



Title: Group Research Project on Joint Ventures

Course:

Year: 1994

Author(s): E. Buescher, R. Hensel, L. Kan, J. Thornton, D. Twitchell and
W. Greg

Report No: P94024

ETM OFFICE USE ONLY

Report No.: See Above

Type: Student Project

Note: This project is in the filing cabinet in the ETM department office.

Abstract: This work is to investigate the creation of joint ventures and their management of technology , personnel and communications infrastructures. It is also addressed the benefits and disadvantages received by the sponsoring companies. The information gathering methodologies used include existing case history research, library research on the topic of joint ventures and surveys of companies that have developed joint ventures and the historical information on which to base conclusions. The expected outputs will include a strategy for developing a successful joint venture, suggestions on managing a n established joint venture to achieve a technology advantage and the pitfalls to avoid.

Joint Ventures

**E. Buescher, R. Hensel, L. Kan, J. Thornton,
D. Twitchell, G. Wilt**

P9424

TABLE OF CONTENTS

1.	Introduction	2
2.	Purpose of Joint Venture	2
	2.1 What is a Joint Venture and Strategic Alliance?	2
	2.2 Why create a Joint Venture?	3
	2.3 Drawbacks of Joint Ventures and Strategic Alliances	5
3.	Management of Technology	6
4.	Management of Personnel and Communications Infrastructure	8
	4.1 Team Development	8
	4.2 Managing Change	9
	4.3 Dealing with Change	10
	4.4 Motivating Team Members	11
	4.5 Communications Infrastructures for Joint Ventures	11
	4.6 Computer-Based Information Exchange	12
	4.7 Product Information Management	13
5.	Results of Joint Ventures	14
	5.1 Negative Results	15
	5.2 Affect of Differing Company Sizes	16
	5.3 Positive Results	16
	5.4 Market Reaction to Smaller Partner	16
	5.5 Technology Push	17
	5.6 Acquisitions	18
	5.7 Summary	18
6.	Methodology	19
7.	Results	20
8.	Conclusions	22
9.	Suggestions for Further Research	23
	Appendix A: Survey Cover Letter and Questionnaire	24
	Appendix B: Survey Data Tabulation	28
	Appendix C: Survey Data Summary	33
	Appendix D: Executive Summary	41
	References	43

1. INTRODUCTION

In today's business community, many companies are working with each other in joint ventures in order to develop new and emerging technologies. In this research paper, we plan to investigate the creation of joint ventures and their management of technology, personnel and communications infrastructures. We will also address the benefits and disadvantages received by the sponsoring companies.

The information gathering methodologies we have used include existing case history research, library research on the topic of joint ventures and surveys of companies that have developed joint ventures and have historical information on which to base conclusions. Our expected outputs will include a strategy for developing a successful joint venture, suggestions on managing an established joint venture to achieve a technology advantage and the pitfalls to avoid.

2. PURPOSE OF JOINT VENTURES

2.1 What is a Joint Venture and Strategic Alliance?

Joint ventures and strategic alliances are not a new business strategy. They were used extensively in the past by businesses. For example, in the 1800's, joint ventures were used to establish U.S. world dominance in the shipping and whaling industries. During the period of the 1880's, railroad and mining joint ventures were quite common. Early in the 1900's, joint ventures were formed to pool risks in gold exploration. One of the largest projects ever to be conducted as a joint venture began in the 1920's. It involved the apportionment and development of crude oil reserves in the Middle East by four U.S. oil companies. These and other numerous examples illustrate that joint ventures and strategic alliances are not a recent practice. However, since the early 1980's, the two business strategies have become highly visible to the general public. This is due mainly to the frequency of their occurrences, the large amounts of money often involved and the resulting media coverage.

As defined by Lynch, a joint venture is:

"a cooperative business activity, formed by two or more separate organizations for strategic purposes, that creates an independent business entity and allocates ownership, operational responsibilities, and financial risks and rewards to each member, while preserving their separate identity/autonomy" [1].

The technical difference between a joint venture and a strategic alliance is whether or not a new, independent business entity is formed. Strategic alliances do not create a

separate organization or legal business entity. In most respects, the joint venture and the strategic alliance are alike; the strategic and operational principles are similar. In this paper, the term "joint venture" will be synonymously used for both types of business activities.

2.2 Why create a Joint Venture?

Since 1978 the establishment of joint ventures in the United States has blossomed due to many technology and economic changes that precipitated deregulation, globalization, and an increased emphasis on the need for product innovation. According to Harrigan and Newman, in 1983 alone the number of cooperative strategies announced in some industries, such as communications systems and services, exceeded the sum of all previously announced U.S. ventures in that sector [2]. Joint ventures have become an important means of supplementing strengths and nourishing weaknesses of firms all over the globe. This phenomenal growth in joint ventures is not a fluke. Several major competitive forces have contributed to this proliferation, and these forces will probably continue for many years to come.

There are several forces that are causing joint ventures to become more popular in recent years. The most noticeable ones are:

A. Specialization of technologies

Many companies have become specialized in one particular segment of technology, but lack the overall "system" knowledge to create a complete product. For example, a company that has the know-how to improve laser printer hardware lacks the critical software to drive the machine. It would be much easier to put a complete product together by creating a joint venture with a company that has the required software rather than start from scratch and internally develop the technologies.

B. Time and/or access to market

The competitive world market has shortened the time window for the introduction of products. Small entrepreneurial companies often do not have the resources, such as distribution channels or marketing expenses, to produce "me-too" like products. A joint venture with a company that has the resource and marketing power to push the product out into the market quickly is a very sensible business strategy for a technology strong company.

C. Shared risk

The cost of a new technology product can be extremely expensive. The next generation of tactical fighter airplane is a case in point. The bidding companies involved (two joint ventures each composed of two major air-

defense companies) have spent billions just to have the Department of Defense consider their designs. Similar considerations also led ITT to team up with their European counterpart to develop a new generation of telephone switching equipment.

D. Lack of technical resources

Major research projects have become so knowledge-intensive and expensive that even industry leaders may require a joint venture to become involved. Capital expense is an important consideration, but not the only one. Research expertise to sustain and complete the project are also needed. For example, MCC was founded in 1983 by fifteen U.S. corporate giants, (3M, DEC, Honeywell and Boeing, to name a few), in order to advance technologies in the areas of semiconductors, computers and software that otherwise could not be made available.

In summary, companies entering into joint ventures are looking to concurrently achieve the following objectives:

1. Improve market or strategic position
2. Leverage precious financial and human resources
3. Reduce risks while increasing rewards.

As an example, according to Almassy and Baatz, the reasons electronics companies team up are shown in the following table [3]. The "% Responding" column represents the percentage of respondents who claimed the corresponding "Reason to Create the Alliance" was appropriate in the creation of their joint venture. As can be seen, in at least the electronics segment of the high tech industry, the reasons to create alliances are the result of the external forces faced by many technology companies today.

<u>Reasons to Create Alliances</u>	<u>% Responding</u>
Access new markets	82%
Enhance marketing, distribution, and sales	76%
Access foreign markets	64%
Access new technology	50%
Improve product development	46%
Defend market share	35%
Access capital	31%
Limit strategic risk	30%
Gain cost advantage	28%
Diversify	22%

2.3 Drawbacks of Joint Ventures and Strategic Alliances

Despite the many potential benefits, joint ventures do frequently go awry. As with any business strategy, the potential problems in an alliance must be carefully weighed against the potential benefits. What follows is a list of potential problems:

A. Antitrust problems

In the past, the United States has enforced strict antitrust laws that prohibit cooperative strategies when they appear to function as monopolies or if they collusively behave. (Judicial opinions have suggested that within the United States all forms of cooperation are suspect and cooperating companies need to prepare antitrust challenges whenever planning joint ventures.) However, since 1984, because of the intense international competition, especially from Japan, the government's attitude toward joint ventures has softened. Still, any company considering a joint venture must pay close attention to this issue.

B. Operational ineffectiveness

Poorly structured joint ventures often result in internal political strife, especially when the long-term goals of the funding companies are not compatible. Owners' fears of loss of control often exacerbate the difficulties of coordinating the ventures' daily operations, especially in industries where technologies rapidly change.

C. Strategic changes

Joint ventures are created when two companies recognize they have inherent weaknesses which could be complemented by the others' strengths. After a period of time, one of the companies may not require the assistance of the other. It could then be necessary to dissolve the joint venture. The expenses related to the dissolution could be quite high.

D. Competition Restriction

Most joint ventures stipulate that the funding companies can not compete directly with the alliance. While this may be prudent when the agreement is signed, the strategic position of the funding companies may change through the years. In the rapidly changing world of technology, it is difficult to foresee if such restrictions would, in the long run, harm or help the companies.

In summary, joint ventures should be carefully weighed and compared with other alternatives such as mergers or acquisitions. Often times, licensing the technology/product or in-house sourcing of the technology/product may be more appropriate.

3. MANAGEMENT OF TECHNOLOGY

With the fast pace of technology, it is often difficult for companies to keep up with the competition. In trying to be technical experts in everything, a company can be consumed by the high cost of rapidly changing technology. Small companies, in particular, often cannot afford to perform all of the technical activities in-house and are looking elsewhere for help. Large companies are also finding it appropriate to find ways of reducing their R&D expenses.

Technology must play a central role in strategic planning which addresses the fundamental functions of establishing a sustainable competitive advantage and ensures the organization's survival [4]. Dodgson cites three reasons for the importance of a technology strategy [5]:

1. Technological uncertainty and complexity
2. Globalization--the international nature of new technology
3. Complementarities--technology strategy and how it complements the overall corporate strategy.

Today, it is becoming evident that innovation is increasingly a result of a network of companies interacting in a variety of ways [6], [7]. Companies are finding that teaming with others is beneficial to them in both technology and financial matters. In the management of technology it is not so much "what you know" but "who you know and what they know". Bursic writes:

"New technologies have many sources. Technology can be achieved through licensing, acquisition, purchase or other strategic alliances, or it may be brought directly out of the organization's own R&D labs. Recently we have seen a growing use of various strategic alliances (joint ventures, research consortia, acquisitions; mergers, and technology licensing) to assist organizations in the transfer of technology." [38].

Gaining a technological advantage from a joint venture needs proper planning and execution if desired results are to be obtained. Almassy and Baatz list the following items, with regard to planning, in rank order of importance [3]:

1. Selection of partner--Evaluate partner on the following criteria:
 - a. Do they possess the resources and capabilities we seek?
 - b. Is their approach to the business compatible with our approach?
 - c. Do they have adequate motivation and commitment to the success of the venture? [8]
2. Clear understanding of roles
3. Clear definition of objectives

of reducing NIH syndrome is to have multiple teams study the proposals of joint ventures. Top executives with technical skill then review the results of these teams. By giving these issues corporate attention, managers attempt to overcome organizational tendencies to reject outsider's ideas without careful study [2].

4. MANAGEMENT OF PERSONNEL AND COMMUNICATIONS INFRASTRUCTURES

People are often considered to be the main resource of a corporation. This is also true in joint ventures. In order to make joint ventures successful, people and their ability to adapt to change must be considered. In this section of the paper, the following topics will be discussed:

- A. Recruiting talented and skilled individuals from parent companies
- B. Creating an environment where creativity is encouraged and rewarded
- C. Helping individuals to cope with organizational, technological and corporate change
- D. Establishment of an organizational structure
- E. Dealing with cultural differences between joint venture team members and parent companies
- F. Establishing a new communications infrastructure for joint ventures.

4.1 Team Development

One basic task crucial to the success of a joint venture is the selection of a team which possesses the technological skills necessary to develop innovative products and services. Often, the abilities of these special individuals are widely known due to their technical expertise evolved from past projects. Now that a joint venture has been established, these creative individuals from each parent company must be encouraged to participate in the new project. Many performers are easily encouraged to join the ranks of the new team, to seek out more recognition and to compete for positions on the newly formed team, which may provide them more opportunity for advancement.

However, there are often technical specialists who fear the change involved in the joint venture. Participating in a joint venture always involves some type of change. For the joint venture employee, this change can be as subtle as having a new project to work on at his/her work place, or as dramatic as having to relocate his/her family to a different part of the world.

4.2 Managing Change

Managing change has been extensively studied by Lewin [9]. Lewin's studies illustrate the balance of certain driving forces which propel the development of projects toward success and the restraining forces that resist change. The formal study of these countervailing forces is called force-field analysis. This technique can help the joint venture project manager identify those forces which "drive" the newly formed organization toward successful completion of their stated goals and the barriers or restraining forces that may deny the attainment of the organizational goals [9].

To effectively manage change, the sources of change must be acknowledged. Four categories of change have been widely recognized [10]:

1. **Organizational Change**--Organizational change is a driving force behind joint ventures. New management directives are issued which yield new business plans, renewed management support and possible changes in working conditions.
2. **Technical Change**--Technical change is encountered when new project specifications, requirements, schedules, budgets and innovation are encountered.
3. **Project Change**--Project change is encountered throughout the development process of joint ventures. This change affects the team members' interests, abilities, motivation, and team spirit during the life cycle of a joint venture. Team performance may be affected by ineffective communications, increased conflict, poor quality decision-making, a reduction in innovation and lower productivity.
4. **External Change**--External change can have its origin from customers, suppliers, regulatory agencies or from economic trends. All of these can lead management to withdraw support for the project.

Many corporations involved in joint ventures utilize a matrix organizational structure. The matrix organization employs a hybrid form of structure which allows functional specialists to be "loaned" to the joint venture project manager for the term of the project and then returned to their functional role in the parent company once the project is completed.

For the functional specialist involved in a joint venture, the anxiety level may increase toward the end of the project. This anxiety arises from a perceived threat to the needs to both security and self-actualization. As the project end is near and potential opportunities with new projects are uncertain, anxiety levels for the functional

- F. Role analysis and clarification should be conducted early in the development of a joint venture and then repeated periodically throughout the life cycle. It is important that the individual team member's perception about their role in the project and their expectations about the roles of the other team members be discussed. By clearing up any misunderstandings that may exist between team member roles and responsibilities, the joint venture team members can exist as a cohesive group despite tensions that may arise during the project life cycle.

4.4 Motivating Team Members on Joint Ventures

Motivating team members is an important part of every manager's job. Many managers who have been promoted into management from past positions in functional departments find themselves uncomfortable with the fact that their performance is now based on how effectively they can manage others to accomplish the organizational objectives. For many managers, this is the most difficult part of their jobs, especially when they are leading individuals over whom they have little or no formal authority.

Several activities are helpful to motivate joint venture team members. The first item required to motivate team members is the development of a team spirit and a sense of a common goal. The team members must feel that they are an important part of a project and that they have a common purpose with a common goal. This sense of unity can be accomplished in the following ways [12]:

- A. Hold regular staff meetings at all levels to let everyone know how the project is progressing and give the team members an opportunity to express their thoughts individually. Improved morale and improved attitudes can result.
- B. Project lunches and parties should be held in the office to celebrate major milestones or anniversaries of the project. These activities reaffirm the fact that all of the team members are actively working toward a common goal as part of an overall team.
- C. Advertise successes by posting the photographs of successful teams who meet quality and time deadlines. Often small rewards are given which further encourage the individuals to strive to meet the organizational goals. The recognition that these individuals receive is an effective motivational tool.

4.5 Communications Infrastructure for Joint Ventures

The American Management Association listed three important actions required for successful joint ventures, Communicate, Communicate, Communicate [13]. The AMA

conducted surveys which showed that in the majority of organizations that had bad experiences with joint ventures a poor communications infrastructure was present [13].

Prior to choosing a joint venture partner, the compatibility of communications systems between the two parent companies was rarely investigated. Some experts that specialize in consulting with companies that are involved in joint ventures state that most of the companies that had to deal with incompatibility of information systems, especially in such functions as human resources, general administration, purchasing, and production and distribution, reported a far higher incidence in losses of worker productivity, market share, profitability and higher employee turnover than did firms that reported compatible information systems [13]. In addition, companies that moved quickly to resolve their incompatibility problems found themselves with fewer problems after the joint venture was established [13].

4.6 Computer-Based Information Exchange

The purpose of computer-based information for engineering managers is to integrate the collection, processing, and transmission of information so that engineering professionals can gain more systematic insight into the operations and functions they are managing [10]. The benefits of accurate information is in systematic, integrated problem solving and lower costs for design, material handling, assembly, purchasing, and quality control activities.

The joint venture and the parent organization's purpose determines what information is to be communicated. Collaboration is a new theory of communication which states that the new frontier for communication is in the creation of value. Collaboration describes a process of value creation that extends teamwork concepts and communication capabilities and applies them to how we actually do work.

Joseph W. Piteo, engineering manager for Sikorsky, stated, "In this collaborative environment, engineers can work better and faster as a team, synergizing their special expertise, talent and experience, while retaining their individuality. The goal is to enable large and diverse organizations within Sikorsky to operate as if they were one intimate and cohesive team" [10]. Piteo's view for successful information systems can also be applied to joint ventures.

The complexity of operations and time constraints make concurrent engineering strategies, like collaboration, important to joint ventures. Several types of information systems that promote collaboration will be presented and discussed. Product Information Management (PIM) will be discussed with its importance on joint ventures.

4.7 Product Information Management

Product Information Management (PIM) helps promote concurrency in joint ventures by streamlining engineering change, enforcing release procedures, and integrating with manufacturing resources planning systems (MRP II). A PIM system employs intelligent work-flow algorithms that allow engineering changes to be made in parallel by different functional teams involved in a joint venture. This promotes reductions in the time necessary for design changes and encourages design reviews that are performed early in the life cycle of a joint venture. PIM systems also prevent future problems by prohibiting the release of components that are to be incorporated into assemblies until all of the components achieve a released engineering status. Also, by directly interfacing with MRP II systems, engineers are able to make better decisions about how to keep production lines supplied at the lowest possible cost [14].

Other information systems are available to improve the information flow between vendors and the joint venture team. The Object Management Group has developed a system called the Common Object Request Broker (CORBA) to provide vendors with a cross-platform, software-independent environment for engineering. Product Data Exchange System (PDES) provides complex information about parts and assemblies that current systems like IGES fail to portray. IGES provides only data related to geometry, where PDES provides information on drawing versions and revisions, tolerance specifications, surface finish, definitions and geometry and topology [14]. Other work is being done on product information systems by Digital Equipment, Hewlett Packard, and others.

The overall objective of a management information system (MIS) is to link the various data producing sources to the information processing subsystem. The characteristics that are beneficial to an information system are the providing of easy access to information and fast, accurate information processing by integrating a wide variety of subsystems. The MIS should be cost effective, many systems today reside on personal computers which are linked by local area networks (LANs) that are fairly inexpensive. MIS should also be easily expandable to allow for future growth and should enhance communications [10].

However, some critics claim that PC's lack the processing muscle to support enterprise-wide systems that, in the past, resided on mainframes or minicomputers. New technology client/server configurations are addressing this problem. A new client/server configuration might include hundreds of clients who operate intelligent, end-user terminals through a *Windows* platform. Job processing servers could reside on a more powerful PC to handle the processing work for clients. This would maximize computing resources by allowing clients to immediately address new tasks [20].

A beneficial addition to the computerized information system is the addition of the electronic mail (E-mail) system. E-mail enables computer users to have immediate access to information. Return messages are easy to enact and provide a two-way communication system which helps to eliminate the miscommunication problems that may occur when two parties are in verbal contact. Another benefit is that a record of the communication can be filed for later reference.

5. RESULTS OF JOINT VENTURES

To reiterate, some of the most common reasons or purposes of joint ventures are:

1. The creation of greater market power
2. The avoidance, reduction, or sharing of risk
3. The acquisition or sharing of information
4. To overcome cultural, political or legal impediments in International business
5. To manage a rivalry by turning competitors into allies
6. To create or take advantage of the competitive edge for product development, manufacturing, and/or marketing
7. To access capital
8. To access managerially developed or proven skills
9. To take advantage of the improved status derived from the relationship with a proven company of well-known name
10. To concentrate on the development of one's own expertise and have the partner company manage the other areas of the venture's day to day activities
11. To shorten product development time
12. To facilitate diversification by placing the technology contributing parent in a new marketplace
13. To reduce the risk of being challenged by the Justice Department for violation of antitrust laws, if the company would opt for other alternatives such as acquisition [15], [17].

After a joint venture has been in existence for a period of time, we are interested if the venture has been a success or failure. Research has shown that more joint ventures have failed than have succeeded [16]. Further supporting this claim, a recent survey has shown that most companies have rated their joint venture results as adequate, at best [18], [31]. In contrast to this, a survey of CEOs performed by the *Electronic Business* magazine revealed that joint ventures had improved market position, and 17% had achieved vast key improvement in market position due to alliances [3].

Despite these conflicting responses and the marginal success rate of joint ventures, joint ventures can be very successful when prudent selection, careful planning, and proper managerial tactics are followed. However, when these criteria are not followed, what often appears to be a perfect match leading to a competitive advantage can instead lead down a path to disaster. A recent survey can be interpreted to show a direct relationship between a company's increasing experience with joint venture activities and the increased managerial reluctance and caution towards joint ventures [17]. More and more companies are discovering that although very enticing, a successful joint venture is not as easy as it may appear. The selection of the right partner is usually the first step in a joint venture and is the most important. Selection should always be based on the ability of the partner to compensate for the given weakness(es) of the parent companies. But selection must be made carefully. One survey indicated that joint venture arrangements between two small firms tended to magnify their common weaknesses [21].

5.1 Negative Results

A classic example of a failed joint venture was presented in a recent joint venture between Selbourne Computer Inc., a high tech start-up U.S. computer firm, and Matsushita Electric Industries Co. (MEI), Japan's largest electronic conglomerate [19]. Concerning partner selection, it would first appear that these two companies could not have been a better match. Selbourne needed MEI's vast capital and manufacturing expertise to develop and bring to market a computer workstation incorporating their licensed Scalable Processor Architecture (SPARC). MEI wanted this technology to gain a presence in the workstation market. With this partnership, sights were set on jointly developing and bringing to market a breakthrough cutting edge workstation far superior to the competition's workstations and months before any similar competitive product line introduction. Instead, the joint venture was only able to produce a prototype equal to the competitor's technology and introduce it only one month before their competition's introduction. With this product only attaining "clone" status, it did not obtain the market appeal or share power to offset the costly R&D and development costs. As a result, Selbourne is currently in financial hardship and faces massive layoffs and restructuring in order to regain its original strength in product development.

Why did this joint venture fail? Selbourne executives blamed "poor execution and diverging business practices" [19]. When examined closely, five critical traps were discovered, all contributing to the failure. These were (a) lopsided organizational links, (b) false expectations, (c) inconsistent communications, (d) manufacturing inflexibility, and (e) unchecked rumors. These are classic examples of problems arising from differing company sizes and objectives, a lack of agreement by key personnel, and the inadequate integration of personnel into the new organizational team [21].

5.2 Affect of Differing Company Sizes

Typical of the Selbourne/MEI joint venture, the majority of joint ventures are established between a small technological start-up firm, and a much larger firm with greater financial resources, and usually greater manufacturing and or marketing skills [20], [21]. With such a size difference in joining companies, one can predict many potential difficulties. The difference in corporate goals, related resource allocation, and priorities, are the apparent difficulties resulting from such a size difference. For example, a small and large firm enter into a joint venture; for the small firm, the endeavor usually represents about 50% to 80% of the firm's future growth objective, 60% to 90% of their resource allocation, and thus ranks extremely high on their priority list. For the large firm, the endeavor commonly only represents about 5% to 10% of their future growth expectations. The awareness of this difference can be of great importance in equalizing priorities between the two companies and in the speed of decision making. One large firm joint venture executive commented, "Our key people are spending 30% of their time on a new business that will probably never contribute more than 5% to sales and earnings" [21].

5.3 Positive Results

Despite the Selbourne/MEI failure to bring their product to market as scheduled, time saving advantages brought about or acquired through joint ventures can be utilized by companies with time requirements. The *Electronic Business* survey clearly showed that time constrained companies ranked the future success of joint ventures with more importance when compared to businesses that are less time-dependent [20]. A classic example of a successful joint venture endeavor is the IBM PC. With the introduction of the PC, a co-specialization of complimentary products followed. To reap full benefit of these products, IBM was forced to develop peripherals and a comprehensive software library in a very short time. Instead, IBM adopted an induced contractual approach. With very shrewd agreements with Microsoft, and an openness to share the system architecture, IBM induced a spectacular output of supporting software for their PC through third parties. This new software made their computer more valuable and more in demand, thus enhancing the take-off of the PC market [24].

5.4 Market Reaction to Smaller Partner

The success of the IBM PC also shows another facet of successful joint ventures--instant success to the smaller firm due to the gained reputation from name recognition with the larger firm. One manager from Cipher Data Products, Inc., who developed a low priced version of the 3480 half-inch streaming cartridge drive, was quoted as saying, "One of the biggest advantages of dealing with IBM is that, once you've created a product that meets the high quality standards necessary to sell into the IBM world, you

can sell into any arena" [24]. Similarly, IBM's contract with Microsoft meant instant credibility for Microsoft. We have all seen where this has led.

5.5 Technology Push

With regards to product innovation, joint ventures tend to support a "technology push" rather than a "market pull" [21]. Technology accumulates new technology, exponentially. With this being the case, product innovation often originates in a firm outside of its realm of expertise; thus it does not have experience with the new product nor the marketing expertise necessary to be successful in the new market. The Selbourne Co. developed the computer architecture but had no experience in manufacturing and marketing a complete workstation. Some other common examples of this are the introduction of Avicel, a non-nutritive, which was invented in the course of attempting to produce a stronger rayon tire cord; the development of Tyvek, a synthetic plastic paper that was formed by a high-density polyethylene company; guidance systems for missiles and rockets were built with internal guidance techniques originally intended for aircraft and ship gun sights. All of these are examples of one firm developing a new technology and acquiring the assistance of another company to successfully bring the new product to market. First came the technology, and then a use(s) for the product had to be discovered; hence the term technology push. The introduction of a brand new product is far riskier than introducing a product that has been demanded by the market, or "market pull". To successfully bring a new product to market, it must be clearly shown that it is better than the old way of doing things. It must be publicly accepted. This can be very difficult because the public is often very reluctant to change proven and tried methods.

Many new products would never have been developed if it was not for joint ventures. Such is the case in the aerospace industry. During the development of the Airbus Industry, the successful development of the new engine developed by the consortium of International Aero Engines, Rolls-Royce, Pratt & Whitney, JAEC, MTU and Fiat, ensured a sufficient number of sales to guarantee a profitable collaboration. But the market would not have produced a suitable return for any two companies if each were to develop a new engine in competition with the other. Thus, without the joint venture, no new engines would probably have been offered in this class by any of the member companies [27]. Many markets do not support sufficient sales to foster competition. This is true in many cases where very high R&D costs are necessary for development. By targeting efforts toward a relatively fixed market volume, a partnership or consortium can plan for a known sales volume. If companies were to compete for this small market share, the risk involved may make the market far less attractive.

5.6 Acquisitions

Many large multi-national companies are finding that they can obtain a better success rate with joint venture activities than with acquisitions. Joint ventures have many advantages over acquisitions as they usually do not involve as large of a financial obligation. Acquisitions can also form tremendous tension between the two firms. The employees of the acquired company often do not want a relationship with the parent company. This can be extremely critical when the main purpose of the acquisition is to obtain a talent base, managerial skill, or marketing expertise. Xerox painfully learned this lesson with their acquisitions of Schugart, Optimum, and Century Data. Most of the talented people in these firms had no interest in being acquired and eventually left. A top executive at Xerox summed up the situation this way; "We learned that in many acquisitions in which we were after the talented people of the targeted company; once they depart, we are left with an empty shell." [31]. Xerox has since turned its attention towards joint ventures. In joint ventures the mutual cooperation of the two companies represents a joint interest and more easily develops a team spirit. Joint ventures also reduce the risk of challenges by the Justice Department for violation of antitrust laws that can be a major stumbling block of acquisitions [17], [31].

One totally different, yet equally interesting finding of joint ventures in the oil industry suggests that, although increasing market power, no economic advantage can result due to higher costs paid by the partnering companies. Such results indicate that although the pooling of resources clearly increases market power, the pooling of finances may also develop a greater market confidence to artificially inflate prices. The joint venture, with its increased power, is more willing to pay high costs. In any case, there is a premium being paid by joint ventures for no obvious pay back [15].

5.7 Summary

In summary, when the managerial traps are avoided, the joint venture allows each firm, regardless of its size or capabilities, to participate in product innovation in the area it knows best [15], [17]. There is clear evidence that joint ventures increase the market power of participants [15]. The joint venture utilizes the previous investments and experiences of the two parent firms in a symbiotic arrangement [17] which opens doors that would otherwise be closed to the individual firms. Joint ventures can allow new technology to be developed, increase productivity, and deploy a more efficient use of increasingly scarce corporate resources.

Joint ventures have been in existence from the beginning of industry. Westinghouse Electric and Mitsubishi Electric have a 60-year old relationship, as do NV Phillips and Matsushita. Xerox has had joint ventures with Rank Organization and Fuji Photo Film for over a quarter of a century. Moreover, multi-national companies have been involved in various kinds of joint ventures for years [31]. Surprisingly, there has been

very little research attention on the subject of joint ventures until the mid 1970's. This original research revealed that the purposes of joint ventures were to predominantly foster a technological push developed by a small high-tech firm needing to develop a market niche. Development of this niche was most easily obtainable by partnering with a much larger established firm with greater finances and a proven manufacturing and/or marketing base. During that time, it was predicted that joint ventures would become the wave of the future, becoming increasingly popular following the exponential growth of technology. Ongoing research shows that the popularity of joint ventures has increased since the 1970's and continues to increase significantly [31]. However, although still very important to the development of technology push, joint ventures are becoming more and more dependent on answering the need of the market pull. This is due to the increasingly shorter life cycles of products caused by stiff competition and the race to bring a better or improved products to the public.

6. METHODOLOGY

The data for this study comes from 6 U. S. technology based companies. The investigation involved the following four steps:

Step 1: Focus group

In order to help identify some of the relevant issues which affect joint ventures, a focus group session was conducted with six engineering management graduate students. After some initial research, the group identified characteristics that were thought to be critical for a successful joint venture.

Step 2: Detailed research design

From the focus group results, we identified six categories of investigation with respect to joint ventures. They are:

- General company information (i.e. Name, Address, Respondent's Title, etc.)
- Company background (i.e. Industry, number of past ventures, etc.)
- Purpose/Assessment of the venture
- Management of venture personnel
- Management of venture technology
- Results/Conclusions.

Detailed research was conducted on each of these categories to establish issues identified in the focus group session [18], [32], [3], [33], [34], [10], [35], and [36]. Based on the output from the research, a two-page survey questionnaire was designed. The question format was primarily closed-ended questions, with Likert-scaled response categories

[37]. The survey instrument was reviewed separately by Portland State University's Engineering Management Department. Utilizing feedback from the Engineering Management Department, the instrument was revised and submitted to the original focus group for further comment. Discussions with the focus group and integration of recommendations by the Engineering Management Department led to the final version of the questionnaire. (See Appendix A).

Step 3: Data collection

The questionnaire was mailed to 100 U.S. technology based companies recently involved in a joint venture as identified in the *1992 Yearbook on Corporate Mergers, Joint Ventures and Corporate Policy* [36]. The mailing list for the survey has been omitted from this report to protect the identity of the respondents.

Completed questionnaires were received from 6 corporations; a response rate of 6%. In an effort to improve the response rate, follow-up correspondence was made to a majority of the corporations on the original mailing list. One additional questionnaire was received from this effort (included in the above count).

Very low response rate

Step 4: Data evaluation

Appendix B shows both a summary of the overall results (answers to each question of the survey) and the results of the three case studies. A graphical representation of the survey results is contained in Appendix C.

7. RESULTS

Due to the lack of response to the questionnaires, we opted to conduct a case study. This was a planned contingency due to the anticipated reluctance to complete the survey. To conduct the case study, we identified and assessed the performance of three ventures and labeled them as: (See Appendix B, Case Study Table, pp. 31 and 32)

ok

- A. A successful joint venture
- B. A moderately successful joint venture
- C. An unsuccessful joint venture.

How did you determine these categorizations?

In this section, we will summarize the results in the same order as presented in the survey instrument. The graphs presented in Appendix C are also presented in this order. The order is:

1. Purpose of the joint venture
2. Assessment of partner

3. Management of venture personnel
4. Management of venture technology
5. Results.

The successful joint venture and the moderately successful joint venture ranked greater market influence and diversification as their two most important purposes for involvement in a joint venture (See "Purpose for Joining a Venture graph" in Appendix C). The unsuccessful joint venture ranked market influence and avoidance of risk as its two most important purposes. Their reasons coincided with the literature study of the "Purpose of Joint Ventures" described in Section 2. In assessing their partner's relative strengths and weaknesses, the successful and moderately successful joint ventures rated shared vision, the partner's strengths/weaknesses and the partner's key resources as the most important (See graph Q3.B in Appendix C). The unsuccessful joint venture rated the partner's strengths/weaknesses as the most important characteristic and rated the remaining criteria as relatively important.

In considering the management of venture personnel, the unsuccessful joint venture felt that a flexible work environment, quality of staffing, compatibility of cultures, close supervision, and adaptability to change were all relatively unimportant for a venture to be successful (See graph Q4 in Appendix C). The moderately successful joint venture, and to a higher degree the successful joint venture, felt these factors were relatively important for a successful venture. Both the successful and moderately successful joint ventures believed that a clear definition of the venture objectives, experienced managerial personnel and accessibility to and support from upper management were the three most important aspects of the management of personnel.

In venture technology management, the successful and moderately successful ventures felt that formal planning, risk factor concerns, an increased engineering force, acquisition of distribution channels, senior management support, providing a basis for tracking and controlling and providing a basis for decision making, were all necessary ingredients to successfully plan, organize and manage technology (See graphs Q5.A and Q5.B in Appendix C). The unsuccessful venture ranked the importance of these categories relatively low. The moderately successful company felt that technology licensing and enhanced communication throughout the joint venture were the most important aspects of a successful venture. All companies agreed that customer satisfaction with the end product warranted a most important ranking.

The two successful companies both indicated that they would participate in future joint ventures and felt that doing so would be critical to their success. Conversely, the unsuccessful venture disagreed with the above. Both successful companies indicated that their ventures led to the formation of a new entity.

Since many of the goals of a joint venture are not quantitative in nature, calculating success was difficult (See graph Q6.A in Appendix C). A change in market position and new technology development, however, is something that can be referenced to measure success. All three case studies indicated an improvement in market position and new technology through involvement in a joint venture with the unsuccessful joint venture showing the least improvement in both areas (See graph Q6.B in Appendix C). Shared risks, reduced time to market, access to foreign business, managing rivalry, diversification and management expectations were all considered benefits to the successful ventures. Conversely, the unsuccessful venture did not consider these elements as beneficial.

8. CONCLUSION

As in any adventure, the possibility of failure increases with the lack of adequate research and planning. We have found that without action in these two processes, joint ventures are much more likely to fail than prosper. If an organization is considering getting involved in a joint venture, it should investigate their reasons for this desire, what benefits and/or hindrances may result, how technology will be managed, how the personnel and communications infrastructure will be managed and what overall results they are wanting to achieve. Throughout this research paper, we have attempted to develop a beginning strategy for companies interested in creating a joint venture, suggestions for managing joint ventures, and a list of pitfalls which should be avoided by joint venture companies.

In developing a strategy for the creation of a joint venture, we have identified the most important aspect to be the selection of an appropriate partner. To improve the odds of a joint venture, joining companies should also pay particular attention to the following: define the objectives sought, understand the roles of the sponsoring companies, develop close ties among senior management of the sponsoring companies, investigate the compatibility of the information and management systems, and develop a time-line for pay-back.

Once the joint venture is up and running, we have identified the following areas as those requiring managerial attention by the newly formed organization: encourage open communication on all aspects of the joint venture, build relationships among the members of the joint venture, define who does what, quickly resolve any discrepancies with respect to the information and management systems, select and develop a team, manage all areas of change, motivate the team members, and integrate (via computers) the members of the joint venture team and the team with the parent companies.

And lastly, we have identified the following pitfalls which should be avoided when developing a joint venture: antitrust problems, operational ineffectiveness, strategic

changes, competition restrictions and divergent business practices among the partners. Educating joint venture participants in these areas can only improve their chances of success. We do not want to imply that if an organization follows these suggestions a success is guaranteed. Other important success factors of a joint venture, not addressed here, include a well designed product, market acceptance of the product, a demand for the product, sufficient capacity to meet demand, etc..

9. SUGGESTIONS FOR FURTHER RESEARCH

It was unfortunate that we did not get an adequate amount of survey responses to analyze. If we had received a better response, we had hoped to not only analyze the data of successful versus unsuccessful joint ventures, we had also hoped to analyze the data by industry (we sent surveys to a given number of industries) and by title of respondent. Instead, we studied and reported on three joint venture cases; a successful joint venture, a moderately successful joint venture and an unsuccessful joint venture. One suggestion for further research is to request survey responses from many employee levels (we requested responses from only the top levels in the organization) within both successful and unsuccessful joint ventures and compare and analyze the responses of the lower to middle to upper level respondents.