation
_________ Other_______________________________

28. Which factors does V.C.I. consider most important as the entrepreneur's motives?

_________ Salary
_________ Being own boss, independence
_________ Challenge - do something that others could not
_________ Challenge - taking on and meeting broader responsibilities
_________ Freedom to explore new areas
_________ Other___________

29. At the time of investigation did you feel that the initial written presentation was:

1	2	3	4	5	6	7
poorly done						well done

30. What was its substance and which aspects of it were encouraging? discouraging?

31. What did you consider to be the most attractive aspects of the company's product(s)? Why?

32. What were the least attractive aspects? Why?

33. Would you please answer questions 31 and 32 for the present time?

34. In speaking to present or potential company customers, at the time of investigation, what did you perceive their rating of the following to be?

    a) The product was a first of its kind or involved new technology

1	2	3	4	5	6	7
not a factor in purchasing product						extremely important

b) Special purpose or special specifications

1 2 3 4 5 6 7

not a factor in purchasing product — extremely important

c) Fast delivery

1 2 3 4 5 6 7

not a factor in purchasing product — extremely important

d) Price

1 2 3 4 5 6 7

not a factor in purchasing product — extremely important

e) Performance of product

1 2 3 4 5 6 7

not a factor in purchasing product — extremely important

f) Service of company

1 2 3 4 5 6 7

not a factor in purchasing product — extremely important

g) Marketing ability of company

1 2 3 4 5 6 7

not a factor in purchasing product — extremely important

h) Quality of personnel

1	2	3	4	5	6	7
not a factor in purchasing product						extremely important

35. Was the factual material in the initial presentation

1	2	3	4	5	6	7
largely unsupported						mainly supported

36. With what sort of analyses?

37. At the time of investigation was it felt that the forecasts and plans set forth by company were:

1	2	3	4	5	6	7
overly pessimistic						overly optimistic

Why?

38. Looking back, how do you feel about the company's forecasts:

1	2	3	4	5	6	7
overly pessimistic						overly optimistic

39. If any, why has your opinion changed?

40. How old was the company when it approached V.C.I.?

41. In what stage of operations was the company at that time?

42. How many employees did it have?

INDUSTRY AND MARKET

43. In your opinion, at the time of investigation how technically specialized was the company?

1	2	3	4	5	6	7
very broad						very narrow

44. How do you feel about this in retrospect?

1	2	3	4	5	6	7
very broad						very narrow

What has led you to change your perception?

45. In your opinion, at the time of investigation how technically developed was the market for the company's products?

1	2	3	4	5	6	7
new and undeveloped						highly developed

46. Has your perception of this changed in retrospect? In what ways and why?

47. Was the market itself

1	2	3	4	5	6	7
new						highly developed

48. Was the market

1	2	3	4	5	6	7
receeding rapidly			stable			growing rapidly

49. What was the nature of the competition this company faced?

- ________ no competition
- ________ a few small companies
- ________ many small companies
- ________ a few large companies
- ________ many large companies
- ________ both large and small companies

50. What marketing variables did you feel were important?

- ________ Price
- ________ Delivery
- ________ Specifications
- ________ Service
- ________ Promotion
- ________ Sales ability

51. In retrospect, which proved important?

- ________ Price
- ________ Delivery
- ________ Specifications
- ________ Service
- ________ Promotion
- ________ Sales ability

52. Did the company engage in promotional activities? Of what sorts and directed to whom?

53. Had V.C.I. previously had experience with companies in the market area?

Which companies?

54. Did you expect to see any radical changes in any aspects of the market?

If so, in what ways?

55. Did you foresee any future problems that might arise for the company because of the nature of the industry or market?

FINANCING

56. What stage of financing was your investment to be?

57. How much financing did the company desire?

58. For what purposes did the company intend to use the money?

59. Were the intended allocation plans well defined?

60. Did the company want a particular form of investment?

    What form?

61. At the time of investigation did you foresee that additional investment would be necessary in the near future?

    If yes, why and what amount?

62. At the time of investigation, did you consider the company to be of:

1	2	3	4	5	6	7
low risk			medium risk			high risk

    What, in particular, caused the risk?

63. In retrospect, was your analysis of risk valid? Why or why not?

64. What did you consider the optimal makeup of debt and equity of the deal from V.C.I.'s standpoint?

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