THE FOUNDING, GROWTH AND DEVELOPMENT OF TECHNICALLY BASED NEW ENTERPRISES

by

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(1977)

SUBMITTED IN PARTIAL FULFILLMENT
OF THE REQUIREMENTS FOR THE
DEGREE OF

MASTER OF SCIENCE IN MANAGEMENT

at the

MASSACHUSETTS INSTITUTE OF TECHNOLOGY

June 1981

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This thesis is dedicated to
my father, Sam Bellin, whose
teaching and example have
inspired me more than a life-
time of studies ever could.

ACKNOWLEDGMENTS

I am most grateful to the entrepreneurs who participated in the study for their time, energies and cooperation.

I thank Ed Roberts for his guidance and the inestimable value of his experience, which enhanced my own in this endeavor.

I thank Chris Taylor for the benefits of his collaboration and commiseration, as well as his friendship throughout the course of our studies.

I thank Mrs. Bertha Mintz for adding elegance to the presentation of this thesis through her great expertise and care in typing it.

Most of all I am grateful to my wife, Pamela, for her immeasurable support and for giving meaning to all my past endeavors and future dreams.

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Submitted to the Alfred P. Sloan School of Management on May 21, 1981, in partial fulfillment of the requirements for the degree of Master of Science

ABSTRACT

This thesis was undertaken to study, evaluate and compare the performance of young companies formed by entrepreneurs to do business in a technical field. The founders of eighteen companies started in the last seven years in metropolitan Boston were interviewed and data were gathered on their experiences running their own businesses.

A questionnaire was used to guide interviews and elicit data from the business founders on their backgrounds, the founding of their companies, capital financing, marketing, administration and human resources. The firms were classified into two groups--higher performing and lower performing--according to their sales revenue growth or other criteria where circumstances dictated an alternative performance measure. The two groups were compared and analyzed to determine whether there were significant differences between the backgrounds, approaches or resources of the higher versus lower performers.

The study contains substantial amounts of descriptive data, but several possible conclusions are also suggested. The better performing companies had a team of founders with complimentary skills in both management and technical disciplines and at least five years of managerial experience behind them. They also tended to use more debt

financing than their less successful counterparts, and had developed more formalized business plans. The higher performers paid more attention to marketing and generally devoted more human resource to this function. They were more product-focused and developed research functions later as the business grew. Finally, the group of higher performers stood out from the rest with their significantly stronger attraction to the financial rewards of entrepreneurship and their predominant drive to increase the profits of their companies, as compared with the non-financial orientation of their less prosperous counterparts.

Thesis Supervisor: Dr. Edward B. Roberts

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CHAPTER ONE

INTRODUCTION, HISTORY AND PURPOSE

1.1 Introduction and History

New enterprises have been an important source of industrial development throughout the modern economic history of the United States. Their contributions to the economy and society have been especially prominent in spawning new technology applications, technology-related new industries and the early diffusion of technicological innovations.

Over the past decade there has been a noted increase in the number and importance of new enterprises which have resulted from the leveraging of technological advances, particularly in the areas of microelectronics and computer hardware design. Many such businesses were founded by entrepreneurs with a single idea to apply a piece of technology to the development of a new product, service or market.

This thesis represents the author's attempt to discern some of the critical issues facing the entrepreneur in the

founding and development of a technically based new business. The research methodology involved in-person interviews with the founders of technical enterprises. Company founders were asked to supply both anecdotal and quantitative information on the following topics:

I. Personal Background
II. Founding of the New Enterprise
III. Financing
IV. Human Resources
V. Company Products and Services
VI. Marketing
VII. Administration
VIII. Operations

The approach of the study is patterned after that developed in earlier research directed by Professor Edward B. Roberts of the Sloan School of Management, Massachusetts Institute of Technology, over the past sixteen years. Most of this earlier research focused on technology-based new enterprises which were "spin-offs" of educational, government or industrial research laboratories, primarily during the late 1950s and early 1960s. The entrepreneurs studied in that work were generally scientists or high level

engineers, and the focus of the new businesses were often directly related to the achievements of the founder in his preceding research endeavors.

This study examines 18 businesses, all of which were started in 1974 or 1975 in Massachusetts with the original purpose of conducting a commercial enterprise in which technology or technical know-how played a significant role. As a result of these sample group specifications the entrepreneurs are not all scientists or engineers and their businesses are not largely characterized as "high-tech," though clearly quite a few of them do fit the description.

While the research methodology here borrows heavily from earlier work by Roberts and others, and frequent comparisons to past works are found throughout the thesis, the present endeavor differs significantly in purpose and scope. Here a strong focus on the importance to fledgling new businesses of organization, strategy, management style and the external economic environment supercedes emphasis on technology transfer and role of the founders' technical backgrounds. Nonetheless technological issues are important here and those familiar with the reported results of the aforementioned analyses will find a great deal of similarity

to them in the format and content of this thesis.

1.2 Purpose of this Study

This study has been undertaken largely to explore the curiosities of its author regarding the formation of technically-based new enterprises. It was hoped that it would enable him to understand in depth the managerial issues facing entrepreneurs and their associates. The research approach offered a unique opportunity to compare and contrast a range of managerial styles, business strategies and career patterns of business founders operating in similar environments during a common time period.

To the extent that the exposure, insights and findings developed in the course of the study enable the author to identify opportunities, evaluate situations and perhaps start and manage his own enterprise, the purpose will have been well served. Nonetheless in continuing along a line of inquiry and examination which has existed in management literature for some time, the author also hopes to have made a contribution to the literature on technical business ventures. In particular the addition of a few new questions or types of questions to the original research instrument

have yielded some interesting results which may not have emerged from earlier studies of this kind.

1.3 Organization of the Thesis

The thesis is organized into four chapters. The first chapter is an introduction. Chapter Two describes the research and analysis methods used in the study. Chapter Three reports the numerical and statistical results of the research, along with some anecdotal observations supplied by the entrepreneurs or interpreted by the author. Chapter Four discusses the implications of the results.

CHAPTER TWO

RESEARCH METHODS

2.1 Sample Selection and Sources of Information

The group of firms identified for potential inclusion in the study met each of the following requirements:

1. They were incorporated in the Commonwealth of of Massachusetts in 1974 or 1975.
2. Their original "Purpose of Organization" in their Articles of Organization indicated that some form of technology or technical know-how would play a major role in the products and/or services they planned to offer.
3. They were "commercial" enterprises--that is, purportedly in business to earn a profit.
4. They were unaffiliated businesses at the time of founding. This excluded, for example, wholly owned subsidiaries of established corporations which otherwise met the criteria listed above.

The reasons for defining eligible sample groups in such

a manner included convenience, completeness and precedence. The Articles of Organization of all Massachusetts corporations were on file and available for public inspection at the Records Division of the Secretary of the Commonwealth's office in Boston. The Articles contain the name of the corporation, its purpose, the names and addresses of its officers and the date of incorporation.

This source of information also enhanced the completeness of the sample. It was the only practical method of identifying firms which have failed, merged or been acquired since their original incorporation. The inclusion of such firms in the study renders the results more meaningful, the author feels, because those firms were felt to comprise a significant proportion of the original universe of technical ventures. Without a representation of dissolved firms, then, the sample would be biased.

The precedent for using firms in the Massachusetts area is found in the fact that the majority of studies similar to this one have examined businesses in the high-tech belt defined roughly by Route 128 in metropolitan Boston. The concentration of educational and research institutions in this region has caused it to become an acknowledged "power center"

for high technology industries.

As the industrial base of high technology expands more and more opportunities emerge for individuals to "spin-off" new businesses with personnel and technical know-how acquired by affiliation with firms or institutions in the area. Moreover as many of the high technology manufacturers become large, their employees may recognize opportunities in market niches which their employers consider too small to concentrate upon.

Finally, the extensive training given professionals in the high-tech community enable them to often leave their employers and set up as independent "consultants," capable of earning far larger incomes with greater personal freedom, doing work very similar in nature to that which they did for an employer.

While previous studies focused upon direct "spinoffs" of local firms or laboratories, this research merely caught inadvertently a large proportion of such enterprises in the course of its identification procedure. In sum, the metropolitan Boston area proved a fertile area from which to sample technically-based new enterprises.

2.2 Study Respondents

The study of Articles of Organization in the first 9 months of 1975 quickly yielded over 70 potential respondents, listed in Appendix I. With a goal of completing 20 instruments the author proceeded to contact the founding principal (or highest ranking officer among principals if there were more than one) of each enterprise in chronological order of founding date until the desired number of interviews were arranged.

It surprised the author to find that he ultimately needed to exhaust the entire list of potential respondents in order to secure scheduling of the desired number of interviews over a 2-1/2 month period. Those eliminated from the list fell into several categories.

Over one-third of the potential respondents had dissolved their corporations (or had them involuntarily dissolved for failure to pay the annual $35 registration fee), and efforts to locate the founders were fruitless. Roughly one-fourth of the candidates were disqualified, either because their business was not at all technical in nature, despite misleading implications of the Articles of Organization, or because their 1975 incorporation was simply a

reincorporation of an existing business under a new structure or switched from an out-of-state incorporation.

Approximately ten percent of the candidates refused to be interviewed. Their reasons for refusal varied from "too busy" to "I don't see anything in it for me" to "I'm trying to forget that whole fiasco!" (spoken by the founder of a firm which had failed). In the end, an additional ten percent of the respondents cancelled their scheduled interviews and were unable to reschedule them.

The high refusal rate was apparently unusual for this kind of study. Possible contributing factors to this were the time commitments involved--the author asked for 1-1/2 hours, although interview times often exceeded 2 hours--and the general economic uncertainties which persisted during the course of study which may have heightened the anxieties of business principals. (It should be noted that the author offered copies of this study as a small quid pro quo to all prospective respondents, but this was apparently insufficient "compensation" to some.)

In all 15 interviews were completed. Cancellations of 8 of the last 10 scheduled interviews narrowed the sample after it was too late to expand. Thankfully, 3 additional

instruments were available from firms which were on this author's prospective respondent list, but were interviewed by Pankiewicz (see Bibliography) a year ago.

The final sample of 18 firms was smaller than intended but still large enough to potentially generate significant findings. Among the 18 were 5 firms which had failed, one which has made a public stock offering, one which has already achieved sales of over $50 million, and a whole range of "in-betweens." Further description of the sample population is found in Appendix I.

2.3 Questionnaire and Interviews

The questionnaire used for interviewing respondents was a derivative of those used in previous studies directed by Roberts (see Bibliography). Several additional questions and one new section of questions were developed by the author in conjunction with Chris Taylor (see Bibliography) in order to test the importance of some strategic, managerial and macroeconomic issues not previously examined.

In addition to the previous Roberts/M.I.T. studies, the present questionnaire also borrows from Braden (see Bibliography), who studied technological entrepreneurship in Michigan.

A sample of the interview questionnaire is found in Appendix II of this thesis.

Interviews were conducted in-person on the premises of the business being studied. The founders of dissolved firms were interviewed at their present places of employment. Interviews were conducted in a semi-structured fashion in that the questionnaire was used as a guide, but respondents were encouraged to bring up issues as they thought of them and to digress if they wished to. The length of the interview varied from one to three hours and averaged roughly two hours.

The interview process was extremely interesting and enlightening. The business founders were exceptionally complete and apparently candid in their remarks. Particularly enriching were the narratives and anecdotes supplied liberally throughout the course of discussions, especially those related to the entrepreneurs' decisions to start a new company and the early stages of running it. Several of these are described in Chapters Three and Four of this paper.

In addition to gethering data and answers to questions the author learned a great deal by observing the operations

of many of the businesses visited. Plant tours, company literature and brief discussions with employees added dimensions of reality to the "sterile" conditions of the interviews.

2.4 Analytical Methods

A fairly consistent analytical methodology evolved out of the earlier studies of this kind referenced in Chapter One. Basically the approach has been to classify all of the firms in the sample according to objective performance ranking criteria, based on sales and profits, and then test for statistical correlations between the values of selected variables and the performance rankings of the firms. Various nonparametric statistical tests are suitable for this kind of analysis.

This approach has enabled researchers to suggest at least the possibility that certain factors, be they related to the founder's background, the new firm's marketing approach or other study variables, are associated with the successful performance of new enterprises. While the authors have been quick to caution readers not to infer causality from correlation, the approach is appealing

because it reveals relationships which are statistically significant.

Several circumstances were encountered in this analysis which caused the author to feel that the preceding analytical approach may not be wholly appropriate for the present study. The first problem relates to the performance rating scheme. Previous authors calculated normalized annual revenue growth for each firm and assigned each into categories according to the average annual sales growth (in dollars) of the firm over its life. Depending on the study, the author grouped firms into anywhere from 2 to 15 performance level categories.

In applying the same methodology to the data collected this author found the resulting performance rankings, while objective, conflicted strongly in several cases with his intuitive or subjective evaluation of individual firms. Several of the firms with spotty past performance were clearly well positioned for a potentially strong future, while a few had grown well for a couple of years but were deteriorating rapidly now.

Instead the firms were classified into two groups--high versus low performing--according to total sales revenue.

Where a firm was misclassified in the author's judgment due to any of the factors cited above, their position was changed to reflect the special circumstances. In practice only three firms were reclassified under this procedure.

A second analytical difficulty arose from the small number of observations in the sample. The likelihood of identifying statistically significant relationships among variables with only 18 observations is quite low. Unfortunately there is nothing which will ameliorate this shortcoming and so the author has chosen to report the "suggestion" of relationships in cases where normal statistical tolerances are not met. Readers are advised to view results with suitable caution.

The appropriate statistical tests for the kind of data used in the study are nonparametric tests. These tests are used to determine whether or not the average value or the distribution of values of a given variable is significantly different between two independent populations. In this case, the two populations are the "high performers" and "low performers," as described earlier in this section.

For example, the division of entrepreneurs in high versus low performing companies according to whether or not

they received loans in starting their company looks like this:

		Performance	
		LO	HI
Had loans to start company	NO	7	4
	YES	1	6

It appears as if an original ability of the entrepreneur to secure loans may have correlated with later success in the enterprise. (The interpretation of such a result is not clear-cut, but this issue is not pertinent to the present illustration.) A Chi Squared test reveals that the probability that the relationship apparent in the matrix shown above is due to random chance is only five percent. Thus the data suggest that there is a ninety-five percent chance that there is a significant difference in the starting capital structure of low-versus-high performing companies.

The appropriate statistical test to use for comparisons of nominal (e.g., yes/no, high/low, etc.) variables such as are found in the study is the Chi Squared test. The level of significance (probability that differences are due to random chance) is reported throughout the paper in

parentheses after the finding. E.G.:

> High performers used debt more often when starting out than low performers (.05).

CHAPTER THREE

RESEARCH FINDINGS

3.1 Introduction

This chapter contains a discussion of the results of the analysis of data collected in the study. Numerical results and statistical significance levels (described in Chapter Two) are related on selected variables from each section of the questionnaire, a copy of which appears in Appendix II. In interpreting numerical results (e.g., "nine of the entrepreneurs in the study had fathers who were entrepreneurs"), readers should keep in mind the total sample size of 18. For the performance classes (described in Chapter Two), the group divided into 10 "higher performers" and 8 "lower performers."

3.2 Founders' Backgrounds

All of the 18 business founders in the study were males. Their ages at the time of founding ranged from 26 to 52 with a mean of 39. The average is higher than reported in previous

studies. The founder's age was not found to be related to the performance of his company.

The entrepreneurs were all married when they started their companies, and all but three had at least one child. Overall, most of the founders felt their families were supportive or very supportive, although three said they were neutral or opposed to the venture.

Of the respondents, 72% said family support and understanding are essential to the entrepreneur, while four felt it somewhat important and one said it was not a factor. A rather sobering finding was that five respondents (28%) had gotten divorced since starting their company, though only two stated that the business was related to their marital problems.

The spouses of half of the entrepreneurs had participated in the venture in some capacity, largely with part-time clerical assistance in the early stages. Two wives were full-time employees in their husbands' firms. None of these family issues had a significant relationship to the performance of the firm.

Half of the entrepreneurs had parents who were in their own businesses. This finding is consistent with previous

studies of the family backgrounds of entrepreneurs; a high percentage of them had an "entrepreneurial heritage." Interestingly, having such a heritage did not tend to increase the success of the founder's business, a result also duplicated in earlier analyses.

The educational backgrounds of the entrepreneurs are summarized in Tables 3.1a and 3.1b. The overwhelming majority

TABLE 3.1a

EDUCATIONAL BACKGROUNDS OF THE ENTREPRENEURS

Highest Education Attained	Number	Percent
Some college - no degree	2	11
Two-year degree	1	6
Bachelor's degree	5	28
Master's degree	7	38
Multiple Masters' degrees	2	11
Doctorate	1	6

TABLE 3.1b

FIELD OF UNDERGRADUATE STUDY OF ENTREPRENEURS

Field	Number	Percent
Engineering	7	38
Physical Science	3	17
Social Science	3	17
Mathematics	2	11
Business	2	11
Arts/Humanities	1	6

of them had undergraduate training in engineering, science or math, as shown in Table 3.1b. This was not surprising considering the technical nature of these businesses, by definition of the sample population. What was a bit surprising was that there was no significant difference between the educational fields or levels of the higher performers as compared to the lower performers. The absence of a technical background did not correlate with lower performance and, contrary to some earlier results, years of education did not correlate negatively with success, although it also did not correlate positively either.

Three of the individuals had Master's degrees in Business Administration, and their companies were all higher performers, but the small number of observations prohibits judgment on this basis. Half of the group had taken some business courses (including those with degrees), but having had such training did not correlate with the individual's business success.

The work experience of the business founders ranged from 2 to 26 years, with a mean of 12 and a median of 11. An interesting correlation was observed between the number of years of commercial (as opposed to government or military) work experience of the founder and his business success (.04).

Particularly striking is the fact that all four founders with five years' or less commercial work experience were lower performers.

Additionally, the amount of managerial experience which the entrepreneur had previous to founding a company was correlated with the performance of the enterprise (.066). In particular, all six individuals with less than 2 years of work experience in a managerial capacity had lower performing companies, while the other two low performers had had 10 and 20 years of managerial experience respectively. In contrast, only 3 of the 10 higher performers had less than two years of managerial level work experience before founding their companies. This result is both intuitively acceptable and consistent with earlier results.

Venture capitalists, among other business analysts, are known to rely heavily on a venture founder's previous track record as an indicator of his or her likelihood of success in a new enterprise. Generally, an individual who has already succeeded once in an entrepreneurial venture is thought to have a much higher probability of succeeding in a subsequent venture, all other things being equal, than his or her counterparts who are first-time entrepreneurs.

It was, therefore, rather surprising to find that, while 10 of the 18 founders (56%) had previously been a principal in another new venture, there was no significant difference between the performances of previous entrepreneurs and first-time founders, as shown below.

		Performance	
		LO	HI
Previous founder of a business	NO	4	4
	YES	4	6

A qualification which modifies the above result somewhat is the removal of individuals whose previous business were unrelated to the one observed in this study. By doing this, 2 fall out of low performing cell and one is dropped from the higher performers with entrepreneurial experience. Finally, a more useful indicator of the value of previous business experience would probably have been a measure of previous success in business. Unfortunately, the data collected here do not permit such a classification. The result here suggests largely that entrepreneurs are fairly likely to venture into new businesses repeatedly, but does not differentiate the performance of previous entrepreneurs from

first-time founders.

3.3 Founding and Development of the New Enterprise

It may be suggested that some individuals are "born with," or acquire at an early age the personality and drive to become entrepreneurs. The individuals in this study were asked to state the approximate number of years over which they seriously contemplated going into business for themselves, previous to the founding of this business. The responses ranged from 1 to 20 years with a mean of 9 and a median of 10.

While this factor had no apparent relationship with future performance, it is nonetheless an interesting observation. The decision to become an entrepreneur is a long considered one, the "seed" for which may be planted early in one's adult life or career.

The decision to launch a particular business, on the other hand, has a much shorter time horizon and seems to result more from immediate circumstances in an individual's career than long term planning. Only four of the eighteen entrepreneurs (22%) were planning the business under study for more than 1 year, while nine (50%) planned for about

1 year and five (28%) researched it for less than a year. The remainder of this section discusses the elements which went into the initial actions which the entrepreneur took in forming his company.

Each of the entrepreneurs were asked to state and rank the features of starting their own business which they considered most attractive. Table 3.3a summarizes the first-ranked choices of the respondents, while Table 3.3b shows the total number of founders indicating each attraction, regardless of its ranked importance.

An examination of the tables reveals the diversity of motivations behind the decision to become an entrepreneur among those in the study. Clearly, the attraction of independence and being one's own boss was the most popular attraction, cited by 78% of the respondents and cited as primary by 33%.

Financial reward was the second most frequently mentioned attraction, but interestingly it was mentioned as primary by only two individuals. Also of note is the fact that this attraction of financial reward was the only one over which the high versus low performing groups responded very differently (.02), as shown below.

TABLE 3.3a

ATTRACTIVE FEATURES OF STARTING A BUSINESS

RANKED MOST IMPORTANT BY ENTREPRENEURS

Feature	Number	Percent
Being own boss - independence	6	33
Challenge - to do what others could not	5	28
Freedom to explore new areas	2	11
Financial reward	2	11
Challenge - to meet broader responsibilities	1	6
Other	2	11

TABLE 3.3b

ATTRACTIVE FEATURES OF STARTING A BUSINESS

(number of mentions, regardless of ranked importance)

Feature	Number	Percent
Being own boss - independence	14	78
Financial reward	11	61
Challenge - to do what others could not	8	44
Freedom to explore new areas	7	39
Challenge - to meet broader responsibilities	6	33
Ability to see things to completion	4	22
Other	3	17

		Performance	
		LO	HI
Financial reward was an attraction	NO	5	2
	YES	3	8

This seems to suggest that those who lack financial motivation may be less likely to perform well by any financial criteria used to assess them. On the other hand, it may be more or less a reflection of a self-fulfilling prophecy: If one doesn't set out to make money, one probably wont. A final comment is that those who have not succeeded financially are perhaps more likely to state that financial reward has not been their goal.

Another diverse array of answers resulted from the question of which factors directly precipitated the actual formation of the new enterprise. The most common factor was a change in work assignment of the founder in his previous employment. In several cases the individual's project team or corporate division was being disbanded or moved and career move was forced upon him. Previous studies have found this to be the most common immediate stimulus to new business formation as well.

Frustration in his previous work was the second most frequently cited precipitator of the entrepreneur's decision to leave his job and start a company. Many of those who called a change in work assignment the primary event cited this as a secondary cause.

Several of the founders said the development of an idea for a new product or market sparked the ultimate formation of their companies, while in the other cases it was a "me too" entry into an existing market and no new idea, technological breakthrough or product form was at the heart of the entrepreneur's venture. There was no significant difference overall between the success of those with important innovations and those without.

An important factor identified in previous studies of this kind has been the degree of technology transfer from the founders' previous employment to their new enterprises. In studies of technology-intensive businesses, a high degree of technology transfer has been found to correlate with success of the new business. This result is not surprising, as a new business is apt to be less risky when the founder has extensive experience in both the technology and, perhaps, the markets connected with the technology. Such a pattern

is also observed within corporations which undertake ventures into new products or markets with new technologies.

Thus it was somewhat surprising to find that the degree of technology transfer had no significant relationship with the performance of companies in this study. A likely explanation of this somewhat counter-intuitive result is found in the fact that for many of these companies technology itself played a relatively less important role in the business than it had for the firms studied previously.

For example, one successful firm in this study has built a substantial consulting business on an innovative concept which initially applied virtually no sophisticated technology. The entrepreneur stated that training he received 20 years earlier in basic engineering was all the technical skill he needed to begin what has become a highly successful service business in an industry which is now growing rapidly and in which, incidentally, new technologies are just beginning to be incorporated.

The author remains convinced, however, that prior experience in the products, markets and technologies employed in a new business is an extremely important factor in the ultimate success. While the example given above is an

exception, many of the founders gained knowledge of the technologies or markets into which they entered through previous education or employment, even if the actual transfer of knowledge was only partial or vague. The data shown in Table 3.3c suggest that those who applied knowledge gained through earlier work experience generally performed better than those who didn't. (The level of statistical significance was, however, a weak .20 largely due to the number of categories.)

		Performance			
		LO	HI	TOTAL	PERCENT
Founder's Source of Knowledge of Technology Applied	EARLIER EMPLOYMENT	4	8	12	67
	EDUCATION	0	1	1	6
	HOBBY	1	0	1	6
	OTHER	3	1	4	22

Similar to the findings in earlier studies, slightly over half of the entrepreneurs began setting up their businesses on a part-time basis while continuing to work at their jobs. Among those who started up part-time, several actually ran a going concern "after hours," while most spent ten to twenty hours per month over a period of six to

eighteen months doing mostly planning and organizing work. Only one of those who started part-time used the period of time for technical development work. There was no significant correlation between having begun the enterprise part-time and its ultimate performance.

The number of founding principals in the original enterprise ranged from one to seven, although the vast majority had from one to three. (The reader is reminded that the interviewee for this study was the original founder with highest position, usually President, in the original organization.) While there was no strong correlation between success and the size of the founding team, Table 3.3d shows that the mode size of higher performing teams was 2-3 founders.

TABLE 3.3d

NUMBER OF FOUNDING PRINCIPALS IN THE ORIGINAL ENTERPRISE

	LO	HI	TOTAL	PERCENT
1 ONLY	4	4	8	44
2-3	2	5	7	39
MORE THAN 3	2	1	3	17

More important than the size of the founding team is the diversity of their background and capabilities.

Consistent with previous results, higher performing companies were founded by a team with at least both managerial and technical experience among its members (.05). The absence of a founder having what the author characterized as previous "profit and loss" responsibilities (as an entrepreneur or otherwise) was weakly correlated with lower performance (.16), as shown below.

		Performance	
		LO	HI
Any of original founders have previous profit/ loss responsibility	NO	5	3
	YES	3	7

Each of the interviewees spoke freely and at some length about their founding activities and early plans. Interestingly, the four most successful businesses in the study (in terms of current sales and profits) all had formal business plans and cash flow projections before starting out. Only one of these used the plan itself to aid in raising capital. Of the lower performing companies, only two

had developed a semblance of a formal plan initially.

Clearly this does not imply that having a formal plan improves one's chances of success. It does, however, seem reasonable that the very exercise of writing the plan forces potential entrepreneurs to consider all relevant issues and to quantify the implications of their decisions. The plan not only reflects the sophistication and foresight of the founders, it also establishes the possibility that, at least under a given set of assumptions, the proposed business is viable.

On the other end of the spectrum, one of the higher performing companies was conceived "over a drink and a handshake" among former colleagues, according to the interviewe. Still another contacted his college roommate of over 20 years ago and proposed that they both leave their highly prosperous careers to start a new business--they did. One entrepreneur had been an elected official when he thought of the idea for his company. When he left office and started up, he actually found his political experience to be a liability, especially when dealing with prospective financial backers.

Overall, the author was quite impressed with the creativity, logic and energy which went behind these business

ventures. Even where they failed, most of the entrepreneurs began with at least an intriguing idea, a plausible strategy, a handle on a new technology, or a sense of market opportunity. However, it is the right combination of those plus good timing, the author learned, which brings success to a new enterprise.

3.4 Financing

The firms in this study began operations with anywhere from 3 to 300 thousand dollars, with a median of 15 thousand. As the table below shows, fully fifty percent of the firms began with less than 10 thousand dollars of equity. Also apparent in the tables is the lack of correlation between

		Performance			
		LO	HI	TOTAL	PERCENT
Amount of starting equity capital	$1-10 K	4	5	9	50
	$11-49 K	2	4	6	34
	$50 K +	2	1	3	16

the amount of equity capital with which the founder started and his company's performance.

In each of the 18 cases the original equity was supplied by either the founding principals or their family and friends. This result is consistent with past findings. The reasons that entrepreneurs do not get outside financing to start up are simply stated as follows:

1. They don't need it.
2. They don't want it.
3. They don't know how to raise it.
4. They can't raise it.

Most of the entrepreneurs in the study fell into the first two categories. There was very little investment required to get most of these companies going, and few founders wanted to give up ownership so early in the game. Even so, not knowing how to raise outside capital plagued a surprising number of the entrepreneurs. Commonly they turned to banks for loans if they needed to finance equipment purchases. Few were aware of venture capital sources, although the reader is reminded that venture capital availability was at an all time low when most of these firms started in 1975. Still few sought venture investors for subsequent rounds of financing as it became more widely accessible in the past three years.

Debt capital was secured by 7 of the firms (39%) for essentially startup purposes. The amount of loans secured ranged from 2 to 250 thousand dollars. Among those who received them, the mean loan amount was $83 thousand and the median was $43 thousand.

Not surprisingly, the larger loans came from non-bank sources. One founder secured a loan on the purchase of a major piece of equipment from its supplier, with whom he had dealt extensively during earlier employment. Another negotiated a large long term note with the company whose division the founder purchased as the base of his new company. Still another secured a loan from the Small Business Administration (S.B.A.) of the U.S. government, a move he later regretted deeply, due to the constraints placed on him by the terms of the loan.

A significant correlation existed between performance and the use of debt capital in the start-up phase of operations (.05), as shown in the table below.

	Performance	
	LO	HI
USED NO DEBT	7	4
USED DEBT	1	6

Because there is little obstacle to securing equity capital from personal sources, it may be that the ability to borrow serves as a "screen" of the entrepreneurs which differentiates those with stronger initial business plans. On the other hand, the ability to borrow may have reflected the founding team's personal financial sources, as most lenders insist on personal signatures on loans to new businesses. If this is so, the truer correlation may have been between performance and the total financial resources ultimately available to founders. As several entrepreneurs pointed out, the sacrifices of salary by those on the founding team was one of the most important early sources of capital.

The uses of starting capital are summarized in Tables 3.4a and 3.4b. The reader should recognize that Table 3.4a shows the factors which each entrepreneur said was the most important use of capital while Table 3.4b is a tally of all factors mentioned as needs for financial support. The second table shows factors of which many, according to the entrepreneurs, went unfunded or under-funded, but which required money in order for the business to perform as intended.

The most striking contrasts between lower and higher

TABLE 3.4a

FACTORS GENERATING GREATEST CAPITAL REQUIREMENTS--

TOP RANKED FACTOR

	Performance			
	LO	HI	TOTAL	PERCENT
Product development expenditures	4	2	6	33
Accounts receivable	0	3	3	16
R&D facilities	2	1	3	16
Technical personnel (not for prod. devel.)	0	2	2	11
Production facilities	1	1	2	11
Inventory	0	1	1	6
Marketing expenditures*	1	0	1	6

TABLE 3.4b

FACTORS REQUIRING FINANCIAL SUPPORT

ALL FACTORS MENTIONED

	Performance			
	LO	HI	TOTAL	PERCENT
Marketing expenditures*	7	2	9	50
Accounts receivable	0	7	7	39
Product development expenditures	4	3	7	39
Technical personnel (not for prod. devel.)	1	5	6	33
Inventories	2	3	5	28
R&D facilities	3	2	5	28
Production facilities	3	2	5	28
Production personnel	3	0	3	17

*Includes sales force, advertising and distribution costs.

performing companies with respect to capital requirements were in the areas of accounts receivable, marketing expenditures and the cost of technical personnel. Almost 3/4 of the higher performers cited accounts receivable as a use of funds while none of the lower performers did. The author feels this result is explained largely by the fact that the lower performers had lower sales and generally required at least partial prepayment from customers to get started on orders. While such prepayment is actually a source of capital to the entrepreneur, most apparently did not recognize it as such and thus probably recalled no problems in financing receivables.

Marketing costs, which included sales force, advertising and promotion, and other distribution expenditures were cited as a uses of funds by all but one of the lower performers and only 20 percent of the higher performing firms. Clearly all of the firms incurred marketing expenses, but it appears that mostly those constrained by insufficient funds for marketing cited this as a capital requirement.

The need for technical personnel is in itself a sign of success since most of the firms started out with the founders as the only technical professionals in the organization.

Clearly, successful businesses in technical fields require additional technical personnel as the business grows. Thus the need for technical personnel is a result, not a cause of success.

Outside investors held no significant ownership of any of the firms in the study initially. Moreover, only two of the companies, both high performers, added equity from outside the company in subsequent financing rounds. Of the two, one gave up 15% for a "sizable" investment by a major customer, while another made a public offering and raised over $1 million in exchange for 65% of a company with negligible sales and a huge deficit.

When asked to characterize the amount of involvement which financial backers had with the company, half of those who ultimately had outside financing of any kind said backers had little or no involvement, and only one said his backers gave a great amount of assistance. The help desired by the entrepreneurs was another matter altogether. Fifty percent said a fairly large amount of close contact with backers was appropriate. Twenty-five percent desired a moderate amount of assistance while another twenty-five percent felt emphatically that backers should have no contact

with the operations of the company. Throughout the interviews the author perceived among the entrepreneurs a general preference for assistance from professionals in running their businesses, but a general dissatisfaction with the quality of the help they received. The issue is discussed further in the last section of this chapter.

Finally, with regard to financing, the issue of mergers and acquisitions was raised with the entrepreneurs. Acquisitions were considered specifically (that is, candidates were identified and evaluated) by one third of the companies. Not surprisingly, only one of them was a lower performer. Two firms, one from each performance group, actually completed an acquisition while ten firms (56%) never considered making one.

One of the firms in the study was acquired by a larger firm after three years of operation. The acquiring company provided the capital needed to support growth in production and product development of his product and the price he received (a figure he declined to reveal) proved his efforts successful. The author agreed, according to the classification scheme described in Chapter Two of this thesis.

An interesting result followed from the author's efforts

to discern whether the entrepreneurs had specifically considered being acquired by another company as part of their long term financial strategy. The following matrix strongly suggests that more successful entrepreneurs were more likely to seek a corporate suitor.

		Performance LO	HI	TOTAL	PERCENT
Has considered or sought acquisition offer	NO	5	2	7	39
	YES	3	8	11	61

The responses suggest that being acquired is a viable and commonly considered means for the entrepreneur to capture some financial benefits from his investment of human and financial capital. Successful firms were probably more likely to consider being acquired because they would be more attractive acquisition candidates.

3.5 Human Resources

While most new businesses begin with relatively few employees, the author hypothesized that differing policies and experiences with personnel may have bearing on the

performance of the enterprise as it grows. At the time of the interview, these companies had current employment of 1 to 650 people (the number of employees in the last year of operations is used for companies no longer in business), with a mean of 60 and a median of 31. The median is most meaningful because the one company with 650 employees clearly biases the mean.

In four companies there was a separate Personnel function, although for three it was a part of the duties of an overall administrative manager. None of the founders considered turnover a real problem in this company, although four (22%) characterized turnover as "moderate"; each of them was a higher performer.

Two-thirds of the higher performers felt that a shortage of critical skills in the labor market had adversely affected their companies' development. As the matrix below demonstrates, the experience of lower performing companies differed significantly from the higher performers in this respect (.001).

		Performance	
		LO	HI
Affected by skill shortage	NO	8	3
	YES	0	6

Some of this difference should be attributed to the fact that many of the lower performers had no employees or so few that the question was largely irrelevant. Still, the undeniable contrast suggests that companies growing vigorously, particularly in a technical business, are likely to experience difficulty in attracting adequate numbers of qualified personnel. The specific skills in short supply were engineers, computer programmers, scientists and "good" salespeople.

One means of improving a firm's ability to acquire talented human resources may be through its compensation policies. When asked about their compensation levels as compared to those with whom they feel they compete for critical personnel, founders gave a range of responses, shown in Table 3.5. Also related to a small firm's ability

TABLE 3.5

COMPENSATION RATES

	Performance	
	LO	HI
Above Average	0	4
Average	1	2
Below Average	4	2
Don't Know or not applicable	3	2

to attract and retain top calibre personnel is its incentive compensation system. While the relationship is not a strong one, there was a marked tendency for higher performers to reward their employees with bonuses, profit sharing and the like (.11).

Finally, the more successful businesses were more likely to "spin-off" new ventures by their own employees. Employees left four of the high performing companies (40%) to start their own businesses, while none of the lower performers spawned new ventures. Spinoffs were formed to compete directly or indirectly with the employers in the study in all but one case. It is not surprising that participation in a successful entrepreneurial venture would inspire an individual to try to emulate (or imitate) the "parent's" success.

3.6 Company Products and Services

Tables 3.6a and 3.6b summarize the original and current mix of business activities of the companies in the study. While the diversity of the businesses make it difficult to draw strong conclusions, certain patterns to emerge.

First, product-focused firms fared for better than

TABLE 3.6a

ORIGINAL BUSINESS ACTIVITIES OF THE ENTERPRISES

	Number	Percent
Production - hardware	2	11
Production - software	3	17
R&D - contract	4	22
R&D and Production - hardware	1	6
R&D and Production - software	2	11
R&D and Production - hardware and software	2	11
Consulting	3	17
Other	1	6

TABLE 3.6b

CURRENT BUSINESS ACTIVITIES OF ENTERPRISES

	Number	Percent
Production - hardware	2	11
Production - software	1	6
Production - hardware and software	1	6
Research - contract	1	6
R&D and Production - hardware	3	17
R&D and Production - software	3	17
R&D and Production - hardware and software	1	6
Consulting	1	6
Other	1	6
Not in business	3	17

research and development oriented businesses, as shown in the matrix below. This finding is consistent with previous

		Performance	
		LO	HI
Main Business Orientation	R&D	8	4
	PRODUCT	0	6

findings. Research and development funding has typically suffered from cyclical fluctuations, and a business organized primarily for its own R&D or product development purposes is less likely to succeed than one with a clear product or service to provide.

A second pattern, hard to discern from the disaggregated data in Tables 3.6a and 3.6b, is the change in business activities over the 6-7 year histories of these businesses. Three general trends were observed:

1. Product-focused businesses ventured into R&D after several years.
2. The R&D intensive firms which prospered were those which generated products ultimately.
3. Most of the pure research or consulting businesses struggled or failed.

When asked to assess the risk of their initial product or service strategies, half the entrepreneurs said it was moderate while 40 percent responded "high" and only two felt it was low. A slightly higher proportion of the lower performers said their risk was high, although their difficulties would make this a rather self-serving statement. Nonetheless, the author agrees that at least some of the less successful entrepreneurs had embarked on high risk endeavors. On the other hand, among those who succeeded were several whose original risks appeared greater to the author than the interviewee assessed them to be. Finally, as Roberts has identified (see bibliography), entrepreneurs tend to exhibit a higher than average psychological need for achievement and moderate risk strategies are most likely to bring recognizable success.

The specific attributes of products or services offered by the companies studied varied widely with few patterns apparent which distinguished higher from lower performers. Somewhat surprisingly, application of a new technology was of little or no importance to half of the higher performers. This agrees with the earlier result regarding initial risks. The use of a new technology is likely to

increase substantially the risk of any new product or service. Still, ten of the companies' first products made important use of new technology.

It is interesting also to note that according to two-thirds of the entrepreneurs the price of their products or services were of little or no competitive importance. Special purpose applications or specifications, rather, gave them their competitive edge. A new, small company is wise, it appears, to avoid price sensitive markets since stronger competitors are apt to engage in price wars to bar a new entrant's success.

3.7 Marketing

In a new company, many of the traditional marketing functions--market analysis, advertising, promotion, sales, administration, new product development, etc.--are handled by one individual. Often that individual is also responsible for other management tasks as well, and thus it is not surprising to find that the marketing functions in new companies are carried out in very informal and often ad hoc ways.

On the other hand, after six or more years in business,

a failure to devote substantial resources to marketing concerns can be both a cause and a symptom of a company's weak performance. Among the firms in this study, marked differences in the attitudes and approaches to marketing was observable among the higher and lower performing companies.

While very few companies had a separate department or position devoted exclusively to marketing when they started out, a majority of the better performers had developed such a function by this point in their development while none in the lower group had. As described by the table below, the two groups differed significantly (.01) in their emphasis on the marketing function. This is consistent with earlier

		Performance	
		LO	HI
Have separate Marketing Function	NO	8	3
	YES	0	7

findings, and it underscores the importance of a new company's functional management expertise in its overall success.

An alternative means to develop marketing strategies

and tactics without devoting internal management resources is to use consultants. Marketing is an area of expertise with a large pool of external resource. While seven of the companies in the study (39%) had used marketing consultants at one time, all but one were dissatisfied with the results and were not inclined to seek that kind of help again. Use of marketing consultants correlated neither with performance or the existence of a marketing department.

Given their limited internal resources, some of the firms undertook extensive and rather sophisticated forms of market analysis. Nearly half of the firms performed formal market studies to assess new ideas or strategies. (The author verified this by asking interviewees to describe the approach, data sources and outcomes of their studies.) It was gratifying to see that even smaller companies have adopted some of the techniques which management schools so strongly advocate. Ironically, the performance of the companies was not correlated with their having done market analysis.

Another of the tools used in more sophisticated approaches to marketing is sales forecasting. Of interest to the author was not the level of analytical sophistication

applied to forecasting, but simply the very existence of an attempt to forecast sales. The method used by these firms to forecast their sales, in addition, said something about their understanding of the dynamics of their markets and, therefore, their company's revenue patterns.

Exactly one-half of the firms in the study convinced the author that they did some meaningful form of sales forecasting. Of those who forecast their sales, the ratio of high-to-low performers matched that of the sample population--hence there was no observed connection between this activity and performance. Nonetheless, firms which did forecasting clearly exhibited a better understanding of the factors--macroeconomic, competitive, governmental or other--which affected their businesses. The entrepreneurs who did forecasting said it helped them plan their sales force allocations, financial flows, staffing and production capacity.

The questions in the survey regarding marketing strategy yielded a wide range of responses, out of which little can be synthesized. Most knew who their target markets and competitors were, but few had a strong sense of their competitive strengths and weaknesses. As mentioned earlier, many entrepreneurs cited high quality and special purpose

applicability as the competitive advantages of their products or services. Several mentioned their company's reputation as a competitive strength and two said technological edge kept them in front of their competitors.

As mentioned earlier, many of these businesses focused upon "niches" in markets which are perceived to be too small by larger, better endowed firms to penetrate. Nonetheless, the more successful firms have, inadvertently, invited competition and imitation of their products or services, as shown in the matrix below.

		Performance	
		LO	HI
Have competitors duplicated your products?	NO	6	4
	YES	2	6

The perhaps less than flattering use of imitation has likewise proven troublesome for the competitors of many of the firms in the study, as shown below.

		Performance	
		LO	HI
Have you duplicated competitors' products?	NO	5	3
	YES	3	7

Most of the companies in the study used a direct sales approach to market penetration. This was usually supported by varying amounts of advertising and promotion, mostly through trade publications and trade shows. (The reader is reminded that all of the companies in the study provided industrial goods or services.) In many cases direct referrals from former business associates or satisfied customers were still the primary sources of new business. Potential customers were identified by market studies, discussed earlier, or from the principals' knowledge of the marketplace he served.

None of the entrepreneurs were very satisfied with the results of their marketing efforts. Most cited discontent with their sales tactics and effectiveness, while others said more advertising and promotion would help them, but that they couldn't afford it. When asked how he would improve his marketing effort, one interviewee responded bluntly: "If I knew, I'd be doing it!"

3.8 Administration

In this area the author had the "modest" goal of gaining an understanding of the extent to which companies like

those in the study make use of management control systems, budgets, information systems or financial benchmarks to operate their companies and measure their performance. In practice it became clear that this issue alone is the subject of an entire thesis. In seeking to generalize about administrative techniques, the author feels he effectively eliminated most of the useful content from the responses.

For example, the respondents were asked to classify their internal management accounting and control system by its "formality." The intent was to distinguish those with formalized (often computerized) planning and reporting mechanisms for different responsibility centers, from those who essentially monitored the bank account to make sure they weren't running out of cash. It became clear that to discuss the matter in sufficient detail in order to make a judgment, the author would have added too much time to an already lengthy interview. The judgments of the entrepreneurs, on the other hand, were by their own admission complete guesses because they had no basis for determining the formality of their systems relative to others'. Also, several said they really didn't understand the questions.

As a result, there is little of value to report out of

the questions contained in section VII of the questionnaire shown in Appendix II. Only 3 of the 18 company founders said they used performance against specific financial goals as a means of evaluating their managers, and just 4 of the firms (half successful, half not) had a semblance of a long range plan.

The one very significant finding in the area of financial administration regards the short term financial goals of the entrepreneurs in the study. Table 3.8 gives testimony to the importance of objectives and their effects on performance. Moreover, it makes strong suggestions about the "profit motive" and its role in the economic development of our culture.

TABLE 3.8

SHORT-TERM FINANCIAL GOALS OF STUDY FIRMS

	Performance	
Major Goal	LO	HI
INCREASE REVENUES	2	3
INCREASE PROFITS	0	7
INCREASE OWNERS' EQUITY	1	0
SURVIVE	3	0
NO ANSWER	2	0

3.9 Operations and the External Environment

Operating a business is an increasingly complex and taxing endeavor. Today's entrepreneur is beset with many problems, regulations, reporting requirements and costs which were all but non-existent as recently as fifteen years ago. The following "laundry list" of factors, which are largely outside the control of business managers, was presented to each of the entrepreneurs in the study to discern which of these often-cited factors was truly affecting the small business in this sample:

1. Environmental regulations
2. Health and safety regulations
3. Economic cycles
4. Inflation
5. Availability of government contracts
6. Capital gains taxes
7. Payroll taxes
8. Government programs for business or workers
9. Venture capital availability
10. Interest rates
11. Stock market for new issues
12. Government paperwork burdens
13. Availability of workers

The most important finding to report from these questions, is that the companies in this study, overall, did not consider many of these factors to have had an important impact on their business. In some cases, in fact, factors commonly thought to be negative actually helped some of these companies, such as the manufacturer of fitration equipment whose business was helped by environmental regulations

The median response to every one of the external business environment issues listed above was a 0 - "no effect." For each factor there were a small number of firms who felt they were slightly helped or hurt by a factor, and occasionally one which said the factor had a severe impact. Clearly the small size of these firms partially explained the lack of impact of many of these factors. That, nonetheless, is an important finding about small businesses, and is discussed later in this section.

Of those factors which did impact businesses in the study, high interest rates was the most frequently cited, with nearly half saying their businesses were adversely impacted by high interest costs. The impact of economic cycles--specifically recessions--was the next most frequently cited negative factor. Surprisingly, inflation

was rarely cited as a significant factor which impinged on companies' growth and development.

Indeed the most revealing finding of this section is the very reluctance of the entrepreneurs to identify the often cited economic and regulatory "demons" as sources of significant difficulties for them in their business activities. Taxes, government paperwork burdens and environmental regulations were among the factors least mentioned as causing problems, yet the current political climate suggests that such factors have the potential to destroy the American economic system unless they are swiftly diminished.

Clearly, the apparent contradiction has several possible explanations. The first is that the sample of businesses and businessmen in this study is not representative of the whole population. Because their businesses are small, they are able to pass under the "net" of many regulatory requirements aimed at "big business." Second, because they are young companies and some are not yet profitable, the tax bites have yet to impact them severely.

Another bias in this sample of firms is that few are manufacturers and those that are do relatively light manufacturing. As a result such things as health and safety

regulations or environmental standards aren't likely to affect them in any significant way.

Finally, the two factors which were mentioned by a majority--economic cycles and high interest rates--may be seen as the ultimate symptoms of many of the ills caused by the impact of the other factors throughout all sectors in the economy. Thus it may still be reasonable to suggest that even small, technically based businesses are indirect victims of the economic and regulatory ills which seem to plague the leading industrial sectors of the U.S. economy.

Surely, further study of this topic is warranted. The lack of "clout" in Washington of which small business groups often complain may be rooted in the fact that they do not, indeed, share the same problems as the powerful industrial lobbies whose loud voices are more often heard by legislators and regulators. A study of the unique problems of today's small businesses would be a valuable contribution to the literature on entrepreneurship.

For those who have been plagued with problems, and some who haven't, several sources of assistance were utilized. Management consultants were used by two-thirds of the firms, while outside technical assistance was sought by 56%. In

most cases the level of involvement of outside consultants was said to be small.

An especially important source of guidance for many of the entrepreneurs was their cadre of professional advisors in the form of lawyers, public accounts and insurance brokers. One or all of these individuals had a very important role in the structure, and often the operations, of nearly every company in this study. Moreover, many of the more successful entrepreneurs gave greater credit to these advisors than to themselves or their colleagues for the success of the venture. The specific advisory services provided varied, but in most cases were an extension of essential services such as auditing, drawing contracts or setting up insurance programs. The author feels convinced that such relationships can have enormous impacts on a new business' success, and regrets not having collected complete data with which to test the hypothesis.

3.10 Observations

The entrepreneurs were asked at the end of each interview to summarize their experiences in businesses and discuss their future plans. Here they were also encouraged to

"wax philosophical" and suggest for themselves the key elements of entrepreneurship and business success. As one might imagine, this section evoked some of the most illuminating, as well as unusual responses of the interviews.

When asked which aspects of their experience had been most valuable to them in running their companies, many responded initially that nothing can really prepare one for running a business other than doing it. Beyond that observation, founders cited their technical backgrounds, experienced-based knowledge of the markets and users of their products, and previous managerial experience, particularly in human relations areas.

One founder stated, with the utmost sincerity and simplicity, that "hunger" was the most valuable previous experience which motivated him to succeed--he did. Finally, most of those who came from entrepreneurial family backgrounds cited the life-long exposure as the most valuable training available.

The most satisfying aspect of their entrepreneurial careers has been simply the experience of "making it work" for most of the founders. The ability to provide a product or service that people really want was also an important

source of fulfillment for many. As several of the companies were providing products or services which improved productivity or conserved resources, this too was gratifying to them.

There were, of course, financial rewards which accrued to several of the entrepreneurs, but the author was strongly convinced that the personal and emotional rewards superceded them in the minds of the study participants. "Seeing my company grow and my people grow with it" gave one man the greatest satisfaction, and several others echoed the sentiment, if less precisely. Many also mentioned the learning from the experience as a great benefit. "I learned to be effective as a manager, fair and compassionate as an employer, and to be honest with myself," summarized one thoughtful participant.

Sources of anguish or dissatisfaction depended on the individual experiences and, often, the relative success to date of the respondent. Failure to achieve their goals was the most frequently cited disappointment. Several also mentioned their exposure to unethical, manipulative or discompassionate behavior among customers, suppliers, financers or competitors as hurting them the most. There

was a refreshingly naive sincerity in the way several expressed their unpleasant experiences and surprise at the behavior of others.

Dealing with employees and colleagues was hard for many in the study. "It was easier for me to fire 200 people as the manager of [a large corporate division] then it is to lay off one person here," offered the employer of 36 people who provides free lunch for his employees every day (and is among the most stunning successes of the study). Only one respondent mentioned conflicts with his co-founders as a problem, although several others had been through such problems in the past as evidenced by the breakup of the original founding them in 6 cases.

Of all the comments offered relative to the key ingredients of success in a new venture, most struck the author as obvious, and perhaps a bit cliché, e.g., "timing," "the right product for the right market," "sound planning." Clearly, these and other factors are indeed essential to success, and many of the firms in the study lacked the essential basics.

But the author was looking for perhaps a bit of sage wisdom from the "generals of the small business brigades."

He may have found it in the response of one battle-torn yet victorious fighter: "It takes only two things to succeed--hard work, and a strong stomach to see it through."

CHAPTER FOUR

DISCUSSION AND IMPLICATIONS

The preceding chapter has demonstrated both similarities and differences in the entrepreneurial experiences of a group of individuals who started businesses in a similar environment during a common period of time. Some of the differences, it appears, arise from the diversity of backgrounds of the entrepreneurs, circumstances of their founding a company, financial and human resources available to the new enterprises, marketing and production strategies and administrative techniques.

It is clear to the author that, while in this study certain factors have been identified or confirmed as correlates of success in technically based new ventures, such results fall far short of prescribing the optimal way to launch and develop a new technical venture. After all, a "venture" must, by definition, have something unique in its concept, approach, or intended goals, and so it is unlikely that the patterns followed previously

will be appropriate to the new venturer.

Still, it is not unreasonable to seek to isolate certain aspects of the entrepreneurial experience which bear consideration by anyone planning or evaluating similar ventures in the future. The author cautions against the assignment of "dos and don'ts" to any of these factors, but offers the following observations on the basis of this and other research.

First, new business ventures should be carefully planned. Given the basic concept or design for a product or service (usually a prerequisite for launching any enterprise), it is enormously important to put the effort into planning the execution of the idea. In "textbook" fashion the entrepreneur should estimate the market potential, produce several sets of sales forecasts (foolishly optimistic to disastrously pessimistic), and then assess the implications of each estimate for all aspects of the operation. Careful planning of cash flows, resource requirements and the means to produce these should then be completed. As important as the amount and means, is the timing of these resources.

This is not to suggest that a good plan assures success, or that a bad one precludes it. Surely numerous empirical

examples (including the present study) can be found to contradict such a prescription. But neither does any form of evidence convince the author that such planning is not essential or that it does not have to improve significantly, all other things being equal, the chance that a new venture will succeed.

Another issue raised by this and earlier research is the importance to the entrepreneur of understanding his or her limitations and providing managerial and technical support where and when needed. Of course it is ideal to begin operations with a pool of talent and experience among the officers which insures the ability of the company to meet any kind of challenge or difficulty. Since most new ventures run very "lean" operations, however, it is far more practical to develop outside contacts, advisors and consultants who can be tapped for advice and assistance when needed. In selecting top managers, on the other hand, it appears useful to choose those with strengths in the areas most critical to the given business as well as those with multi-disciplined training and experience, so that top management can effectively be spread thinly.

The specific source of financing seems less important

to the new venturer than the securing of an adequate amount and access to future funding as it is needed. Neither the amount nor the source of financing has related to the success of technical entrepreneurs in this or previous research. Ironically, the most successful business in this study was started with the second to the least amount of capital.

The marketing of technical products is often performed by individuals with technical backgrounds, but it does not follow that the technical director of a new enterprise should be its only or even principal marketing executive. Time and again analysis has revealed that, even among small companies, a more sophisticated approach to marketing yields impressive results. Marketing was the most common source of difficulties for firms in this study, and the failure to deal with developing their marketing has been cited as the downfall of too many technology-driven companies.

Finally, the author's most overwhelming impression from the study is that entrepreneurship is an exercise of "doing." For all the research, planning, fund raising and market analysis which seem key to an entrepreneurial venture's success, nothing can substitute for,nor exceeds the

importance of the entrepreneur's drive, perseverance and will to make it work. These are unmeasurable but thoroughly observable phenomena, which have been studied and analyzed by industrial scholars and practitioners for some time. The unique qualities found in entrepreneurs will never be synthesized or replaced, but one can expect them to be duplicated time and again in societies which encourage free enterprise and individualism.

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A P P E N D I C E S

APPENDIX I

PROFILE OF FIRMS USED IN STUDY AND LIST OF FIRMS IN THE ORIGINAL SAMPLE

APPENDIX Ia

PROFILE OF OPERATIONS OF FIRMS IN THE STUDY

Company	Sales Revenue[a]	Employees[a]	Status[b]
A	$41,000,000.	550	going
B	2,500,000.	26	going
C	2,450,000.	25	going
D	2,000,000.	65	going
E	1,800,000.	20	going
F	1,100,000.	36	going
G	500,000.	15	going
H	300,000.	5	going
I	250,000.	3	failed (4)
J	200,000.	3	going
K	200,000.	10	acquired (2)
L	65,000.	1	dissolved (1)
M	65,000.	4	failed (3)
N	60,000	1	going
O	40,000.	1	going
P	30,000.	1	going
Q	20,000.	6	failed (1)
R	15,000.	1	failed (2)

[a]Most recent year or last year of operations.

[b]Numbers in parentheses are years of operation before status change.

APPENDIX Ib

LIST OF FIRMS CONTACTED FROM THE ORIGINAL SAMPLE

1. AAAA Data Services, Inc.
2. A&T Manufacturing Company, Inc.
3. AMI Manufacturing Company, Inc.
4. Amkey, Inc.
5. Andover Medical Incorporated
6. Applied Digital Engineering, Inc.
7. Aristonics Corporation
8. The Artura Group, Inc.
9. Atex, Inc.
10. Baldpate Electronics, Inc.
11. Bruker Instruments, Inc.
12. Buffalo, Inc.
13. Burlington Components Corporations
14. Cape Pure Energy, Inc.
15. Cardiac Devices, Inc.
16. Cardio-Pulmonary Products Corporation
17. Commterm, Inc.
18. Computer Security Institute, Inc.
19. Computer Services for Education, Inc.
20. Continuous Expression Processor, Inc.

21. Crosbro, Inc.
22. Data Flow, Inc.
23. Dataplex, Inc.
24. Detectrol
25. Digiplex Corporation
26. Diode Devices Inc.
27. DMV Antibodies, Incorporated
28. Eastern Analytical Laboratories
29. Electric Vehicle Engineering
30. Electronics Research Group, Inc.
31. Encode, Inc.
32. Flex-Key Corporation
33. Fotocom
34. General Turtle Development Corporation
35. Geo-Atmospherics Corporation
36. H&K Services, Inc.
37. Hanscom Associates, Inc.
38. Hinds and Company, Inc.
39. Industrial Biomedical Sensors Corporation
40. Infinite Perspectives Corporation
41. ISI Electronics, Inc.
42. Keyview Terminals Corporation

43. Keytek Instrument Corp.

44. Lake Wales Plastic Corp.

45. The S. F. Maloy Co., Inc.

46. Mann Data Inc.

47. Martingale Inc.

48. Mayday Corporation

49. Merrimack Instruments, Inc.

50. Microseal Plastics Corporation

51. Microwave Associates Service Company, Inc.

52. Minicomp, Inc.

53. New England Medical Equipment Co., Inc.

54. Northeast Telephone Corporation

55. Pan-Tech Corporation

55. Lee W. Parker, Inc.

56. PBL Electro-Optics, Inc.

57. Peldata Incorporated

58. Plasma Therm, Inc.

59. Polyclon, Inc.

60. Prac Tek Associates, Inc.

61. Ramco, Inc.

62. RDM Associates, Inc.

63. R.G. Systems, Inc.

64. Ruskin Data Systems, Ltd.
65. S-E, Inc.
66. Scientific Innovations, Inc.
67. Solar Energy Technology, Inc.
68. Specdata, Inc.
69. Statistical Laboratory Inc.
70. Sunsav, Inc.
71. Surgic-Aid, Inc.
72. SYS/3 Associates, Inc.
73. Tech Computer Inc.
74. Visual Information Processing, Inc.
75. Xenergy, Inc.

APPENDIX II

STUDY QUESTIONNAIRE

CO._____

SECTION I--Background

I-1 Name _____Age_____

I-2 Place of birth_____

I-3a) Number of younger brothers_____sisters_____

b) Number of older brothers_____sisters_____

I-4 In what part(s) of the U.S. (world) were you raised?_____

_____

I-5 Your Family

a)Were you married when you founded this business_____?

Number of children_____?

b)If yes, how did you perceive your Family's support and understanding of your proposed venture?

-3	-2	-1	0	1	2	3
strongly opposed			neutral			very supportive

c)How important do you feel family support and understanding are to the entrepreneur?

1	2	3	4	5	6	7
not a factor						indispensible

d)What was your spouse's occupation during the venture formation?_____

_____

e)Has your spouse participated in the business since founding?_____

_____

I-6 Please indicate your parent's occupation and then clsssify it by checking the appropriate employment type:

Parents' occupations (exact speoification): father_____

mother_____

Employment type (father--F, mother--M):

Professional (nontechnical)	_____	clerical	_____
Professional (technical)	_____	sales	_____
Managerial (nontechnical)	_____	skilled labor	_____
Managerial (technical)	_____	other	_____

I-7 Was your father or mother in his or her own business? Yes___ No____

I-8 What were your mother's (M) and Father's (F) educational attainments?

Grammar School _____ High School _____

College

Technical_____ Natural Sciences_____

Social Sciences_____ Business_____

Arts _____

Graduate School

Technical_____ Natural Sciences_____

Social Sciences ____ Business_____

Arts _____

I-9 How much formal education have you completed? (Indicate year)

_____ 1) Some high school or less

_____ 2) Graduated from high school

_____ 3) Some college but no degree

_____ 4) Two-year degree

_____ 5) Four-year degree

_____ 6) Master's degree

_____ 7) Multiple Master's or Engineer's degree

_____ 8) Doctorate

I-10 In what fields are your degrees?

Natural Science_____ Social Sciences_____

Physical Science, Math _____ Arts _____

Engineering _____ Humanities _____

Technical (2-yr) _____ Business, Law _____

I-11 How many (semester long) courses have you taken since your last degree? _____

I-12 How many business courses have you taken?_____

I-13 Work experience (previous jobs held prior to forming your own business):

Company_____Dates_____

Type of work_____Title_____

Company_____Dates_____

Type of work_____Title_____

Company_____Dates_____

Type of work_____Title_____

Company_____Dates_____

Type of work_____Title_____

Company_____Dates_____

Type of work _____Title_____

I-14 Did you previously participate as a founder of any new business?

If so, which?_____

When?_____

Disposition?_____

_____

I-15 Papers published and/or patents granted:

	Before previous employer ( )	While with previous employer ( )	Since leaving previous employer ( )
Papers			
Patents			

I-16 Were these publications and/or patents directly related to the establishment of the new business? No_____ Yes _____. If yes, how important were they?

1 2 3 4 5 6 7

little importance — extremely important

I-17 May we have a copy of your resume for our files? Yes_____, No_____.

1-18 (OPTIONAL). Religious background

(1)Protestant_____ (4) None ____

(2)Catholic _____ (5) Other _____

(3)Jewish _____

SECTION II -- Founding of New Enterprise

II-1 a) When did you first think of going into business (in general, no particular business) for yourself? _____

_____

b) When did you first consider starting this particular business?

_____

c) Did you have any friends or relatives who had started their own business, whose experience was influential to you in starting your company? _____

_____

_____

d) Of these, how many worked for your previous employer ( )?

_____

II-2 a) Did you pursue this effort to start the business on a part-time basis, prior to actually terminating your previous employment?

Yes ____ No ____.

b) If yes, how much time was spent, part-time, (man hours per week) by you _____ and others _____? Duration of period _____.

II-3 In the first year of operation, how was your time spent (preparing prospectives, designing product, market research, business planning, etc)?

Business aspects: ____% Describe briefly _____

_____

_____

Technological aspects:_____% Describe briefly_____

_____

II-4 Would you say the environment at your previous job ( ) was conducive to the new enterprise "Spin-off" process? Yes____No_____

Explain, please_____

_____

_____

II-5 Did you get discouragement or encouragement from personnel at your previous job to go into your own business?

-3	-2	-1	0	1	2	3
much discouragement			little reaction			much encouragement

II-6 At the time you started your new enterprise, what features of going into business for yourself did you consider most attractive? (Check all which apply, then rank those you have checked 1, 2, ...with 1 being the most important.)

Rank	
_____	Financial reward
_____	Being own boss--independence
_____	Challenge—do something that others could not
_____	Challenge--taking on and meeting broader responsibilities
_____	Freedom to explore new areas
_____	See things through to completion
_____	Other_____

Comments:

II-7 Can you point to any circumstances which precipitated you starting your own company? Check all which apply, then rank those you have checked with 1 being the most important.

Rank

_____ Learned of market for new idea

_____ Learned of financial backing

_____ Offer to join in new enterprise

_____ New breakthrough or new idea

_____ Someone decided to join in venture

_____ Project completed

_____ Change in work assignment

_____ Friend or associate left

_____ Personal conflict

_____ Lack of recognition

_____ Frustration in job

_____ Other _____

_____

II-8 Did the decision to start your company depend on the principal's knowledge of a new product or service that they felt was not being adequately developed or commercialized by an employer ( )?

_____

II-9 From which source did the technology used in your original product or service derive primarily?

_____ Your work or others' work (of which you were aware) at an employer's ( )

_____ Earlier work experience

_____ Education

_____ Hobby

_____ Other_____

II-10 Overall, what do you feel is the degree of technology transfer from the founder's previous employer ( )?

_____(1) Direct: The company in its present form would not have started without technology from previous employers ( ). It utilizer or utilized at the beginning mostly what the founder(s) learned from previous employer ( ).

_____(2) Partial: An important aspect of the company's work originated with technology from previous employer ( ), although the individuals who transferred the technology might have broadened the technology during subsequent studies or formal education before the formation of the new enterprise.

_____(3) Vague: Nothing specific was transferred. However, general background and knowhow learned from previous employers helped materially.

_____(4) None: Essentially nothing that the company does is related in any manner to previous employment ( ).

_____(5) Special Case: _____

_____

_____

II-11 a) How many people (exclusive of founders) do you now employ who worked with you previously?_____

b) How many people (exclusive of founders) did you employ, but no longer employ who had worked with you previously?_____

c) How many people do you now employ who worked at your former employer ( ) at one time?_____

II-12 a) How many people participated in the formation of the company as principals?_____

b) What were their anticipated functional roles? (e.g. general manager, marketeer, researcher, etc.)_____

_____

_____

_____

II-13 Did any of the founding principals have prior business management experience?_____

_____

_____

II-14 Your company is a:

Sole proprietorship_____ General partnership_____

Limited Partnership_____ Corporation_____

II-15 a) Please discuss freely your decision to start the company including any points of interest not already presented (how you handled first business arrangements, including contacts with government agencies, events which transpired early in the firm's life which have proved to be major factors in the company's success or lack thereof, etc.)

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

b) Describe the original business plan with respect to original strategy, goals, and milestones.

SECTION III — Capital Financing

III-1 a) With how much capital financing did you start the company?

Equity_____ Loans_____

b) For what was this financing used?_____

_____

_____

_____

c) Where did you get this initial financing? (list approx. percentages)

i)_____Personal sources

ii)_____Private V.C. firms

iii)_____Private foundations

iv)_____Insurance companies

v)_____Corporations (non-insurance)

vi)_____Banks

vii)_____Small business investment companies

viii)_____Other

d) After this initial financing, what percentage of the company's equity was owned by outsiders?_____

III-2 Do you feel that your affiliation with your previous employer made capital financing easier or harder to obtain?

-3	-2	-1	0	1	2	3
much harder			no effect			much easier

Comments: _____

_____

_____

III-3 a) Have you since added long term capital from outside your company?

Yes____ No____

Please indicate major sources and amounts: _____

_____

_____

b) What % of the company equity is now owned by outsiders?

III-4 Do you feel you have been hindered by too little (or too much) capital support? Yes____ No____

Please explain:_____

_____

_____

_____

III-5 What factors have generated your largest needs for capital? (Please check those which apply, then rank those checked 1, 2... with 1 being most important.)

Rank

_____ R&D facilities

_____ Production facilities

_____ Product development (including required technical personnel)

_____ Technical personnel (for other than product development)

_____ Production workers

_____ Accounts receivable

_____ Raw materials

_____ In-process inventory

_____ Finished goods

_____ Advertising

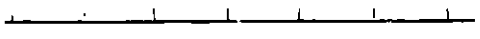
_____ Sales force

_____ Distribution

_____ Service network

_____ Other

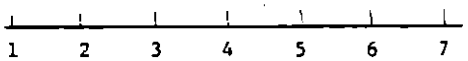
III-6 a) How much assistance (financial and business advice, etc) have your financial backers provided to the firm?



1 2 3 4 5 6 7

None — A great amount of close day-to-day contact

b) How much of this type of assistance do you feel financial backers should make available to the firm they are backing?



1 2 3 4 5 6 7

None — A great amount of close day-to-day contact

III-7 Have you ever considered taking the company public? Yes_____No_____

Please discuss your decisions and how they've impacted the firm.

_____

_____

_____

_____

_____

III-8 Have you ever considered mergers or making an acquisition or being acquired?

Yes_____ No_____ Briefly discuss your goals in this area.

_____

_____

_____

_____

_____

SECTION IV -- Human Resources

IV-1 Describe your experience with turnover (use rates if known or characterize as low, moderate or high) among:

professionals _____

managers _____

salespeople _____

production workers _____

clerical _____

IV-2 Do you feel company development has been at all affected by a shortage of specific skills in the workforce?

Yes _____ No _____

If yes, which skills?_____

_____

_____

_____

IV-3 With whom do you feel you compete for skilled employees (companies or industry)? _____

_____

IV-4 How do you recruit new employees? _____

_____

_____

_____

_____

IV-5 Do you feel that your overall compensation rates are:

above average? _____

competitive? _____

below average? _____

IV-6 Do you reward product development engineers for innovative work?

Yes____ No_____

If yes, how? _____

_____

_____

IV-7 What percentage of salesforce compensation is:

base salary?_____

commission ?_____

IV- 8 Have any of your employees left to start their own business?

Yes _____ No _____

If yes, please describe briefly._____ _____

_____ _____

_____

_____

IV- 9 Are there any other labor issues that you feel are important to your enterprise?_____

_____

_____

_____

SECTION V — Company Products and Services

V-1 Classify the type of your business: (indicate with a "B" the classification of the business when it began and with an "N" for its classification now.)

_____ (1) Production—hardware

_____ (2) Production—software i.e. programming, consulting, services

_____ (3) R&D (contracted)

_____ (4) Non-profit

_____ (5) Consultant

_____ (6) R&D and Production (hardware)

_____ (7) R&D and Production (software)

_____ (8) Production (hardware and software)

_____ (9) R&D and Production (hardware and software)

_____ (10) Other _____

V-2 Describe the general nature of your business, its products or services.

_____

_____

_____

_____

_____

_____

_____

_____

_____

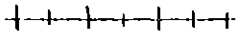
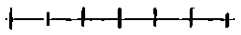
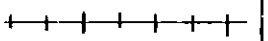
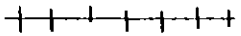
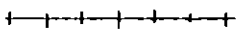
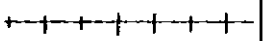
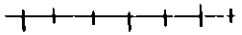
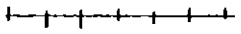
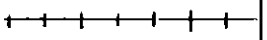
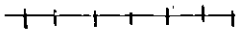
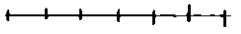
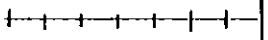
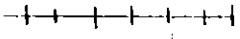
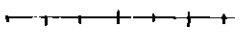
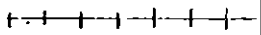
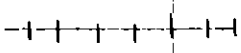
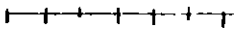
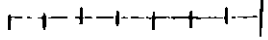
_____

_____

_____

_____

V-3 Complete the following table:

	First Product	Subsequent Major Products #2	#3
Name of function (What was it?)			
Principal customers			
Entrepreneur's view of risk (High, moderate, low)			
Where did the technology come from?			
When introduced?			
Competitive Advantages:	not a factor 1 2 3 4 5 6 7 extremely important	not a factor 1 2 3 4 5 6 7 extremely important	not a factor 1 2 3 4 5 6 7 extremely important
a) New tech or first of kind			
b) Special purpose or special specifications			
c) Fast delivery			
d) Price			
e) Calibre of product or personnel			
f) Other			

SECTION VI — Marketing

VI-1 a) What is your overall marketing strategy (i.e., products, markets, distribution channels, growth plans, etc)?

_____

_____

_____

_____

b) How has this changed from the original strategy?

_____

_____

_____

VI-2 a) Do you have a marketing department (or a special section of the company devoted to the marketing effort of the business?

Yes _____ No _____

b) What are the functions of the marketing people and at what point in time were they added to the company's employment?

_____

_____

_____

_____

_____

c) Who handled the marketing function in the beginning?

_____

_____

_____

d) Does the firm use marketing consultants? Yes_____ No _____

If yes, to what extent, and is this for any particular problems?

e) Do you do any sales forecasting?_____ If so, how is this done?

For what is the information used?

VI-3 Have you done any studies to analyze potential markets? Yes_____ No_____

If yes, what was done? If no, how do you get market information?

VI-4 a) What sales methods were utilized by the company at the beginning?

b) Which do you use now? Which contributes the most to total sales?

c) Have any methods been used and subsequently discarded? Yes _____ No _____

If yes, which ones and why?

_____

_____

_____

VI-5 a) What means of advertising or promotion have been used?

_____

_____

_____

b) Which have been most successful?_____

_____

_____

c) How do you determine the effectiveness of your advertising and promotion?_____

_____

_____

_____

VI-6 a) In general, has the marketing of your products been accomplished in a manner satisfactory to you?

-3 -2 -1 0 +1 +2 +3

entirely unsatisfactory — very satisfactory

b) How would you improve upon the marketing function?

_____

_____

_____

VI-7 a) To whom have your advertising and promotional efforts been directed?

b) How has that changed over the years?

VI-8 How do you identify potential customers?

VI-9 Whom do you consider your main competitors?

VI-10 Have competitors ever duplicated your products? Yes ____ No ____

If yes please explain their actions and your company's responses.

VI-11 Have you ever duplicated competitor's products?

VI-12 What do you consider your company's major competitive strengths?

Weaknesses?

SECTION VII -- Organization Planning and Control

VII-1 a) Describe your management accounting and control (budgeting) systems.

_____

_____

_____

_____

b) Please rate them as to:

formality -3 -2 -1 0 1 2 3

totally informal or non-existent — highly formal and specific

level of detail -3 -2 -1 0 1 2 3

broad or vague goals — specific line-item targets

VII-2 Please rank the major short-term financial goals of the firm.

_____ increase revenues

_____ increase profits

_____ increase owner's equity

_____ increase market attractiveness of firm

_____ generate cash

_____ other

VII-3 Does the company have a long-range financial plan? Yes ___

Please discuss its major objectives.

_____

_____

_____

_____

VII-4 How has the structure of the organization changed over its history?

_____

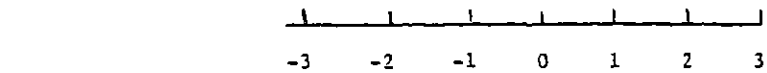
_____

_____

_____

SECTION VIII -- General Operating Issues

VIII-1 Characterize the extent of the vertical integration of your production



VIII-2 Are there economies of scale in production of your goods and services?

Yes _____ No _____. Explain_____

_____

_____

VIII-3 Discuss your manufacturing strategy (e.g. standardized vs. custom, assembly vs. component production, etc.)

_____

_____

_____

_____

_____

VIII-4 What information sources (people, publications, etc.) do you rely on to keep aware of:

technological developments: _____

_____

business developments: _____

_____

VIII-5 a) Are any of your products patentable?_____

b) If so, have you patented these products? Yes_____ No_____

c) What effect do you feel this action (or decision) has had on the firm's success?

_____

_____

_____

VIII-6 Have you hired any people (consultants, etc.) to help you with management matters? Yes _____ No _____ Or with technical matters? Yes _____ No _____

If so, in what areas and at what times? Please discuss your use of such professional advisory services.

_____

_____

_____

VIII-7 Please describe the major business problems your company has encountered.

_____

_____

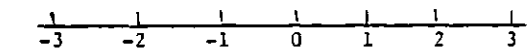
_____

_____

_____

_____

VIII-9 Please rate the degree of difficulty you feel your company has faced because of the following business climate factors:



-3 severe problems; 0 no effect; 3 factor has helped company tremendously

1. Environmental regulations _____
2. Health & safety regulations _____
3. Recession--low demand for product _____
4. a) Inflation - materials, etc. _____

   b) Inflation - labor _____
5. Availability of Government contracts _____
6. Tax treatment of capital gains _____
7. Special Government programs for business or workers _____
8. Venture capital availability _____
9. Availability of workers _____
10. Stock market for new issues _____
11. High interest rates _____
12. Social security payroll increases _____
13. Government paperwork burdens _____
14. Labor regulations

SECTION IX -- Summary

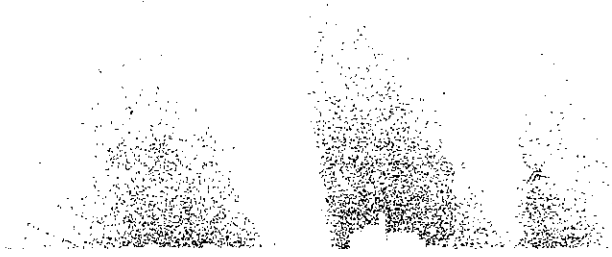
IX-1 What, in your past experience, has proven most valuable to you in your present enterprise?

IX-2 Where did you acquire or learn the important knowledge and skills necessary for your work here?

IX-3 What would you say are the company's major strengths?

IX-4 What would you say are the compnay's important deficiencies?

IX-5 Personally, what has given you the most satisfaction as a principal in this enterprise?



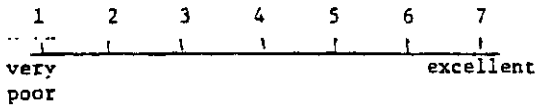
IX-6 What has caused you the most anguish or dissatisfaction?

IX-7 How would you rate your company's success at this date?

IX-8 What factors would you say are essential to the success of a new business?

IX-9 At this time, what are your personal goals regarding the company (i.e., your future involvements)?

IX-10 How would you rate your company's prospects for future growth and success?



IX-11 Do you know of any other people from your previous employer who have founded companies?