

**General Growth Process:
Concept to Living Enterprise**

A dissertation submitted

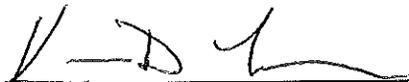
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Abstract

This study examined the process by which a technology company grows from a concept into a living enterprise in order to provide guidelines to technology entrepreneurs. A living enterprise is a mature and stable blue chip entity that is able to act on its own based on the structure of having a community involved in making business decisions. This study used a triangular selection process to narrow approximately 500 companies down to four companies. Using archival data to develop case studies, the growth processes of four technology companies (i.e., Apple, Microsoft, Oracle and Google) were investigated, analyzed, and compared. These case studies started by examining the backgrounds of the founders, development of the initial product, and beginning of operations to the point when each of them became a living enterprise.

The four case studies were used to build the model entitled General Growth Process: Concept to Living Enterprise. This model is a useful tool for entrepreneurs who want to start and grow their companies. The general growth process extended Larry E. Greiner's models (1972), the model of organization development and the five phases of growth. In addition, Laurence Capron and Will Mitchell's definitions of, build, borrow, or buy were incorporated as well as my addition and definition of abroad (i.e. international). Finally, this study provided detailed information on how each founder became a values-driven leader and built a living enterprise.

Keywords: concept, entrepreneurs, founders, growth process, growth strategy, growth options, living enterprise, organization life-cycle, product development, values-driven leadership

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Chapter 1: Introduction

New Concepts

Every day, new technology concepts are being created from nothing into something. College students from all over the world are turning their concepts into start-up companies. Most will fail, some will succeed, but very few of them will be able to build a company that can literally change the world. What makes students willing to drop out of college or quit their full-time jobs to pursue their ideas? How are they able to develop their products, raise capital, find customers, build operations, and make a company into a living enterprise? The idea of giving up the security of college or a job, a known path, may seem crazy to others. The idea that a group of inexperienced young people might dare believe they could change the course of history from their dorm rooms seems crazy, but it happens in every generation. Once upon a time, Steve Jobs was crazy enough to challenge the dominance of International Business Machines (IBM) Corporation and started a company from his parents' garage that became a living enterprise.

Jobs celebrated that supposed craziness:

Here's to the crazy ones. The misfits. The rebels. The troublemakers. The round pegs in the square holes. The ones who see things differently. They're not fond of rules. And they have no respect for the status quo. You can quote them, disagree with them, glorify or vilify them. About the only thing you can't do is ignore them. Because they change things. They push the human race forward. And while some may see them as the crazy ones, we see genius. Because the people who are crazy enough to think they can change the world are the ones who do. (Isaacson, 2011, p. 329)

This study examined the growth process from concept to living enterprise in order to develop a general growth process that motivated technology entrepreneurs can use to take their companies to reach the highest level of success, and create a company that will long outlive them. I defined a living enterprise as an entity which is mature and stable enough to reach blue chip status. A blue chip company is defined as “a stock issue of high investment quality that usually pertains to a substantially well-established company and enjoys public confidence in its worth and stability” (Merriam-Webster, 2014). At this level, the company is owned by a community of members who are able to enter and exit the entity. Within this structure, the community makes the decisions, and the entity has positive cash flow to finance current operations and grow without the need for outside additional capital. In addition, the entity has the ability to raise additional discretionary capital by increasing its ownership levels; and can last longer than the average corporate life expectancy. The word living was used to indicate how the entering and exiting of members allowed for the entity to grow without need for a specific person. The word enterprise was used to indicate a mature and stable business.

This study explored the most successful technology companies in which the founders started in a garage or dorm room in order to provide an understanding of what processes these companies employed to achieve such a level of success. The question of whether these processes can be duplicated has been explored and answered.

Statement of Purpose

The purpose of this study was to provide an understanding of the processes used by technology companies to achieve their growth objectives. It started with the founders, the people who took a concept and used whatever resources they had to see whether they could start a business. I reviewed the experiences of the founders and discovered that they are people who dropped out of college or left their jobs in order to start a technology-based company. I explored how the founders overcame their catch-22, a critical problem that entrepreneurs must solve in order to start their company, begin operations, and grow their company. The research focused on each target company's life cycle by adopting themes from Larry Greiner's (1972) growth model to understand the strategies that each company used (Greiner, 1972). This study expanded on the three growth options outlined in the book *Build, Borrow or Buy: Solving the Growth Dilemma* (Capron & Mitchell, 2012) and I added a fourth growth option of my own, *Abroad*, referring to international expansion. Also, in this study I examined the very early stages of four target companies from concept, when the founders turned a concept into reality, to when the company became a living enterprise.

Exploration

Organization life cycle

The research focused on each target company's life cycle by adopting themes from Larry Greiner's growth model (Figure 1) (Greiner, 1972), in order to understand the strategies that each company used to become a living enterprise.

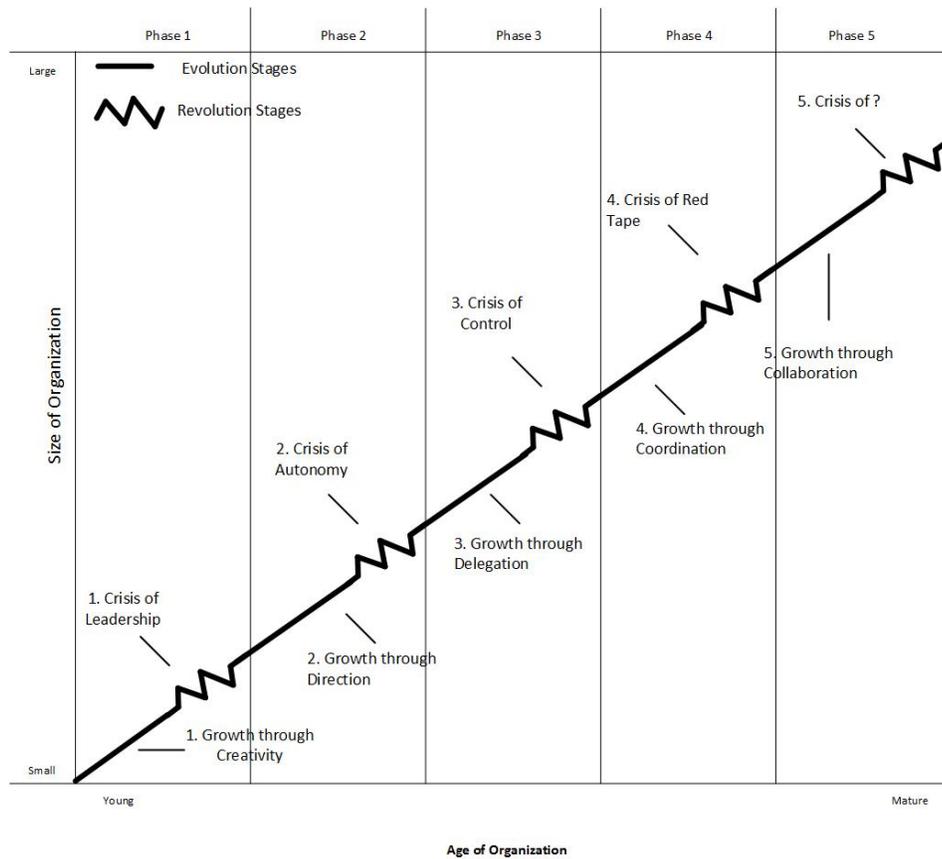


Figure 1. Larry Greiner's (1972) Growth Model

Source: Adapted from Greiner (1972), p11.

Greiner's model of organization development (Figure 2) which consists of three categories of industry growth: high, medium, and low. Companies with advanced technology are considered in the high-growth business category because they achieved high levels of revenue in a short period of time.

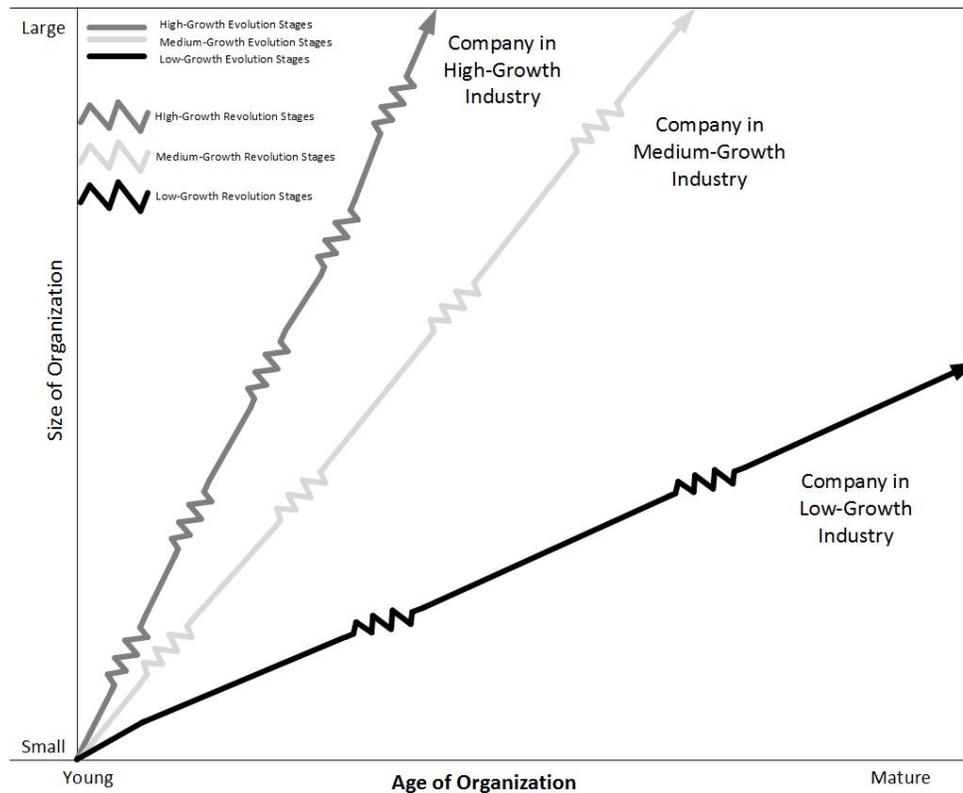


Figure 2. Greiner's (1972) Model of Organization Development

Source: Adapted from Greiner (1972), p.10.

The goal of this research was to provide an understanding of the growth strategies that entrepreneurs employed to overcome the challenges they encountered, how they developed a prototype, where they raised capital, and how they marketed their product. If the entrepreneurs were able to overcome these challenges and develop the functional prototype, they still needed to prove that the product worked before receiving outside capital. Furthermore, even if the prototype worked, how did they know whether people or businesses would buy the product? To develop the prototypes, how much time and money did the entrepreneurs invested? How did a

company shape the life cycle of its first product? Was success completely dependent on the founders? At what stage of the life cycle was a formal management team needed?

Overcoming the catch-22

For the purposes of this dissertation, I defined the catch-22 as the paradox that in order to start a business, entrepreneurs need a product to sell; in order to develop the product, they need money; in order to get money, they need investors; in order to get investors, they need customers; and in order to get customers, they need a product. This problem created another problem, leading entrepreneurs back to the original problem—that is, they needed a product so they can have something to sell to their customers. Successful entrepreneurs have founded ways of solving this paradoxical problem. I termed the solution overcoming the catch-22. Every entrepreneur needs to solve this problem for the business to start.

The catch-22 is a critical problem that entrepreneurs must solve in order to start their company, begin operations, and grow their company. The catch-22 has been defined by other authors. This study used several definitions of catch-22. The catch-22 is defined by Merriam-Webster as “a problematic situation for which the only solution is denied by a circumstance inherent in the problem or by a rule” (Merriam-Webster, 2013).

Christine Ammer (1997), a writer with the *American Heritage Dictionary of Idioms*, defines the catch-22 as follows:

A no-win dilemma or paradox, similar to damned if I do, damned if I don't. For example, you can't get a job without experience, but you can't get experience unless you have a job it's Catch-22. The term gained currency as the title of a 1961 war novel by Joseph Heller, who referred to an Air Force rule whereby a pilot continuing to fly combat missions without asking for relief is regarded as insane, but is considered sane enough to continue flying if he does make such a request. (Ammer, 1997, "Idioms & Phrases," para. 1)

Growth processes

In many cases, the entrepreneurs did not have the funds available to move the company forward. Therefore, they needed to seek funding and sometimes found themselves in a crowd of other entrepreneurs seeking funding for their companies as well. Did they get adequate funds to move the company along? This study examined the processes used to obtain funding, a critical part of growing a company.

Companies need money to develop their concepts, develop their prototype, and commercialize their product for the market. Some entrepreneurs may be able to finance the prototype themselves to the point that investors are able to see how it works. Other entrepreneurs may want to license their products. However, this study did not include product licensing as a growth strategy because the goal of the study was to provide an understanding of how the growth strategies of companies develop. It focused on how the prototype helped to develop a growing company and the process the entrepreneurs used to raise capital either from debt or equity. During the early stages of a company, the entrepreneurs asked their friends and families to

become investors. The intention of friends and families was to invest in the relationship with the entrepreneurs rather than in their concept. The role of angel investors was defined in this study, and outside investment from experienced investors who have an interest in the company was also defined.

Many companies fail because of lack of capital, when they are simply unable to pay their bills or take advantage of opportunities such as government contracts that require a bond and insurance. Even if the entrepreneurs were able to develop the prototype, raise capital to commercialize the product, and bring it to market, they needed additional resources to compete in the market.

This study included research on how successful companies were able to find their initial customer base and how they competed in a market with competitors that had more resources and more influence. It set the guidelines for different levels of growth based on the life cycle. A company's level of growth varies from industry to industry. This study focused only on the high-technology industry. Growth levels were sometimes based on the number of employees, customers, or locations; other measures are based on sales, profits, and cash in the bank. In some cases, high-growth technology companies hired a few employees but generated millions of dollars in sales. Other companies hired thousands of employees but generated little or no revenues. For these reasons, this study focused on growth levels when a company is approaching living enterprise level.

Living enterprise

I defined living enterprise as the point when a company reached a level of growth and no longer depends on the founders to manage operations. Such a company have assets and a positive free cash flow to pay its bills, and do not require outside capital to grow. At this level, the company is managed by a community of stakeholders. In some cases, the founders exited the company and a board of directors hired a management team to grow the company. The company has a large customer base that generated substantial revenue to cover its expenses and is profitable. Additionally, the company gains influence in the marketplace, which helped it launch new products based on feedback from customers and partners rather than on the vision of the founder. The vision of the company is created through debates and discussions with the stakeholders. Therefore, living enterprise is a level of success that few companies have achieved. This study sought out a formal growth process in order to provide insights to other companies so that the number of living enterprises would increase.

A company moved beyond the early stages when the entrepreneurs can hire support personnel for their phones; develop the product; and do marketing, sales, technical support, finances, and even janitorial services. If anything were to happen to the entrepreneurs in the beginning stages of the company, the company would fail because of the lack of resources to support the company. A living enterprise does not depend on one person or one product but on a community of people to manage and grow the company and on a product portfolio to generate revenues.

Build, borrow, buy, and abroad

This study expanded on the three growth options outlined in the book *Build, Borrow or Buy: Solving the Growth Dilemma* (Capron & Mitchell, 2012) (Figure 3). I added a fourth growth option of my own, *Abroad*, referring to international expansion. As the world becomes smaller with the use of technologies such as voice over IP (VOIP), web conferencing, cloud computing, automated tooling, and mobile devices, the smallest companies, which once thought that expanding internationally was only for Fortune 500 companies, are quickly learning that international expansion is available to them via the Internet. The “or” used by Capron and Mitchell limits the options (Capron & Mitchell, 2012). I proposed that the companies needed to use a combination of options throughout their life cycle, because as a company grows and enters the next level, it will be presented with different options to grow.

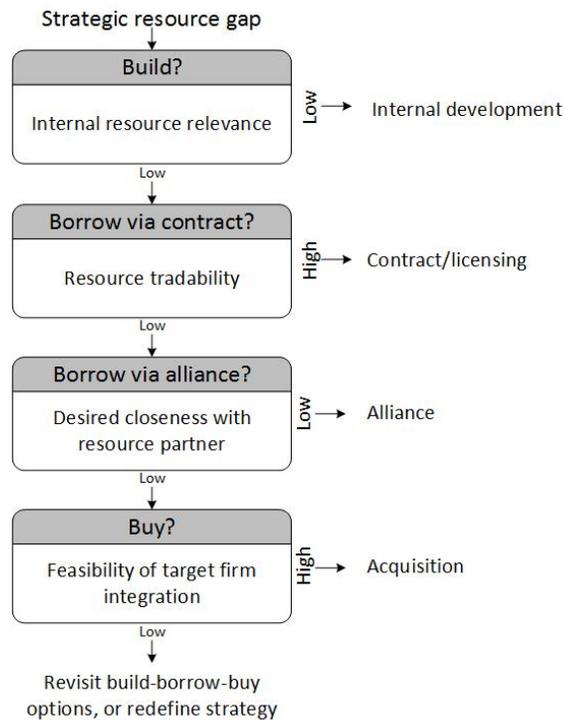


Figure 3. The Resource Pathways Framework as a Decision Tree

Source: Adapted from Capron and Mitchell (2012), p. 44.

Growth Option One: Build

The first option is to build, or develop products internally. The benefits of this option are that the company owns the technology, controls how to release the technology, and protects the technology. The risks are that the technology is non-proven and will require a large infusion of capital and time to be fully developed.

Growth Option Two: Borrow

The second option is to borrow another company's resources in the form of a partnership. The benefits of a partnership allow a company to expand its product offerings by combining its brand with another brand. For example, a partnership between Planters Peanuts and South Beach Diet created Planters South Beach Nut

Mix. The risk is that South Beach gave up some of the control of its brand to another company.

Growth Option Three: Buy

The third option is buy, which happens when the company acquires another company.

The existing companies have mature products but could be losing market share, or a successful company that could demand a premium purchase price. Also, the two corporate cultures could make it difficult for the company to succeed if the employees are not getting along. However, the benefit of buying an existing company is that it could quickly increase sales and add new products to the purchasing company. The two companies may become stronger because of cost reduction.

Growth Option Four: Abroad

The fourth option abroad, refers to expanding into international markets. The company needs to adjust its business model, branding, legal structure (to understand the laws of each country entered in to avoid risks), and products to localize the company with the local population. The company also needs to establish a foreign subsidiary to manage the operations. For example, Google expanded its search engine technology to China, so Google had to setup a new foreign subsidiary to develop new search technology in the Chinese language. Google's technology has expanded to reach over 1 billion people and the company can benefit greatly by selling its products in new markets. The four growth options have their pros and cons, and a company may select a combination of them during its different growth levels.

Study Interest

In 1997, my freshman year of college, I created a software program entitled College Plan in my dorm room. I wanted to graduate from DePaul University in three years to focus on my entrepreneurial career. Therefore, the College Plan program contained all of the required courses that were needed to earn my Bachelor of Science degree in commerce. It used past data to predict and generate future class schedules based on the courses required for degree completion.

During the development of College Plan, I discovered that most of the DePaul University data was in hardcopy form, portable document format (PDF), or Word documents. It was not managed in a database and did not interact with other applications. In 1999, during my senior year, I recognized an opportunity to take offline services online while enrolled in an entrepreneurship course. I developed a prototype of the software and presented it to the DePaul University Entrepreneur Center. During this time, DePaul University was forming an incubator for technology start-up companies. In the fall of 1999, I was accepted into the incubator. I experienced the capabilities of information technology when I met my goal of graduating college in two years instead of four because the software created an efficient course schedule.

In the fall of 1999, I initially incorporated my company, Epazz, Inc., in Delaware under the advice of counsel. Later, on March 23, 2000, I reincorporated the company

in Illinois because of the possibilities to issue unlimited shares without additional franchise taxes. During this time period, I raised funds from family and friends, then developed my first software.

The first software was developed by several professors and graduate students as a dot-com model supported by advertising funds. Based on the feedback from users, we determined that the product could be sold to colleges and universities. During this time period, the dot-com bubble burst, so I changed the direction of the business, which made sense at the time. In 2001, we raised additional funds to provide an enterprise version, which was used by universities and colleges. Later, we attained our first college customer. The software was developed primarily for college students, but we discovered that more staff members than students used the software.

Therefore, we developed additional features for the staff members. Additionally, it was clear that the payment delay period during which the universities and colleges could pay was too long so Epazz, Inc., did not have the cash flow to manage operations. Fortunately, the additional features made the software applicable to businesses. This situation led to our focus on selling to business customers, which improved the company's cash flow.

As of 2014, Epazz, Inc., has over 10 full-time workers, over 500 customers, and over \$1 million in annual revenue and I maintain majority control of the company. I believe Epazz, Inc., can grow much bigger and faster and become a living enterprise.

My understanding of the processes and strategies that other companies used to achieve growth leads me to believe that Epazz, Inc., can duplicate many of those same processes that made them successful. This study will not only assist Epazz, Inc., but will also be beneficial to other companies that want to grow and succeed.

Study Organization

This dissertation was divided into six chapters. Chapter 1 provided an introduction on this study's purpose and significance. Chapter 2 described the literature review of relevant sources on areas related to the growth process. The literature covered growth strategies, growth options, founders, product development, venture capital, joint venture capital, mergers and acquisitions, and multinational corporations. Chapter 3 provided descriptions of the study research method process detailing how the data was collected and what research questions were asked. Chapter 4 detailed the results of the research in the form of four case studies. Chapter 5 examined and analyzed the results using existing theories and showed how the existing theories were used in order to develop my own theory and my development of the "general growth process model." The final chapter reflected on my research experience and provided insights and recommendations on the growth processes.

Chapter 2: Literature Review

Introduction

In this chapter I have provided a comprehensive literature review of text on growth processes and growth strategies, product development, partnerships, mergers and acquisitions, and international commerce. These topics shaped an understanding of what it takes to grow a concept into a living enterprise. I used Greiner's growth model to help describe the growth phase of an organization (Greiner, 1972). The growth model consists of five phases: entrepreneurial, collectivity, delegation, formalization, and collaboration. Additionally, I used Capron and Mitchell's (2012) "build, borrow, or buy" concept from their book *Build, Borrow or Buy: Solving the Growth Dilemma*. Furthermore, this chapter included a fourth growth option, *abroad*, to indicate international expansion, as well as changing the word "or" in the "build, borrow, or buy" concept to "and." Thus the growth options used in this dissertation are "build, borrow, buy, and abroad" to demonstrate companies' ability to combine multiple growth options to create new growth strategies. Finally, I combined Greiner's growth model and the four growth options provided a comprehensive literature review of articles and books in the areas of leadership, entrepreneurship, and business to determine whether building products organically, partnering with others, buying established companies, expanding internationally, or a combination of the four options, created a better process for a company to grow from concept to living enterprise.

Founders

A company does not start itself: It is founded by a person or a group of people who met one day and decided to start a company, not knowing whether their efforts will mean success or failure. Oe and Mitsuhashi used a study from the Panel Study of Entrepreneurial Dynamics to understand the skill sets of the founder(s) to see whether the right type of experience a founder would need for their company to break even more quickly than an inexperienced founder (Oe & Mitsuhashi, 2013). The results of their study showed that prior job and industry experience in the same industry as a new start-up does provide positive results (Oe & Mitsuhashi, 2013). Founders are able to use their experience as an organizational asset, which means that they can use their skill set instead of hiring an employee who will increase expenses, delaying the break-even point (Oe & Mitsuhashi, 2013). Fewer expenses mean that the company will be able to break even faster.

Another study by Eesley and Roberts questioned whether experience or talent could indicate how a start-up company would perform (Eesley & Roberts, 2012). Eesley and Roberts's results showed that talent was more important than experience in starting a company and that prior experience in the same industry also produced better performance. Further, Vesper (1990) developed strategic factors in a start-up that could make it a success or a failure and stated the importance of the founding team having marketing and technical experience in the new start-up (Vesper, 1990). Also, it is important for the founding team not to overemphasize research and

technology. The important area focused on is strategy and organization. The founding team needs to be able to execute its business plan.

Vesper (1990) discussed how new ventures are started by college students in what he called “School to Venture” (p. 66). He described the different types of School to Venture: one is when a student sells products to an on-campus customer base, and another is off-campus activities. Also, Vesper (1990) examined when a student might decide to drop out of school to pursue his or her new venture.

Vesper (1990) referred to a person who leaves a job to pursue a new venture as “Job to Venture” (p. 75). He described different types of Job to Venture, depending on how the person left the job: whether he or she maintains employment and works on the new venture during the night or on the weekends, or left the job first and then started the new venture (Vesper, 1990).

Growth Strategies

Greiner’s growth model was used to help describe the growth phase of companies (Greiner, 1972). The model entails five growth phases: entrepreneurial, collectivity, delegation, formalization, and collaboration (Hunter, 2005; Cope & Watts, 2000; Scott & Bruce, 1987; Kazanjian & Drazin, 1990; Papke-Shields, Malhotra, & Grover, 2006; Hatch, 2006). The entrepreneurial phase is the very early phase when one or more individuals begin to realize an opportunity for a product. It occurs prior to the revenue stage and the product development stage (Greiner, 1972). The entrepreneurial

phase explains and explores the building of a product, the early prototypes, and the challenges of raising capital and forming a team. The product development team comprises the founders and a few skilled individuals who had experience in the development of similar products from a concept. The team develops the prototype, conducts internal testing or alpha testing, and makes some revisions before testing the product with beta customers, people or organizations that would be considered early adopters (Greiner, 1972). Once the team received the feedback that they needed from the beta customers, they took the product to the marketplace. At this stage the company is formed.

The collectivity phase is the next level on Greiner's growth model, when the company has released its first new versions of the product, lands its first customers, and hires the first round of employees (Greiner, 1972). Cope and Watts (2000) built on Greiner's research to understand the learning patterns of founders (Cope & Watts, 2000). As a company grows, new challenges bring about crises. Hunter (2005) also built on Greiner's growth model for his case analysis of the five stages of life cycle of the entrepreneur, in which he defined characteristic behaviors, personal skills, and abilities needed to expand a business. Many founders are not serial entrepreneurs and therefore do not have new-venture experience, which according to Vesper's (1990) research does not necessarily mean the venture will fail. However, Cope and Watts (2000) viewed it as a continual learning process. Founders learn through experience,

the first time they bring a product to market, get their first customer, hire their first employee, or make their first payroll.

If founders have learned from their successes and failures, they will be able to enter the delegation phase (McAdam & McAdam, 2008). The delegation phase is when the founders begin to bring in middle managers such as a marketing manager, operations manager, or director of product development to help oversee specific areas of the company (Greiner, 1972). The management begins the process of partnering with other companies to grow the companies to the next level.

The formalization phase of Greiner's growth model demonstrates the process of managing an organization through policies and procedures (Greiner, 1972). The head of the organization at this phase may be not the founder of the company but an experienced and seasoned chief executive officer (CEO). During the formalization phase, the company is divided into clear subgroups to facilitate better management. Kazanjian and Drazin (1990) went further to discuss different configurations of decision making (Kazanjian & Drazin, 1990). They built from Greiner to understand the centralization and formalization of decision making. Also they viewed functional specialization to examine operation issues and determine whether centralized or decentralized decision making provided lower managers with the power they need to make better decisions.

The collaboration phase of the growth model showed how departments and divisions are formed, and in some cases act as separate entities. Some of these divisions are overseas operations (Greiner, 1972). During this phase, corporations use growth strategies to expand their brands into multinational operations. I used the four growth options to show how companies grew out of the so-called garage into world headquarters.

Scott and Bruce (1987) used Greiner's growth model to explain their five small business growth stages, focusing on understanding the question of size, time, and stages of growth (Scott & Bruce, 1987). The size of a company changes rapidly during the early stages based on what they are able to achieve. Greiner's growth model provided a guideline for how to examine the life cycle of an organization as it starts small and grows large.

Entrepreneurial Phase: Build—Product Development

Greiner's entrepreneurial phase begins with the founder(s) of the company. Bhidé (2000) discussed the importance of the founder(s) skill sets and their traits and stated that many entrepreneurs do not have direct industry experience or management experience before starting their companies (Bhidé, 2000). Bhidé (2000) discussed how many entrepreneurs, based on the Inc. 500 list, launch their business with unoriginal ideas. Bhidé (2000) went further, stating that based on the Inc. 500 list from 1982 to 1989, the founders interviewed had imitated someone else's ideas and

that any innovations were merely incremental improvements that could be replicated by their competitors.

Entrepreneurs are not very well organized in the beginning. Papke-Shields, Malhotra, and Grover (2006) used Greiner's growth model in their study about the business planning process to explain the early processes with regard to the degree of rationality-adaptability, where there is a lack of formal guidelines or procedures in the beginning and then over time the business planning becomes more complex and organized (Papke-Shields, Malhotra, & Grover, 2006).

Theoretical structure of concept

Sääskilähti's (2013) concept thinking model defined the role of engineering with the role of thinking in providing scale innovativeness and business models. Sääskilähti (2013) explained that the concept is not only about the idea of the product or services but also how the company can generate revenue from the idea. He developed the theoretical structure of a concept model. Figure 4 shows all four main fields, which are offering, process, finance, and delivery.

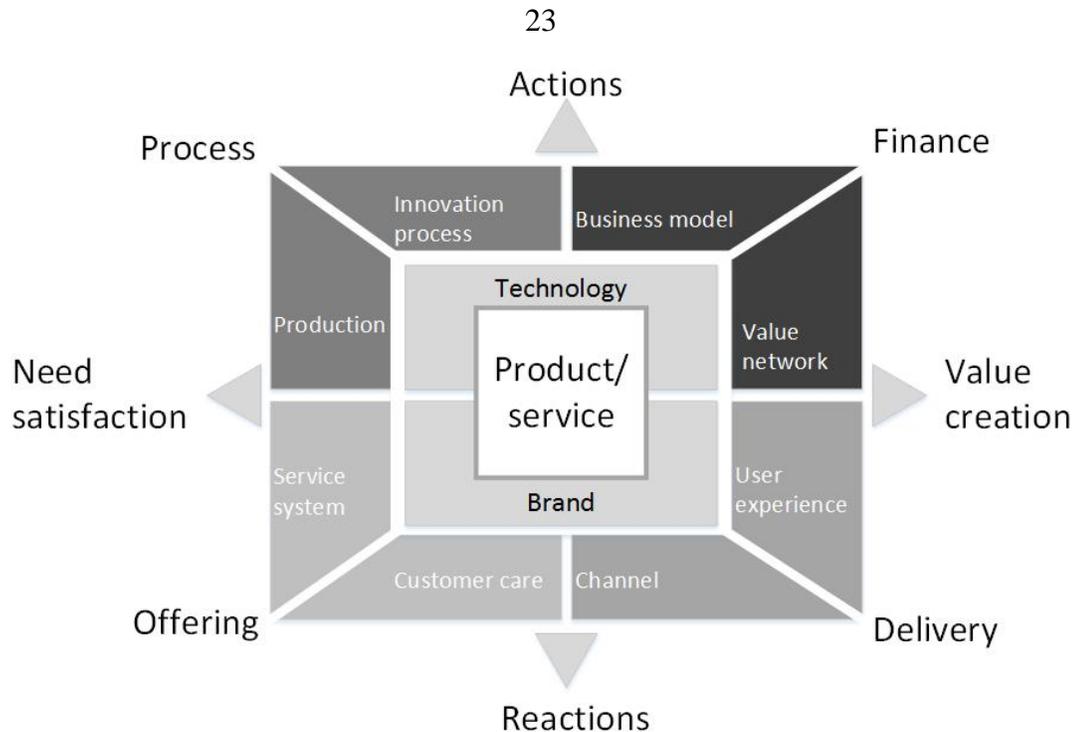


Figure 4. Theoretical Structure of Concept

Source: Adapted from Sääskilähti (2013), p. 3.

This entrepreneurial phase dealt with the development of a product or the building of a product. Therefore, part of the literature review addressed articles on product development (Joachimsthaler, 2007; Piccoli, Brohman, Watson, & Parasuraman, 2004; Kazanjian & Drazin, 1990; Kazanjian R., 1988; McAdam & McAdam, 2008; Bonabeau, Bodick, & Armstrong, 2008; Thomke, 2006; Christensen & Raynor, 2003; Bhidé, 2000; Luecke, 2003). The beginning of any company is the day that a person or persons have an idea for a product.

In 1999, Reed Hastings returned a Digital Versatile Disc (DVD) copy of *Apollo 13* late to his local Blockbuster store, which at that time was the largest home video

chain (Joachimsthaler, 2007), and was charged \$40. The experience gave him an idea for a DVD mail service that would deliver DVDs to the end user via the United States Postal Service (USPS). The concept became a product, and then a company called Netflix that was founded by Hastings to deliver movies and television via USPS and later through the Internet (Joachimsthaler, 2007). Netflix is an example of a company that built a product from a new business model concept to a living enterprise. The conceptual foundations explained by Piccoli, Brohman, Watson, and Parasuraman (2004) examined the overall assessment of the utility of a product.

Product development process

Many of the largest companies in the world started in a dorm room or a garage with one or two people who wanted to make something that others like themselves could use. Their idea was developed into a useful product that they used to launch the company. Therefore, it is critical to understand the product development process and why some products succeeded and others failed. Many new start-ups have untested founders and managers who may want to centralize decision making (Kazanjian & Drazin, 1990). Most companies rely on their first product to launch but cannot grow to the next level without additional product offerings. Bhidé (2000) stated that start-up companies have difficulty securing the resources they need to complete their products. Part of the product development process is understanding how to duplicate the initial success of the first product. The product development process can make or break a company.

Evans and Webster (2007) discussed the product development process and came up with a product-offering methodology to help companies maximize profit. According to Evans and Webster (2007), companies make product-offering decisions based on the response from the marketplace. The marketplace response could alter the company's business model and change how the company operates. The authors used an example of car companies adding an air conditioning unit in every car because of consumer demand. Furthermore, they argued that the car companies could have sold the air conditioning units as an option, rather than as part of the core product because car buyers in areas such as Alaska would rarely use the air-conditioning units. Many car companies offer what Evans and Webster called *a la carte* offerings, which allow the consumers to pick and choose components as part of the complete product (Evans & Webster, 2007).

During the early stages of a company, the founders have limited funds available for offering different options of their products. In addition, resource providers often do not want to work with a start-up company because they are unsure whether the company will be around to pay them their money (Bhidé, 2000). McAdam and McAdam (2008) did a study on how an incubator can provide critical resources to the founders during the stages of product development. They built their model on Greiner's growth model to examine the level of complexity and structure. The founders started with the basic offering, which included the critical product features that made the product useful to early adopters. Without the critical product features,

the product would not work. Imagine the car without the wheels or engine, and imagine the car without air conditioning or a radio (Evans & Webster, 2007). The car would still run without the air conditioning and radio, though it would not be as enjoyable a ride, but the car cannot run without the wheels or engine. Furthermore, Evans and Webster (2007) commented that if a company is planning to offer features in the future, it should make the most cost-effective decisions to include the option. Therefore, the car company should make room for a radio and air conditioning unit so it does not have to redesign the car.

During the product-offering process, entrepreneurs assisted in translating their concept into a product from the “paper napkin” to a computer model, to a clay model, and to a functional prototype. Bonabeau, Bodick, and Armstrong (2008) discussed ways that companies can be successful with their product development process and increase the probability of success. For a company to become living enterprise, it needs a product to sell. Bonabeau et al. (2008) suggested identifying poor product projects in the early stages and eliminating them. Bhidé (2000) used the example of 3M to discuss the need for companies to create new products and make focused project selection decisions and thus avoid risk. If a prototype is not working the way it should, or if it requires additional capital, eliminate the prototype and try a different approach. Trial and error will occur in the early stages, but during the late stage of the product development process, the cost of making changes or eliminating a prototype could be the end of any commercial launch. The resource allocation process discussed

by Christensen and Raynor (2003) prioritizes resources toward projects that may have the most commercial success. Companies need to manage the resources on a day to day basis (Christensen & Raynor, 2003). In any product development process, there may be several versions of the product before the final one is ready for the market. New tools are available to help decrease the number of physical prototypes.

Luecke (2003) explained the process of creativity and innovation as it relates to product development. The innovation process starts with idea creation. As an example, one day a group (or a person) discovers an idea that they believe will solve a problem. They recognized an opportunity for a product that could generate money, they started a research project to determine whether the idea is truly unique or something that would provide incremental value. Next, they begin to develop the product using personal funds, money from friends and family, or outside investors to finance the initial prototype (Luecke, 2003). The goal is to commercialize the product and market it to a group of users. Over time, the product, if successful, would experience an S-curve (Figure 5). According to Luecke (2003):

An S-curve is plotted on a two-dimensional plane and describes how long performance or cost characteristics of a technology change with time and continued investments. Here the horizontal axis reflects the time while the vertical axis indicates some particular dimension of product performance or cost competitiveness. (p. 14)

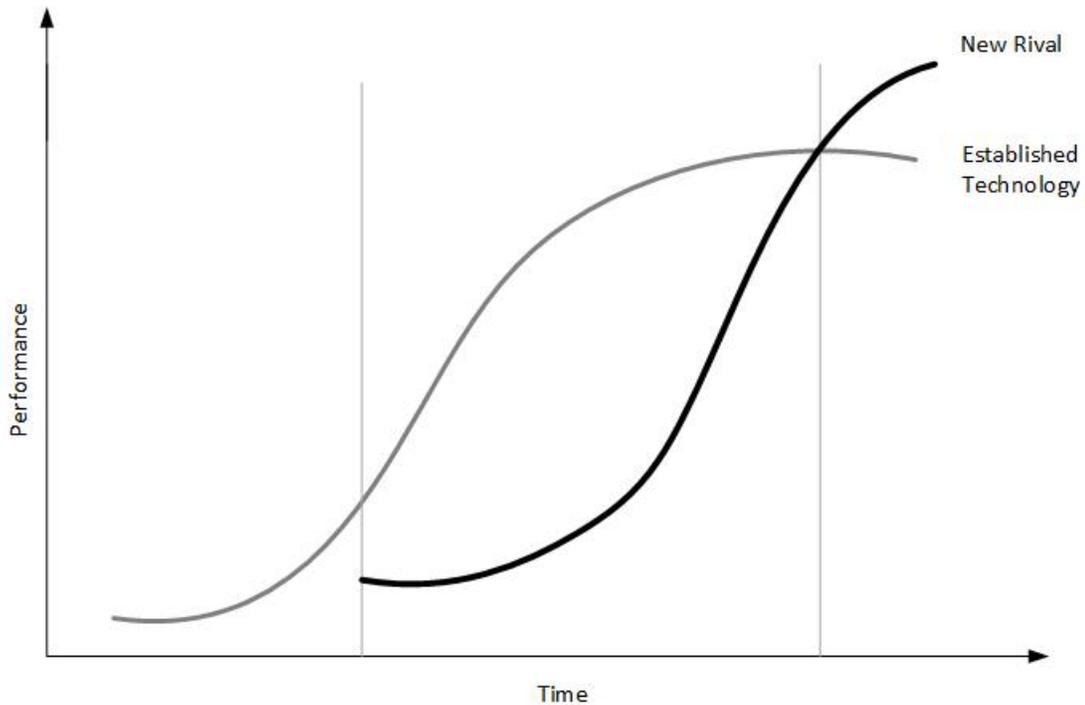


Figure 5. S-curve

Source: Adapted from Luecke (2003), p. 15.

The longer technology products are in the marketplace, the less of an innovation they become. As more competitors enter the marketplace, the cost of producing the technology decreases and it is harder for a product to stay competitive. For technology companies to stay ahead of the curve, they need to invest in research and development so they can supply the market with new innovative version of the product.

Radical change and incremental change

Luecke (2003) discussed radical change and incremental change. Whereas a radical change might be that of switching from horse and buggy to automobile, an incremental change is adding an air-conditioning unit to a car. How do some

companies maintain growth while others disappear? The *Harvard Business Review on Strategies for Growth* is a collection of articles written by various authors (Harvard Business Review, 1998). In “Value Innovation: The Strategic Logic of High Growth,” Kim and Mauborgne (1997) discussed how value innovators view their business opportunities by thinking about what they can do to start over (Kim & Mauborgne, 2005). Value innovators view the whole company, its existing resources, and resources they can obtain. Kim and Mauborgne (1997) cited a quote from one of the Virgin Group executives: “We don’t let what we can do today condition our view of what it takes to win tomorrow. We take a clean-slate approach” (p. 106). Part of the product development process involves funding the commercialization of the product (Bhidé, 2000). Therefore, the financing options that entrepreneurs utilized are featured in this study.

Raising capital

Many entrepreneurs are able to bootstrap the product development of their initial product. To get a business started, entrepreneurs request funds from friends and family (Bhidé, 2000). Parks (1976) discussed the need for capital to continue to grow a company in the sixth of his 11 hurdles in “How to Climb a Growth Curve.” Parks stated that as a business grows so does its expenses; entrepreneurs who are no longer able to raise funds from friends and family or short-term bank financing will be in danger of not being able to grow or survive. Thus, entrepreneurs need to find ways to raise capital through long-term bank financing or equity capital (Parks, 1976).

One of the options for equity is venture capital. There are many venture capital firms providing opportunities to aid in understanding the effect of venture capital firms on start-up companies. Venture capital firms have changed the shape of a company and helped make it a living enterprise (De Clercq, Fried, Lehtonen, & Sapienza, 2006; Vesper, 1990; White, D'Souza, & McIlwraith, 2007). Vesper (1990) discussed how receiving a large amount of initial capital helped companies work out their problems and solve issues. Other authors suggested that venture capital firms care more about the idea than the management team because they can always replace the management with professional CEOs (Wyld & Maurin, 2009). White et al. (2007) noted that 50% of venture capital firms replaced the CEOs and indicated that the founder was not needed for the company to be successful. Moreover, the idea, capital, and leadership are the keys to success.

Venture Capital Firms

Venture capital firms are usually not the first investors (Hite & Hesterly, 2001). Most start-up companies get their first investment from their personal savings and friends, family, or fools (also known as the three Fs), as explained in “An Entrepreneur’s Guide to the Venture Capital Galaxy” (De Clercq, Fried, Lehtonen, & Sapienza, 2006). The three Fs provide the seed capital to help develop the prototype, find the first customers, and hire consultants or employees to help refine the concept. If the entrepreneur is able to prove the concept and show that the product works, then he or she may be able to raise capital from business angels and wealthy individuals who use their own funds to further business ventures (De Clercq et al., 2006). Venture

capitalists invest a large amount of capital to grow a small company into a mid-size company. They look for one out of a 100 companies to make 10 investments and hope one of those companies will provide a return on their total investment (De Clercq et al., 2006). If the company shows that it is able to use the funds wisely to get additional customers, it will attract venture capitalists.

Wyld and Maurin (2009) suggested that the founder is not necessary for the success of the company. Conversely, in their article “Entrepreneur Passion and Preparedness in Business Plan Presentations: A Persuasion Analysis of Venture Capitalists’ Funding Decisions,” Chen, Yao, and Kotha (2009) conducted a study to analyze how the relationship between the venture capitalist and entrepreneur was affected by the initial presentation of the concept or business plan. In the study, 126 Master in Business Administration (MBA) students presented their business plans (Chen, Yao, & Kotha, 2009). The authors wanted to understand how passion and preparedness would affect venture capitalists’ decisions. The study results showed that if the entrepreneur was passionate and prepared, he or she was more favorably viewed than the less passionate and less prepared person (Chen et al., 2009). A passionate entrepreneur may have an edge over other companies looking for capital from venture capital firms. The venture capital firm understands that only a few of the companies it invests in will be successful enough to provide the 30% to 60% returns to satisfy its investors (Chen et al., 2009). Additionally, it understands when to accept that the company has failed. Finally, many articles have focused on risk management such as

(Lumpkin & Dess, 1996; Littunen & Niittykangas, 2010), which can help entrepreneurs understand the costs and benefits of many of the decisions they will encounter during the process of growing their company.

Business model

Start-up companies have limited resources and therefore need to focus their resources on business opportunities that can provide them the most benefit at the lowest cost. Part of the business development entails understanding what the business model is. Osterwalder and Pigneur (2010), defined a business model as a rationale for how a company develops its products or services and determines who its target customers are, how it will deliver their products or services to the target customers, and how it will capture value from its efforts (Osterwalder & Pigneur, 2010). They also discussed the company's value proposition, which is how a company caters to its target customers through a mixture of elements such as pricing, service, delivery, region, and size of order. A different value proposition is a reason that a customer may choose one company rather than its competitor. It is not necessary to have an innovative product to capture share; it could be an innovative business model. Johnson (2010) coined the phrase *white space* to mean uncharted territory or underserved markets that provide opportunities to exploit using a different business model: "White space is a subjective valuation: one company's white space may be another company's core" (Johnson, 2010, pp. 7-8). Figure 6 is Johnson's model defining white space.

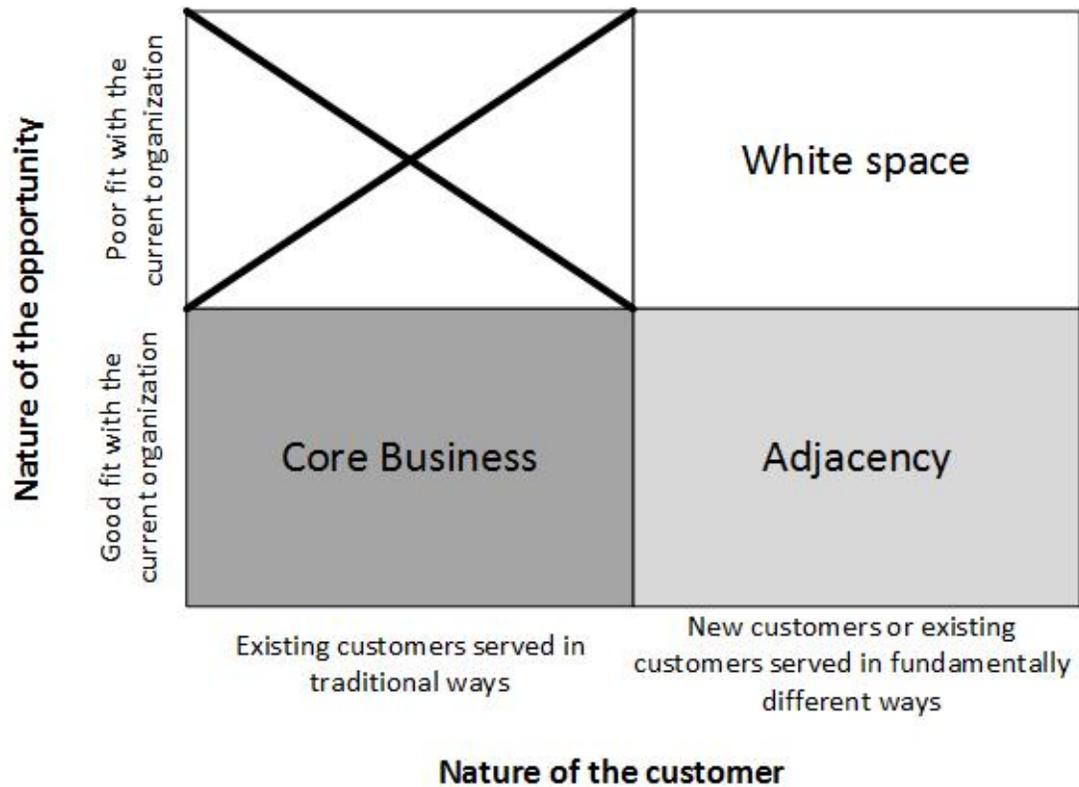


Figure 6. Defining White Space

Source: Adapted from Johnson (2005), p. 8.

Similarly, Kim and Mauborgne (2005) explained their concept of the blue ocean strategy in which companies seek to find new demand in uncontested market space, or what they call blue ocean, instead of competing in existing industry, or red ocean. In the example of Netflix and Blockbuster discussed earlier, a new business model, not a technology, caused Blockbuster to lose market share. Kaplan (2012) reviewed Blockbuster's business model and believed the company had a compelling business model when it started in 1985. At that time, the technology of video cassette players was in millions of American households. Consumers had to buy videos from a store to use their video cassette players. Blockbuster's business model was to rent the video

to the customers allowing them to pay less than they purchase a movie they would usually watch only once. The author referred to Blockbuster's business model as "a smart financing model to capture value (Kaplan S. , 2012, p. 5). Also, Blockbuster entered into a revenue-sharing model with movie studios to receive the videos of movies at little to no cost. The business model brought the company to a \$5 billion market cap in 2002 (Kaplan S., 2012). As technology changed from videocassette to DVD, Blockbuster changed with the technology. However, Blockbuster did not change its business model to take full advantage of DVD technology. Unlike videocassettes, which were bulky in size, DVDs were thin and light.

The founder of Netflix, Reed Hastings, saw the business opportunity to exploit the size and shape of DVDs and to exploit the United State Postal Service. Hastings's DVD mail service meant that customers would not have to travel to a retail store to rent and return their videos (Kaplan S., 2012). They could use their mailbox for delivery and returns. Netflix charged a monthly membership fee rather than Blockbuster's per-rental fee. Sixteen years later, all Blockbuster video retail stores are closed. As of January 19, 2014, Netflix has a market cap of \$19.5 billion (Yahoo Finance, 2014).

Collectivity Phase: Build—Operational

Each phase of the growth model brings new challenges. As a company grows from a prototype to a commercialized product, the customers become part of the picture. I reviewed articles that discussed how growth depends on happy customers—

(Dougherty & Murthy, 2009). Dougherty and Murthy (2009) discussed how companies can understand their customers and how potential customers select a company over its competitors, which is critical for a start-up company to understand in order to take away customers from competitors.

Another topic from the literature is decision making. In interviews with focus groups and consumers, the author's views on green electricity were discussed (Ozaki, 2011). The founder or CEO needs to trust the policies and procedures that he or she established in order to allow the company to function. In Hurley's (2006) article "The Decision to Trust," the author commented on the trust factor between management and employees (Hurley, 2006). He discovered that some employees find it difficult to share critical information because they fear that their boss will fire them if anything goes wrong. Also, Hurley (2006) conducted a survey and found that 69% of respondents do not know who to trust in their organizations. Similarly, Neilson, Martin, and Powers (2008) wrote, "we've identified four fundamental building blocks executives can use to influence those actions—clarifying decision rights, designing information flows, aligning motivators, and making changes to structure" (p. 2).

Kroegeer (1974) explained the different managerial roles required during different stages of a company life cycle. In the beginning, the company needs an originator-inventor to develop the product and business model. Once the product is developed, the managerial role needs to change to planner-organizer in order to develop the

business plan for financing (Kroeger, 1974). As the company gets more customers and add more employees, the managerial role changes to developer-implementer in order to manage the production and marketing of the products. Through continued growth, the managerial role changes to administrator-operator, primarily focused on marketing. The final managerial role is successor-reorganizer to push toward new technologies (Kroeger, 1974).

In this dissertation, the literature review consisted of articles on business functions and how outsourcing can reduce costs—for example, Weeks and Feeny (2008) explained the costs and benefits of outsourcing a large portion of a company's information technology (IT) department. Outsourcing allows the company to focus on core competencies.

Marketing strategies

The build option for growth is about not just new product development but also strategies in marketing and sales of the company's existing product lines. In Ghosh's (2010) *Strategies for Growth: Help Your Business Move Up the Ladder*, he outlined the strategy of investing in their value chain, which consists of their primary activities of inbound logistics, operations, outbound logistics, marketing, and sales.

Furthermore, a company's support activities for infrastructure, human resources, technology, procurement, and marketing of sales and services can show an increase in the top and bottom lines. A company does not need to develop a new product every year; they can use the same product in different ways (Ghosh, 2010).

A company can develop a marketing plan that gives its customers free software features for signing up for a year. This may attract new customers and provide cash now that can be used to manage cash flow and invest in opportunities without needing to use equity or go into debt. Furthermore, Ghosh (2010) proposed building an efficient operation that is able to make the best use of resources, which can reduce costs and save time. Locke and Romis (2007) stated that lean manufacturing reduces waste. Hence, lean manufacturing helps focus on the product line and services to deliver goods that reduce the material, energy, and time needed to produce them (Locke & Romis, 2007). These are short-term costs, but the end result can mean a decrease in costs for the long term.

Growth strategies depend on the strategic focus of the management team in deciding what is best for the company. Stuart Cross (2011) discussed how companies need to align their structure with their strategy. If a company wishes to be a product leader, it needs to understand the key capabilities of the company's structure in order to execute the strategic focuses, which, in the case of product leader, are understanding what the customer wants, having a research and development function that creates products based on what the customer wants, communicating to the customer base that a product is available and fits their wants, and managing the product life cycles so that new products replace the old products (Cross, 2011).

Delegation Phase: Borrow—Partnership

As a company moved from the entrepreneurial phase to the collectivity phase and then to the delegation phase, policies and procedures are established to help manage operations. Meanwhile, the corporation's culture is formed, from one or two guys in a garage, to a first office packed with employees, to offices in different time zones. The company is able to function, and new challenges begin to arise. According to Greiner (1972), the delegation phase is the decentralization of decision making through the creation of formal policies and procedures to make sure decisions are being made by employees as if the management were themselves making the decisions (Greiner, 1972). The management team is likely to be managing a company with hundreds, if not thousands, of employees scattered around the country. The employees are managed through a hierarchical organizational structure, from the CEO to the c-class managers, vice presidents, and eventually down to the directors, managers, and direct reports (Hatch, 2006).

Outsourcing

Outsourcing is the practice of hiring an outside company either domestically or internationally to manage or handle a business function such as programming, back office support, human resources, or accounting. The advantages of outsourcing are that the company is able to focus on the business function that it does best. Cross (2011) commented that outsourcing or subcontracting provides companies with the flexibility to use the capabilities of other companies without needing to develop their own infrastructure. Companies want to have a sales channel and distribution center,

but a company may have limited resources and cannot afford to hire the wrong person. Therefore, a company can hire outside sales representatives or consultants. Other outsourcing business functions have been added in recent years such as call centers, technical support, and programming, which have direct contact with customers. Weeks and Feeny (2008) explained the cost and benefit of outsourcing a large portion of a company's information technology department.

Companies with successful relationships become dependent on their IT partner. A chief information officer (CIO) who would like to switch in order to save costs may experience problems because the company's data is formatted based on its IT partner's technology (Weeks & Feeny, 2008). Furthermore, IT becomes so integrated into the company's practices that if anything happens to the IT partners the company is affected. Many companies believe the benefits outweigh the risk and consider outsourcing more of their business functions, including product development (Weeks & Feeny, 2008). This brings up the question of whether innovation can be outsourced.

There are risks that the IT partner may try to use their innovation for other customers. A company can manage the risk mostly through monitoring. The authors of the article "Managing Risk in the New World" brought together five risk experts in discussion about how to better manage enterprise risk (Kaplan, Mikes, Simons, Tufano, & Hofmann, 2009). The experts cite outsourcing as an effective way to minimize risk

but also offer some questions that any management team looking to outsource needs to answer:

...what happens if your subcontractor goes out of business? These kinds of decisions require you to think about what you're really doing. What can go wrong? Am I willing to take the consequences if something goes wrong? None of these answers are clear. Of course, that's what makes our job interesting (Kaplan et al., 2009, p. 5).

Similarly, Yu (2008) explained the innovation of IT to help a company produce with minimum sunk cost (Yu, 2008). The companies that outsource their IT business functions do not have to invest in the latest technologies because they are sharing the cost of the new technology with a group of companies. Companies pay for only what they are using (Yu, 2008). Thus, a company is able to spend the money on improving operations, conducting research and development, and paying dividends to shareholders.

Partnership companies

Outsourcing partners have many important tools for a growing company to use. They are able to access the resources of a large company without needing to invest in a large infrastructure. Kaats and Opheij (2014) viewed partnership as a part of collaboration (Kaats & Opheij, 2014). No matter how large a company is, some projects are so big that they require the assistance of others. Kaats and Opheij (2014) listed four items that motivate collaborative partnerships: market development, cost advantage, knowledge development, and external pressure. Some organizations have core competencies in different areas that would require additional capital and time for other companies to build on their own. Therefore, entering into a partnership is

sometimes the best option (Kaats & Opheij, 2014). There are many other types of partnership companies that can consider for how to grow their business. For instance, Cross (2011) commented that joint ventures allowed two or more companies to share the risk and returns in the ever-changing world of technology. Furthermore, joint ventures provide a way for companies to leverage each other's assets. Usually, two large growing companies discuss how joining together on a new business venture or new product would provide value to the companies. The companies may come from different industries or markets where a merger would not make sense (Cross, 2011). However, by joining together, they can leverage each other's knowledge and experience in the markets to expand their reach in other markets. For example, in 1996 Microsoft and the National Broadcasting Company (MSNBC) formed a joint venture, MSNBC, to broadcast leading news.

Microsoft had the software knowledge and expertise to create websites that could handle millions of users who needed access to news content for MSN.com and other Internet services. However, they did not have the experience to create news content, nor the reputation needed to attract an audience, but NBC News did. NBC News had the reputation and news infrastructure around the world to provide news operations, but NBC News did not have knowledge in building complex websites (Olsen, 2001). The idea was that if Microsoft Internet technology joined NBC News content, they would create a powerful website and news cable channel that would be fully integrated (Olsen, 2001). Microsoft and NBC invested \$420 million into the joint

venture, which became the second highest ranking news channel, right next to the Fox News Channel (Olsen, 2001). In 2012, NBC Universal bought out Microsoft's share of the MSNBC (Finke, 2012). Overall, MSNBC is considered a successful joint venture of two giants of industry.

Formalization: Buy

Mergers and acquisitions (M&A) offer the fastest and safest way for a company to grow. However, they are not without pitfalls. Companies that begin a merger and acquisition process, M&A, are typically in the formalization phase of their organization's life cycle. Hatch (2006), stated that the formalization phase of Greiner's model of organization life cycles tends to indicate that a company is still growing and beginning to differentiate its products and services. The departments are clear and controlled by their own heads. Furthermore, the company could have a division to handle the company's separate business units.

The organization chart for such a company has multiple levels of management and even multiple presidents for each division. The organization's structure is complex, and the founders may have left some time ago (Hatch, 2006). Moreover, the organization chart's complexity creates formal control mechanisms that make it difficult for employees to tell the CEO ideas or concerns they are having with their project. The CEO is several levels above them at the top of the chart, and the ideas or concerns are handled by a project manager. Most likely, the CEO will never meet the programmer and may not be located in the same state or even country (Hatch, 2006).

Buy growth option

The literature review provided information that has an impact on the buy growth option and explained why some companies succeed and others fail (Cross, 2011; Rodriguez, 2008; Anslinger & Copeland, 1998; Markides, 1998). Cross (2011) defined three types of acquisitions. In the first, a company buys a minority stake in another company. For example, in 1997 Microsoft bought a minority stake in Apple Computer to help maintain its product lines, which were targeting the Macintosh computer system (Markoff, 1997). According to Cross (2011), the second type is an asset acquisitions, in which a company buys selected assets of another company such as brands, trademarks, patents, software, or equipment, but not its liabilities or shares.

Cross (2011) defined the last type of acquisition as a full acquisition, or stock sales. The acquiring company buys the stock of the other company, so the selling shareholders will not be liable or responsible for the company they are selling. He pointed out that the selling shareholders are typically the ones who benefit from the sale in the short term, if the two companies are public (Cross, 2011). Comparably, another author discussed an acquisition by a national bank of a small community bank (Rodriguez, 2008). The national bank wanted to enter the market area of the small community bank. Furthermore, the management team of the national bank believed that acquiring the small community bank would immediately allow it to gain customers and employees who had a relationship with the community. Once the acquisition was completed, the buyers needed to conduct an analysis on how the two companies would integrate together (Rodriguez, 2008).

A merger can fail for various reasons. An example of a merger that failed is the American Online (AOL)–Time Warner merger in 2000 (Arango, 2010). The \$350 billion merger made business history and was its biggest failure (Arango, 2010). AOL was an online service with millions of monthly subscribers, and Time Warner was a cable provider and purveyor of media entertainment that also produced regular content. AOL believed that it would be able to offer original content to its subscribers if it merged with Time Warner, thereby attaining a competitive edge. However, the two companies' cultures were different, and a lack of focus caused the combined entity to lose half of its value (Arango, 2010).

Anslinger and Copeland (1998) discussed how Sara Lee acquired more than 60 consumer product companies. The acquired companies were considered non-synergistic, meaning that they were unrelated to Sara Lee's core bakery business. According to the authors, "the common wisdom on successful corporate acquisitions is short and simple: Make them small and make them synergistic" (Anslinger & Copeland, 1998, p. 56). However, the authors showed an 18% to 35% return on investment on non-synergistic acquisitions, which may show the common wisdom to be incorrect.

Another author explained why companies that acquired unrelated companies were able to see a return on investment (Markides, 1998). He stated that managers need to

answer six questions about why they need to buy non-synergistic companies. Many of the questions have to do with the understanding of the competitive landscapes. If a company comes on the market for sale and one of its competitors is interested in purchasing to gain a dramatic edge in their current business, it makes sense to either make a competing offer or find a similar business to purchase to stay competitive. Also, a non-synergistic acquisition may allow a company to enter new markets in which they can cross-sell and upsell the current target market (Markides, 1998).

In the case of Sara Lee, the company sells bakery goods and clothes. One customer base may buy bakery goods and clothing from Sara Lee, and another customer base may buy bakery goods and clothing from a Sara Lee's subsidiary. Furthermore, diversification may help stabilize cash flow since one business unit may receive most of its revenue in the beginning of the year while another business unit may receive most of its revenue in the middle of the year (Anslinger & Copeland, 1998).

A constant stream of cash help managers predict the financial condition of their company. For instance, Markides used the example of Lan & Spar Bank of Denmark (Markides, 1998). Lan & Spar has multiple work groups, and each work group has specialized knowledge. Markides discussed how some of the Lan & Spar employees are called integrators (Markides, 1998). These employees help transfer knowledge from one work group to another in order to improve productivity.

Collaboration Phase: Abroad

It is critical for a company traded on the public stock market to establish a growth platform. Shareholders, which include pension funds, mutual funds and retail investors, demand a constant growth rate. The board of directors is aware of the demand. Thus, they hire a senior management team to carry out the demand. The level of demand can change throughout the life cycle (Hatch, 2006). A company with only two guys who work in a garage can grow easily by acquiring a few more customers. However, when the company has 10,000 employees, hundreds of subsidiaries, millions of customers and billions of dollars in revenue, it is difficult to double the company within five years. Furthermore, there are multiple management teams running different divisions within the company.

In the literature review, the collaboration phase has been defined differently (Quinn & Cameron, 1983; Shamir & Howell, 1999; Baird & Meshoulam, 1988). The companies that reach the phase that Greiner called “collaboration phase” have become large multinational corporations (Greiner, 1972). According to Hatch’s (2006) organization theory, the collaboration phase is where the business units have become so complex that they act as their own large company inside a larger company. The senior management team may have difficulty understanding what is going on. The author stated, “The collaboration phase of organizational development requires a qualitative change in organizational form as well as in the integration skills and leadership styles demanded of managers” (Hatch, 2006). Moreover, when the company has grown big,

it becomes critical for someone to understand what it does and for separate groups to collaborate with one another.

In the collaboration phase, the company has been a living enterprise for some time and is a global citizen. The company has reasons to expand not only in its home country but also in foreign countries. This growth option, abroad, is the last of the four options. The abroad option is not only to sell products to foreign customers but also to set up operations, hire management teams for foreign subsidiaries, invest in infrastructure, and set up distribution channels. According to Hatch (2006), this level of growth of the company into a multinational corporation (MNC) may cause a crisis of red tape because the organization will have multiple levels of management, including management for its foreign subsidiaries and a global management team. If the foreign subsidiaries management team needed to make a decision in a timely manner, it may require the permission of the global management team. This situation would create a bureaucracy (Hatch, 2006).

Additionally, in the process of becoming a MNC, the company is expanding into foreign nations as a citizen of the nation. By reaching a level of maturity, the company has brand enough to expand into foreign markets. In their book *Emerging Markets Rule: Growth Strategies of the New Global Giants*, the authors described:

the spectacular growth of globe-spanning businesses in the developing world. As they displace established firms, redistribute world power, and redefine who is in charge, these emerging market multinationals—

or EMMs—are going to reshape the global economic order for decades to come (Guillen & Garcia-Canal, 2012, p. 1).

International expansion growth process

An international expansion growth process means that companies need to build a physical infrastructure or be able to borrow or acquire it. Many foreign governments see the value of MNCs and assist by matching funds or building roads and bridges. Guillen and Garcia-Canal (2012) explained the new form of globalization, saying that it “has become a two-way street: improvements in transportation, communication, and other enabling technologies coupled with the enormous economic growth of emerging economies have transformed the way and the location where goods and services are produced and sold” (p. 9).

The authors indicated that growing a company abroad is about execution (Guillen & Garcia-Canal, 2012). Companies need to understand the value of gathering knowledge, analyze the fundamentals of the foreign market, and create strategy that fulfills a need. They know the market, and they should execute on it. Furthermore, companies need to be patient, and they need a lot of cash to build in room for error. A company’s first strategy could fail. In the case of Sara Lee, the company was not patient enough to allow its bread company to continue growing in foreign markets (Guillen & Garcia-Canal, 2012). Sara Lee lost its focus on acquiring unrelated companies and missed out on the growing European bread market. In contrast, Sara Lee’s competitors took a different approach. For example, Pan Bimbo focused on building production facilities in 18 countries and developing a distribution network of

tens of thousands of trucks. Additionally, the quality of the product was critical to its success (Guillen & Garcia-Canal, 2012).

Pan Bimbo knew that bread products have a limited shelf life. Its strategy was to provide fresher bread products than its competitors. Also, Pan Bimbo had over a million points of sale in each of the 18 countries, which offered insight into how they could market the bread products (Guillen & Garcia-Canal, 2012). Finally, Pan Bimbo had 150 local brands to localize its business toward each market and submarket (Guillen & Garcia-Canal, 2012). The authors added comments from the company noting that it is no small undertaking to become a global brand (Guillen & Garcia-Canal, 2012). Customers have different taste in different countries. Hence, localization is critical for companies to grow their business abroad.

Living company

Living companies last beyond their founders and become institutions that can live for decades. De Geus (1998) defined a living company and identified why a living company last beyond the others (De Geus, 1998). He defined a living company as having a lower mortality rate than the average corporation and his findings showed average life expectancy is less than 50 years. The author found four traits that makes living companies extraordinary: conservatism in financing (the companies have high amounts of cash in hand); sensitivity to the world around them (the companies change their business models as politics, technology, or the economy changes); awareness of

their identity (stakeholders feel like they matter to the companies); and tolerance of new ideas (the companies experiment, starting unrelated businesses).

De Geus (1998) said that managers of living companies view themselves as stewards of an institution and understand that companies need to grow and make money.

However, the managers do not believe that money is the only purpose of the company. These managers have new ideas but are not foolish with the money because they protect the company's assets. They manage money conservatively by making sure that there is a rainy day fund (De Geus, 1998). Also, they do not use a third party to finance their opportunities. This allows the company to select opportunities that fit within its guidelines and best practices. Furthermore, the managers help foster an organization of learning. Their employees are continuously being trained in new areas and new businesses in order to evolve. The employees of living companies, as defined by De Geus (1998), have entered the collaboration phase of their organization life cycle.

Human community

A company is not only a place to make money, service a customer base, employ workers, pay dividends to investors, borrow knowledge and resources from partners, and compete in the marketplace with other companies, but also part of a human community (De Geus, 1998). Therefore, a community of people has a stake in the company's future. They fought to keep the company alive, and they care about the company's reputation even at a cost to their own personal financial statement (De

Geus, 1998). Thus, the company becomes a living enterprise and an entity that thinks for itself, fights for itself, and cares about itself.

Growth types

Anthony and Duncan (2012) stated four growth types: commercial, sustaining, transformational, and disruptive. A commercial growth type means increasing the market share of the company's existing product lines without making any changes to the product (Anthony & Duncan, 2012). The second one, sustaining, adds additional features to a product, decreases the time that it takes to get to the end user, and finds ways to reduce the cost (Anthony & Duncan, 2012). The authors defined transformational growth as major improvements to a product that can lead to a new product line. Lastly, disruptive growth means creating new products in a new market.

Anthony and Duncan (2012) defined the four goals: overall company performance targets, specific targets for each growth type, operational targets, and strategic opportunity areas. The first goal, overall company performance targets, entails the company's short- and long-term revenue and profit objectives. The second goal is the specific targets for each growth type and how each will generate revenue. The third goal, operational targets, is the detailed view of revenue goal for the short and long term of each business unit or product. The fourth goal, strategic opportunity areas, means that the company reviews all of the business opportunities available to it and determines which one will provide the greatest return for the lowest risk (Anthony & Duncan, 2012).

The fourth goal needs to be under the growth guidelines. Growth guidelines set up what type of business opportunities fit within the company's relevant dimensions based on its resources. The growth types, growth goals, and growth guidelines make up the company's growth blueprint as defined by Anthony and Duncan (2012).

The growth blueprint is the first component in Anthony and Duncan's (2012) concept of building a growth factory. The second is called production systems. The authors defined production systems as a set of processes, structures and tools that help to create new ideas and resources needed in order to execute on those ideas. Finally, the third component is governance and controls, which are managed by a set of systems and processes.

The authors explained that there are four key systems within the governance controls component: idea governance systems, portfolio tracking systems, resource allocation systems, and continuous improvement systems (Anthony & Duncan, 2012). Idea governance systems help measure and manage different approaches to different types of ideas. Portfolio tracking systems help measure and track the growth opportunity pipeline. Resource allocation systems manage the allocation of a company's human and financial resources throughout its projects (Anthony & Duncan, 2012). Finally, continuous improvement systems identify problem areas and take actions to improve the areas or to remove the areas.

The fourth and final component of the growth factory is leadership, talent, and culture (Anthony & Duncan, 2012). The authors said that lean-forward leaders, innovation talent, measurement and reward systems, and development programs are all needed for a fully functioning growth factory (Anthony & Duncan, 2012). Lean-forward leaders are individuals who help define the culture of a company by being a role model, displaying the type of behaviors and attitudes that would push the company forward (Anthony & Duncan, 2012). Innovation talent is experience combined with the right roles of equally increased growth. The measurement and reward systems help manage the risk that occurs as a company grows. Lastly, development programs train employees to have shared mind-sets and languages that make collaborating on projects and tasks easier (Anthony & Duncan, 2012).

These four components create a growth factory. The growth factory is, rather than a different concept from build, borrow, or build, a different way to view the growth process. The growth factory helps prepare the company for growth by helping the company understand the current status and what is needed to focus on growth (Anthony & Duncan, 2012). Before the company decides which options to use to create its growth strategies, it needs to know how the processes work. Figure 7 shows Anthony and Duncan (2012) graphic which displays a triangle of the growth factory.

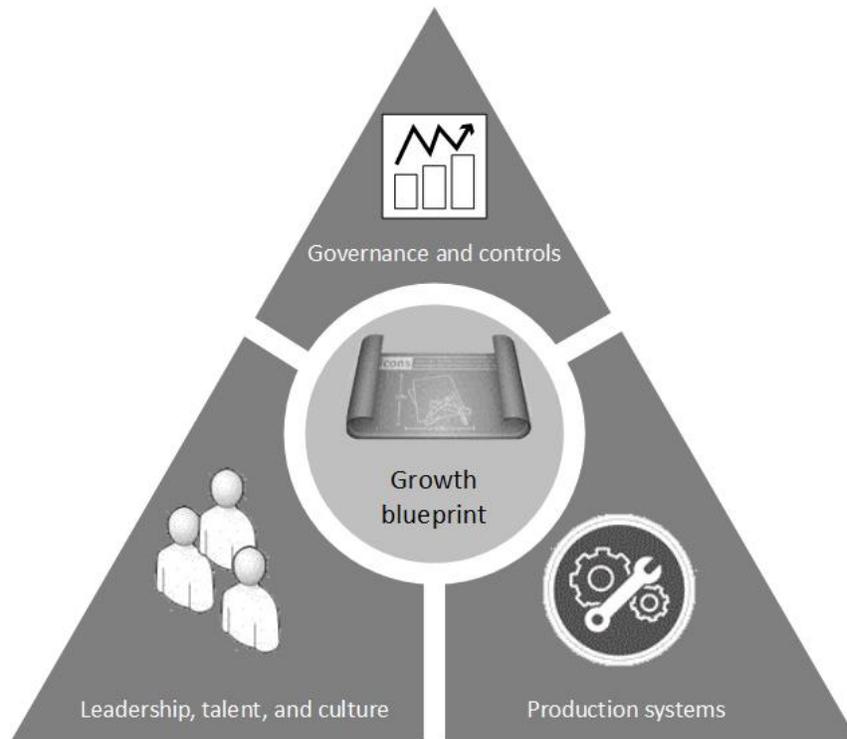
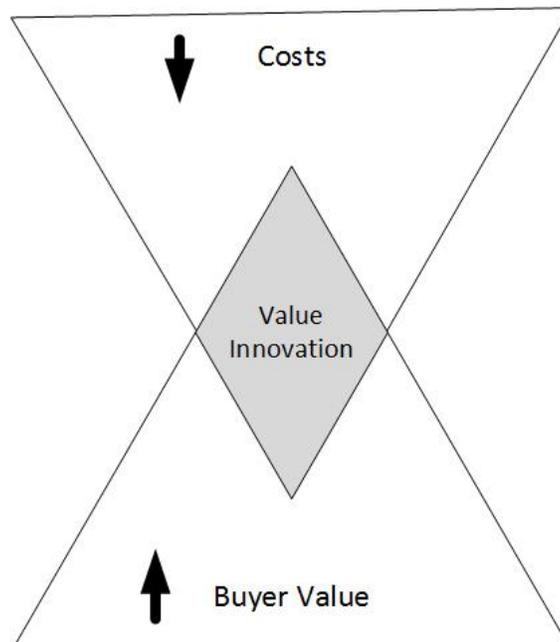


Figure 7. Triangle of Growth Factory

Source: Adapted from Anthony and Duncan (2012), p. 7.

A different approach to the growth triangle is the blue ocean strategy. *Blue Ocean Strategy: How to Create Uncontested Market Space and Make the Competition Irrelevant*, by Kim and Mauborgne (2005), focused on how companies can create valuable innovative products. The authors discussed ways to beat the competition by making competition irrelevant, instead, companies need to focus on creating blue oceans (Kim & Mauborgne, 2005). The authors defined blue oceans as new market space in an untapped market where there is a high demand and new growth opportunities. By creating blue oceans, companies make their competitors irrelevant because they are making the rules, setting the prices, and creating the community.

In contrast, the authors define red oceans as markets full with competitors trying to outdo each other thereby, causing low profit margins, high competition, and declining industry (Kim & Mauborgne, 2005). Companies that wish to grow to the next level will create products that have value and are innovative. The authors coined the term *value innovation*, which they defined as the creation of new technology that change the ways customers interact for the better in an easy to use, user friendly, intuitive product at a reasonable cost (Kim & Mauborgne, 2005). Furthermore, the authors argue that the old way of thinking was that the higher the cost, the greater the value. The authors believed that companies that create blue oceans are able to create value innovative products that better customers' lives at a reasonable cost the average consumer could afford to pay. Red oceans create products that may be differentiated by low cost simultaneously; however, these are incremental changes that their competitors can quickly catch up to. Blue oceans lower the cost and increase the value for the customers. Figure 8 depicts the blue ocean strategy.



The simultaneous Pursuit of differentiation and low cost

Figure 8. Blue Ocean Strategy

Source: Adapted from Kim and Mauborgne (2005), p. 22.

Blue oceans focused on creating value innovation products and businesses.

Conversely, Collins' (2001) *Good to Great: Why Some Companies Make the Leap . . . and Others Don't* focused on creating effective systems to build great companies (Collins, 2001). Collins assembled a team of researchers to explore why some companies are good while others are great. The companies that Collins selected from among Fortune 500 companies found ways of growing their enterprises during any economic period. The author defined what it means to be a great company by measuring the financial revenue of 11 companies over a 15-year period based on the "ratio of cumulative stock returns relative to the general stock market" (Collins, 2001, p. 7). As part of finding out why good companies become great, he understood that good companies have good people fueling great systems (Collins, 2001). Most great

companies find their talented executives within the company instead of hiring executives from outside. Collins's research data showed no correlation between executive compensation and the greatness of a company (Collins, 2001). There was no evidence that long strategy sessions create great companies. Collins concluded that technology-driven change does not transform companies (Collins, 2001).

Furthermore, he stated that M&As did not transform a good company into a great company. Most great companies focus on managing change and motivating their employees. Good employees make good companies, and good employees with great systems make great companies (Collins, 2001). Figure 9 shows Collins's hedgehog concept, in which companies that are successful focused on what they are passionate about, what they are best at, and how they can make money.

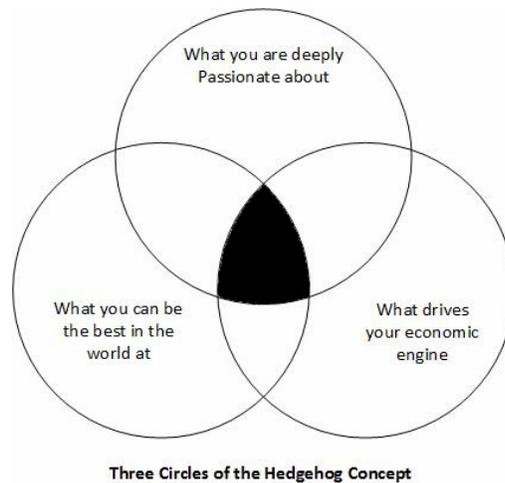


Figure 9. Three Circles of the Hedgehog Concept

Source: Adapted from Collins (2001), p. 96.

As Collins (2001) wrote, “A Hedgehog Concept is not a goal to be the best, a strategy to be the best, an intention to be the best, a plan to be the best. It is an understanding of what you can be the best at. The distinction is absolutely crucial” (p. 98).

Chapter 3: Research Methodology

Research Approach

The research methodology for this study entailed performing multiple-case study of publicly traded companies to identify a growth process. Robert Yin's book *Case Study Research: Design and Methods* cited the use of the so-called comparative case method to apply to multiple-case studies (Yin, 2009). Yin's book provided a clear road map of how to use case studies for research methodology.

Robert Yin's Six Phases

Yin discusses six phases that researchers should consider for case study research: plan, design, prepare, collect, analyze, and share (Figure 10) (Yin, 2009). The first phase is to create a plan in which I defined the research questions and rationale for using a case study versus other possible methods (Yin, 2009). Also, I discussed the strengths and limitations of using a case study for a research methodology. The second phase is the design for the case study project. This research project used multiple-case studies to understand the patterns that advanced technology companies used in order to grow. I defined the criteria used to select the publicly traded companies for this project. Furthermore, I defined the process used to maintain the quality of the case study. The third phase is the preparation phase. I prepared a case study protocol and conducted a pilot case to refine my case study protocol (Yin, 2009). The fourth phase is the collection phase. In this phase, I used the case study protocol to find data that supported the case study. I used NVivo software to maintain

the support data for the case study. The fifth phase is the analysis phase. I analyzed the data to explore the patterns between companies.

The author stated that sixth phase involves sharing the information with a defined audience through textual and visual materials (Yin, 2009). I provided charts and graphs to show the audience how I reached my conclusions and allowing them to form their own conclusions (Chapter 4 and 5). I provided detailed information about how each phase was conducted using Yin's model (Figure 10):

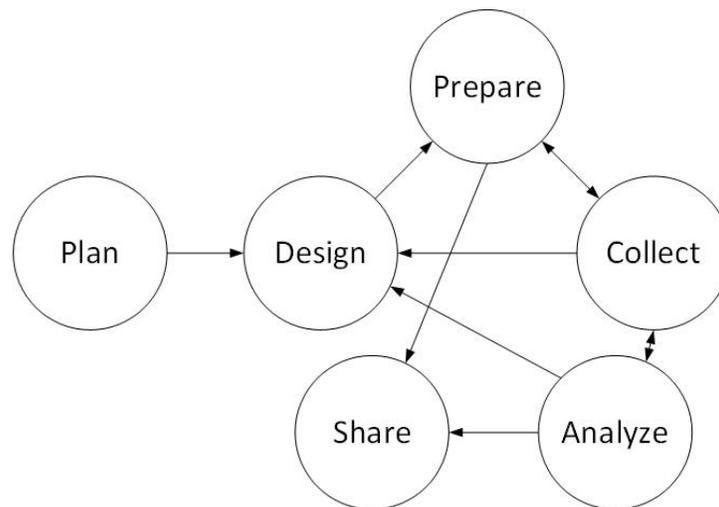


Figure 10. Case Study Process Plan

Source: Adapted from Yin (2009), [Kindle edition] abstract.

Plan

Research questions

This study tried to answer the following research questions:

Primary research question

What is the growth process for turning a technology concept into a living enterprise?

1. Why did this company grow?
2. What are the best growth strategies implemented at different growth cycles?
3. When should the founder of a company exit the company?
4. When is the vision realized by the company?
5. How does capital influence the growth strategies?
6. Are companies with venture capital backing more successful than companies on a shoestring budget?
7. What made this company a living enterprise?

Case study method versus other methods

The case study method has been used to investigate managerial processes in business (Yin, 2009). It provides assistance in understanding how real-life events shape companies and organizations. By using the case study method, I was able to understand how a concept devised by a couple of individuals could grow into a company with billions in revenue. The social science aspect of a case study allowed me to dig into the skill set of each founder to understand why they made the decisions they did. Other methods, such as surveys for which I could mail hundreds of companies, would not provide the results that I needed to be able to analyze a complete organizational life cycle. Surveys would not be answered by the founders or executives of companies. Some of the founders may have died, and many executives will have no knowledge of the early stages of the company. Another research method such as experimentation requires control of behavioral events (Yin, 2009). Therefore, I have used the case study as my research method for collecting the information

needed to understand the process of taking a company from concept to a living enterprise.

Strengths and limitations

Strengths

The case study:

- Allows a way to evaluate decision making
- Helps to understand processes
- Helps create a story
- Helps to understand set of events

Limitations

- Provides no control over events
- Viewed by some as a less desirable form of inquiry than other research methods (Yin, 2009)

Overcoming limitations

The research method required viewing a complete cycle from concept to living enterprise. The events have already occurred and people have experienced the complete cycle. To understand the process, an individual needs to view the history of the companies. Therefore, it is not necessary for me to have control over events. The second limitation, that some scholars may view case study as a less desirable form of inquiry, is one that needs to be addressed by explaining that this study provides an understanding of the completed cycle by going back into the past to discover what it took for each company to move from concept to first product, to first customer, to

first management team, and to initial public offering (IPO). Other research methods were viewed as closely as possible in order to conduct the study, but they presented great limitations. The case study method was selected because it offers a full understanding of the process employed by successful living enterprises.

Design

My criteria for selecting living enterprise growth companies were as follows (Figure 11):

1. The companies needed to be one of the *Financial Times* Top Global 500 of 2012.
2. The companies needed to have technology hardware, software, or computer services.
3. The companies needed to be founded in the United States of America.
4. The companies needed to be currently and publicly traded and to have been public for over seven years.
5. The companies needed to have been founded after the 1970s to access enough information to provide a thorough understanding of the growth process.
6. Founders of the companies needed to have been listed on the Forbes 400 of the richest people in the world during the year 2011 to have the notoriety to create an adequate level of data and to do a proper research analysis on the founders of the company, history of the company, and future of the company.

If a company did not have adequate data, it was removed from the list. Figure 11 shows the triangle selection process inspired by Collins' (2001) triangle selection

process featured in *Good to Great: Why Some Companies Make the Leap . . . and Others Don't*.

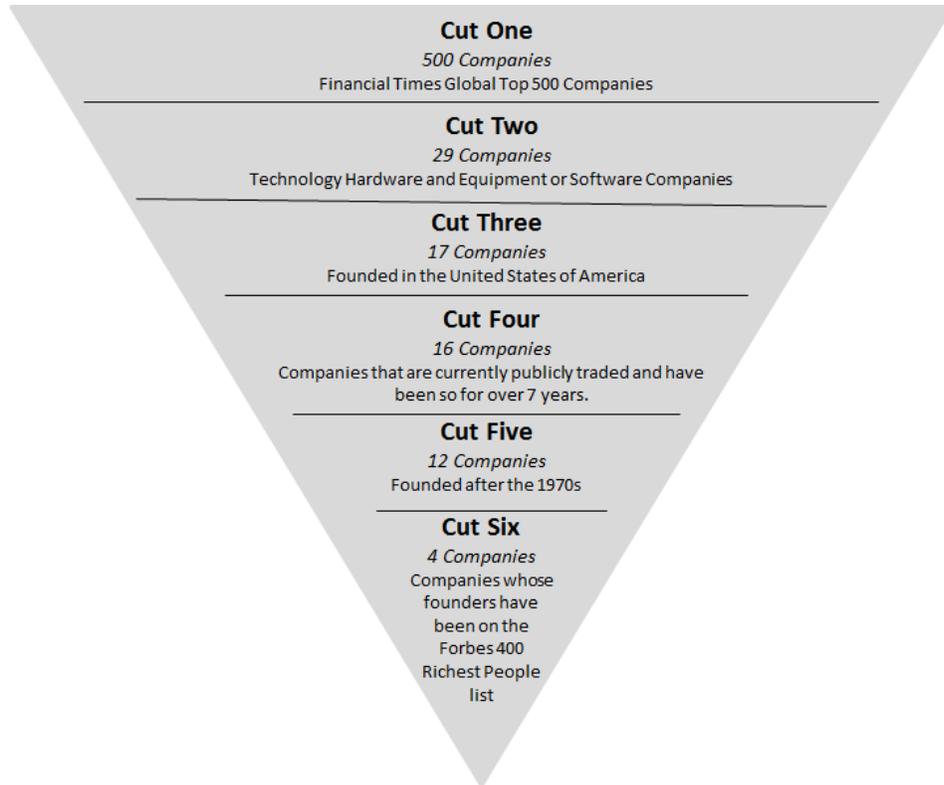


Figure 11. The Triangle Selection Process

Source: Adapted from Collins (2001), p. 220.

Based on my current criteria, the following companies were my targets:

1. Apple
2. Microsoft
3. Oracle
4. Google

Propositions

I researched these companies by studying Securities Exchange Commission (SEC) filings, founder and executive interviews, and analyst research reports to discover how these companies were founded, who the founders were, how the founders created the first product, how they were able to bring the product to market, and at what point the company became a living enterprise. My goal was to understand what growth strategies led them to succeed, and whether those strategies could be developed into a process for other companies to standardize and adopt.

Multiple-case studies

I used multiple-case studies to compare and contrast the four companies. I then determined whether the process was the same for all companies or if one of the companies had a truly unique process that was unlike that of any of the others. I selected four companies rather than 31 because the selected companies were enough to provide data to create a process for this research study. Furthermore, an author selected four companies in a prior study (Chandler, 1962) and a selection process model (Collins, 2001).

Procedures to maintain case study quality

Procedures

The selection of documents needed to come from sources that had a history of providing accurate information.

- For the SEC filings before 2000, I used Thomson One Banker database, to which access is provided by several colleges and universities.

- For the SEC filings after 2000, I used SEC.gov.
- SEC filings are viewed by the companies, outside legal counsel, and outside auditing firms. The SEC monitors the filings and reviews them for any issues. If there are any issues, the company and the outside service providers are required to amend the filings. There are laws and rules that punish the companies for any inaccurate or misleading information and could result in fines and prison time.
- For gathering data from books and articles, I compared and contrasted data from multiple books to determine whether the information appeared in multiple sources. If the data appeared in multiple places, I deemed the data verified. If only one book and article had the data, then the data was not verifiable. If there was a difference between time and events in different books or articles, I went with the information that appeared in the largest number of reading materials.
- For selecting videos or audio clips, the sources of the video or audio clips were video sites such as YouTube, Vimeo, Netflix, and Amazon. Licensed video, which required that a company such as Netflix, Amazon, or iTunes pay the publishers, received a higher ranking than sites such as YouTube or Vimeo where anyone can upload materials. I examined the source of each video and determined whether the sources had a copyright to the video that they uploaded to free video sites.

Prepare

The Ph.D. in values-driven leadership program at Benedictine University has aided me in developing the skills needed to conduct the four case studies. In the DVDL 775 Leadership and Corporate Social Responsibility course (2011) taught by Dr. Diane Swanson, I had the opportunity to conduct a practice interview with a director of social responsibility at a Fortune 500 company to understand how the company managed its corporate social responsibility programs. In addition, the DVDL 885 Research Methods Three: Advanced Qualitative Methods course (2012), taught by Dr. Inger Stensaker, and provided initial insights into how concepts become living enterprises.

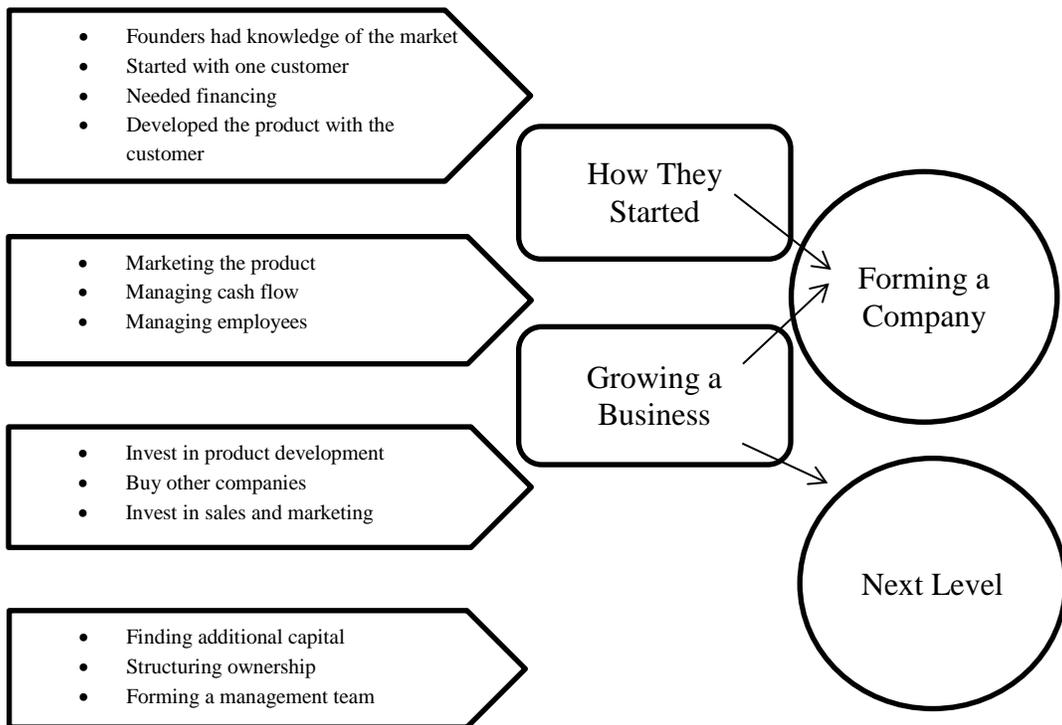


Figure 12. Data Structure

Source: Passley (2012), p. 3.

Data structure

I used the data structure to help develop research questions for two interviews during the course in order to fine-tune my interview skills (Figure 12) (Passley, 2012). The interviews were for course purposes only and the names of the interviewees will not be disclosed. The interviews provided the beginning elements of the case study of “How They Started” (Passley, 2012). How did these companies that would one day become the world’s largest technology companies start? Why did they start and how did they grow? The interviews were conducted with two people. One interviewee had started a software company with two other founders, and the second interviewee took over a family business. The software company grew from product development. They reinvested revenue back into the company, which went from three founders to a company with over 40 employees and over \$7 million in revenue (Passley, 2012). The family business grew through acquiring other companies in the United States (U.S) and foreign countries and then developing new products (Passley, 2012). These interviews helped me expand the build, borrow, or buy concept from Capron and Mitchell (2012) to build, borrow, buy, and abroad. Furthermore, these interviews provided a clear understanding of my definition of catch-22 as related to starting a business from scratch.

Outline of case study

I created a process to determine how a concept becomes a living enterprise by studying the four companies in the United States. I used Yin’s case study protocol (Yin, 2009) to create an outline for how I organized the case studies.

Topic: Selected Company

1. Founder(s)
2. Concept
3. Initial product development
4. Overcoming catch-22
5. Proof of concept
6. Forming the entity
7. Operations
8. Systems
9. Community
10. Segmentation
11. Living enterprise
12. Models and graphs

Collect

I reviewed the development process of a company from concept to living enterprise.

To understand the full life cycle of a company for the purposes of creating a process,

I used archival data to look back on the history of the company from the concept to

the point when the company became a living enterprise.

Data sources

1. SEC filings: 10k annual reports
2. Annual reports
3. Public interviews of executives and founders

4. Press releases
5. Magazines and newspaper articles
6. Analyst research reports
7. Books
8. Companies' Websites

Case study software: NVivo version 10

I used NVivo to manage the case study and created my case study database. NVivo is a software program that helped me code SEC filings, articles, books, and video interviews. This software was used to analyze the data and provide new insights.

Analyze

After I gathered all the data, I analyzed them to identify patterns and trends to see what processes and milestones the companies used to achieve their success. I developed a case study for each company and compared them with the other companies on the list. I reviewed the type of growth strategies that the companies used to grow the company to the next level. Once the patterns and trends were identified, I started developing the models. I identified ratios that would be used to compare and contrast different companies' methods and processes in order to understand the results of different growth strategies.

The SEC filings and other public records were used to take my research to a certain level. Additionally, the data were needed to refine any growth processes. Many companies on the target list were written about in articles and books. Also, many

founders and executives participated in public interviews and wrote autobiographies. Some founders had died, but the level of data, number of interviews, and amount of articles available on each target company were sufficient for this study. I had more than adequate information even though an interview with the founders may not be possible with larger companies.

1. I entered the financial statements from the company's 10ks from the start date of the company until the company reached living enterprise level.
2. I compared the financial data with financial data with that from other companies to see if there were any patterns.
3. I used the 10k annual reports, articles, and books with each of the four growth options that the company selected in order to grow to the next level.
4. Based on the patterns and changes that I saw, I created a process to determine when the concept was created, by whom the business was formed, and when the company became living enterprise.
5. I tried to determine which major players and history makers changed the course of the company.
6. The key data points were: build, borrow, buy, and abroad.
7. I analyzed the Annual growth rate.

Share

The patterns, models, charts, and forms of this study provided a process that, via this study, will be shared with others who want to grow their companies to the next level.

Chapter 4: Results

Overview

In this chapter, I have provided detailed information of the case study results on how Apple, Microsoft, Oracle, and Google grew from a concept to a living enterprise by using a combination of build, borrow, buy, and abroad strategies, as well as Greiner's organizational life cycle. Furthermore, I discussed the overall key findings of this study and created a system, based on 10 levels that these companies used to succeed.

Key Finding

The research made it clear that these four companies' founders were not the inventors of the product catalog. Instead, each founder created a better mouse trap and made improvements on products that had already been created by other companies. This study's key finding led to the following statement: *"The benefit goes not to the one who invented it but to the one who knows how to exploit it best."* Shaun Passley

The key finding reinforced Johnson's (2010) white space model, which is about seizing business opportunities in uncharted territory or underserved markets. The four companies defined their white space, exploited technology invented by others, and created business models to serve their target customers.

Apple

Between 1984 and 1989, Apple developed Macintosh, an all-in-one computer with a graphical user interface and mouse. As an interesting note, Douglas Engelbart was the

one who invented the mouse at Stanford Research Institute (SRI) International (Maisel, 2013). Later, Xerox incorporated the mouse for its graphical user interface on its Alto prototype. On June 21, 1967, SRI submitted an application for a patent, and it was granted on November 17, 1970 (United States Patent No. US3541541 A, 1970). SRI licensed it to Apple. Apple completely changed its computer design around the mouse. Johnson (2010) asked, “Why didn’t Xerox exploit them?” and answered this question by stating that it is difficult for an established company to operate outside its core space (p. 6). Apple’s white space was the personal computer. Xerox’s core space was business machines such as printers.

Microsoft

Microsoft purchased an operating system from Seattle Computer Products to partner with IBM on its personal computer product (Bunnell , 1982). The operating system, Quick and Dirty Operating System (QDOS), was developed by a Seattle Computer Products developer, Tim Paterson, who copied it from Digital Resource’s Control Program for Microcomputers (CP/M)-86 manual. IBM wanted to license CP/M from Digital Resource for the IBM personal computer. Unfortunately, IBM and Digital Resource could not come to an agreement (Hughes, 1983), so IBM went to Microsoft; and Bill Gates, who did not want to lose an opportunity to work with IBM, had Paul Allen buy the operating system from Seattle Computer Products. Allen (2011) said, “In building our homegrown BASIC, we borrowed bits and pieces of our design from previous versions, a long-standing software tradition. Languages evolve, ideas blend

together; in computer technology, we all stand on others' shoulders" (Allen, 2011, p. 75).

Oracle

Oracle developed its database product based on a relational database research paper (Codd, 1970). Codd was an IBM researcher, but IBM did not want to enter into the database software market (Codd, 1970). The research paper was published because IBM did not know anyone interested in understanding what relational databases were and how to build them. Larry Ellison, Ed Oates, and Bob Miner developed their own relational database product, which they used with the Central Intelligence Agency (CIA). Oates and Miner had the skill set and understanding of databases to be able to understand the information in Codd's white paper in order to develop their relational database. Ellison, Oates, and Miner were their start-up's most important organizational asset (Oe & Mitsuhashi, 2013). Oracle's founders were an example of Oe and Mitsuhashi's (2013) study on entrepreneurial dynamics.

Google

Google developed a web search engine using algorithms to analyze backlinks to determine relevant content. It created a page rank system to provide better search results. However, Google was not the first search engine. Between 1994 through 1998, more than 10 search engines were launched before Google. For example, WebCrawler, W3Catalog, Aliweb, and Jumpstation started in 1993 (Kim L. , 2011). Jumpstation used web bots to automate findings and index web pages (Sherman, 2003). In 1994, WebCrawler, a text-based search engine, was launched (Sherman,

2003). The difference between Google and other companies was not financing (Sullivan, 2003), because the other companies had venture capital, it was usability. Google created a better user experience with better search results and a lack of advertising interruptions (Mostafa, 2005). Stanford students and faculty began to use the website, which was hosted on Stanford's servers. Larry Page and Sergey Brin dropped out of their Ph.D. program to pursue their start-up with the assistance of Stanford University's resources. Their actions were an example of Vesper's School to Venture route (Vesper, 1990).

Each company in the case study seized a competitive edge to create better products. Their competitors were unable or unwilling to challenge them in a timely manner to stop their capture of market share in a short period of time (Johnson, 2010).

The term exploit was used in a documentary called *Triumph of the Nerds* (Gau & Sen, 1996). This documentary provided a background history of Microsoft, Apple, and Oracle. The documentary was filmed before Google was an active company. It provided insight into how Microsoft and Apple used the research conducted at Xerox's research park to create the next big thing. Xerox had the entire personal computer with graphical user interface for years before Apple and Microsoft, but it was Apple and Microsoft that knew best how to exploit the technology. Apple and Microsoft spent their time and capital commercializing the technology. Xerox's

executives did not know what they had. In fact, they gave it all away for the right to buy \$1 million of Apple Computer, Inc., stock (Gau & Sen, 1996).

Key Themes

I reviewed hours of video interviews with the founders of the four case study companies to develop an understanding of how they started their companies and why their companies were able to grow in order to develop the key themes. For a theme to be defined as a key theme, a majority of the founders had to use a similar phrase in one of the videos. The theme was coded in NVivo 10. The key themes were vision of the future, innovation, risk taking, rival, and usability.

Vision of the future

The founders of the four case study companies had a vision of how things were going to be in the market. According to Kroeger (1974), the founders were originator-inventors during this stage of their companies. They did not invent the technology; they improved on existing technologies. The founders had a vision of the future. Steve Jobs believed that an all-in-one computer with a graphical user interface and a simple plug-and-play setup would allow novice computer users to use it without assistance. Bill Gates had a vision of a common platform to run a personal computer on. Larry Ellison believed every company needed to store data efficiently. Larry Page had a vision of everyone finding relevant search results. Furthermore, their vision allowed them to see how people would use the technology and what product offering would need to be rolled out. For instance, Gates explained the Microsoft vision in a corporate video called *Microsoft Plus Program*:

Now one thing that has not changed during our entire history is the vision that drives us. I wanted to use a few slides here to about how much impact personal computers are having very broadly. The trends that we identified back in 1975 are really in full force right now up more and more computers on desktops and even homes. (Microsoft, online corporate video, 1994)

Innovation

The founders knew how to innovate their products after the first generation. They paid attention to small details. Larry Page and Sergey Brin did not insert banner ads on their homepage or search page because they believe the user would be distracted from their objective of finding the best search results. Unlike other search engines, which had very busy home pages and search results pages, Google's home page showed only the logo and search bar. The search result pages showed the text advertisements. Furthermore, Google's text advertisements were relevant to the search performed; therefore, they were useful to the user and provided high-quality targeted leads to advertisers. Google avoided the bells and whistles in its first version of the Google website (Harvard Business Essentials, 2003). By keeping it simple, the company could focus on other business activities such as increasing the user base and raising capital. Page and Brin understood the importance of knowing how people would use their product. Although Google was not the first search engine, it became the number one search engine because of the detail and focus placed on the user. Brin (2013) said:

My vision when we started Google fifteen years ago was that eventually you wouldn't have to have a search query at all. You would just have information come to you as you needed it. And this is now, fifteen years later, sort of the first form factor that I think can deliver

that vision when you're out and about on the street talking to people and so forth. (TED, online video presentation, 2013)

Innovation was policy for the four companies. The founders and executives understood how quickly technology changes. Each company spent an average of 7% to 15% of its revenue on research and development, according to the SEC filings during the study period, excluding the first two years of starting the company. The companies needed to provide the next-generation product offering and incremental product improvement to maintain and grow their user base.

Risk taking

The majority of the founders did not complete their college education. Most of them were in their twenties and did not have families when they started their companies, so they were able to take major risks. For example, they could empty their savings, quit their jobs, and move across the country because they were only responsible for themselves. If they needed additional support, they could ask for it from their parents. Vesper's (1990) School to Venture and Job to Venture concepts discussed the process founders follow to transition into their new venture and the assistance of friends and family in helping with the transition. Jobs said:

When you grow up, you tend to get told that the world is the way it is and your life is just to live your life inside the world, trying not to bash the walls too much. Try to have a nice family life, have fun, save a little money. That's a very limited life. Life can be much broader, once you discover one simple fact and that is everything around you that you call life, was made up by people that were no smarter than you. And you can change it you can influence if you can build your own things that other people can use. Once you learned that you'll never be

the same again (Pioneer Productions & O'Connor, documentary movie, 2011).

Rival

The majority of the founders were competitive. They wanted to be number one and saw legacy companies such as IBM as a competitor that could destroy their companies. In particular, Steve Jobs was focused on how Apple Computer could compete against Big Blue (IBM). Apple Computer needed to develop a business model to compete against IBM and other companies. Its decisions would affect the marketplace (Evans & Webster, 2007). Oracle focused on how it could compete against IBM's DB2 database. Sometimes partners became true rivals. Microsoft and Apple were partners for years before Apple Computer sued Microsoft over the graphical user interface. Larry Ellison saw Microsoft as a rival in terms of sales and market share, and he wanted to suppress it. In an interview on November 1, 1996, Ellison and Charlie Rose had the following exchange:

Rose: But that's what's smart about them though. They wake up. They wake up if the idea that some else generated catches hold. They're in there with all the force that they have.

Ellison: You bet!

Ellison: The war of ideas is over and the war of markets is beginning.

Rose: And you won the war of ideas?

Ellison: We won the war of ideas, but you do not make a lot of money winning the war of ideas. And it's really the war over market share.

(Rose & Castleman, video interview, 1996)

Usability

All four target companies focused on the usability of their products for the novice user. They knew that most people needed the product to be intuitive. Therefore, time

and money went into the usability of their products. Like many start-ups, the four companies had limited resources and needed to focus on their most critical features (Bhidé, 2000). The four companies believed usability was a critical feature. Apple Computer's Macintosh was a graphical user interface that used a keyboard and mouse, allowing the user to click on icons. Microsoft had a similar product, Windows, which was an operating system that many other computer vendors could license for their personal computer systems. Oracle had a database with a graphic user interface allowing nontechnical users to run queries. Google used a simple search results page without the characteristic in-your-face advertisements. During an interview with Olga Kharif, Larry Page said this: "Basically, our goal is to organize the world's information and to make it universally accessible and useful" (Kharif, 2001).

Other important themes

Other important themes were disclosed by one or more of the founders, providing greater insight into how the growth process began and evolved through the course of the organizations' life cycle. These themes yielded information on the founders' motivation and shared understanding regarding technology in their role in the industry (Table 1).

Table 1. Other Important Themes

Change the world	User focus	Culture	Venture capital
Skill set	Parents	Character	Personality

Leader and Genius Founders

Each target company had two founders, except Oracle, which had three. There are two categories of founders: leader founders and genius founders (Table 2). Leader founders are the ones who drive the business forward and understand that they are in business to make money and grow the company. They are driven to growth and possess leadership qualities that attract people to them. These founders are the early CEOs or leaders of the company. They spend their entire adult lives running the company. The leader founders are talented businesspeople with no business experience, but Eesley and Roberts (2012) pointed out that talent was more important than experience.

Table 2. Types of Founder

Leader Founders	Genius Founders
Steve Jobs, Apple Computer, Inc.	Steve Wozniak, Apple Computer, Inc.
Bill Gates, Microsoft, Inc.	Paul Allen, Microsoft, Inc.
Larry Ellison, Oracle, Inc.	Ed Oates and Bob Miner, Oracle, Inc.
Larry Page, Google, Inc.	Sergey Brin, Google, Inc.

The second type of founders is the genius founders. Genius founders are people who have the technical skills needed to create the initial products that the company needs to sell. They help form the research and development departments. They are also the first ones to leave. For example, Livingston summed up the founders of Apple Computer, Inc. in one statement: “Wozniak and Steve Jobs founded Apple Computer in 1976. Between Wozniak’s technical ability and Jobs’ mesmerizing energy, they

were a powerful team” (Livingston, 2007, p. 31). Wozniak had prior work experience in the same industry when he was at Hewlett Packard. Oe and Mitsuhasi’s (2013) study found that prior work experience in the same industry provides positive results for the new company.

Wozniak’s work experience, as an engineer, was a benefit to Apple. Eesley and Roberts’s (2012) study showed how talent plays an important role in the performance of new companies. Jobs was talented in understanding how to design products for consumers. Eesley and Roberts’s (2012) study offered possible clues as to how the combination of Jobs’ talent and Wozniak’s prior work experience played a role in launching Apple. Also, Vesper (1990) categorized Wozniak’s situation as a sideline start-up Job to Venture situation because Wozniak continued to work for Hewlett Packard (HP) for some time until he left HP to work for Apple full-time. Similarly, Paul Allen, Larry Ellison, Ed Oates, and Bill Miner had full-time jobs and worked on their new venture until it was able to pay for their living expenses. Bill Gates, Larry Page, and Sergey Brin would be considered School to Venture dropouts because they dropped out of school before earning their degrees (Vesper, 1990).

According to Kroeger’s (1974) model of managerial roles, the manager for an early stage is an originator-inventor. The leader founder would be the originator, and the genius founder would be the inventor (Kroeger, 1974).

Case Studies Overview

This study used the four companies of Apple, Microsoft, Oracle, and Google to create a business growth process. To develop the business growth process, I needed to understand how the companies were formed, launched, grew, and became living enterprises. Therefore, each company was studied individually and then compared to the other target companies to fully understand their commonalities and differences.

Founders

I began each case study by focusing on who founded the company. In the dictionary, a founder is defined as simply “one that founds or establishes” (Merriam-Webster, 2014). The definition from Merriam-Webster was too basic. My definition was that a founder is an individual who is a driver in the formation of a company; without this person, the company would not have existed. There are different definitions of a company founder and other publications have presented certain individuals as founders even if the company would have succeeded without them. For example, Google search results displayed Ronald Wayne as one of the founders of Apple, Inc. His contribution to the formation of Apple, Inc., was drawing up the partnership agreement. Steve Jobs and Steve Wozniak asked him to take a 10% stake in Apple, Inc., to help resolve any disputes (Wozniak & Smith, 2006). After signing the partnership agreement, Ronald Wayne relinquished his stock for \$800 (Wozniak & Smith, 2006). He did not help to form the concept of the business or spurred the initial growth of Apple. Apple was created and grew without his contribution; therefore, based on my definition, he was not a founder.

The case studies provided information about the characteristics and personal lives of the founders such as who their parents are, where they went to college, how they met, and what their early careers were like. The understanding of who founded the company provided key insights into these companies' growth and will be of tremendous help to those who want to start and grow a successful business. Arvanitis and Stucki (2012) further explained how the founders' characteristics affect the characteristics of the company and how the company drives innovation (Arvanitis & Stucki, 2012). After studying the lives of the founders, I explored the key milestones that they took to turn the concept into a product. Once a product was developed, the young company was able to commercialize the product. The key terms of proof of concept and catch-22 were used to determine how the founders were able to take the product from the prototype to its operations level.

Proof of concept means getting the target customer to use the product. The customer may agree to use the product on a trial basis. Proof of concept does not require that the customer pay for the product; however, it requires that the product meet feasibility threshold set by the market (Rasmussen & Sorheim, 2012).

Catch-22, as explained earlier in this study, is the paradox that, in order to start a business, entrepreneurs need to have a product; in order to develop the product, they need money; in order to get money, they need investors; in order to get investors, they

need customers; and in order to get customers, they need a product. This problem creates another problem, which leads entrepreneurs back to the original problem: they need a product so they can have something to sell to customers. Rasmussen and Sorheim (2012) explained the gaps between pre-seed funding, seed funding, and venture capital, as well as how new programs are helping to solve the catch-22 by filling in the gap with government funding. Hence, overcoming the catch-22 is critical for operations to begin.

For the purpose of this study, I defined *operations* as a business producing and providing product to the market. However, this does not mean that the business has gone through the formalization stage of the business entity, only that the business is able to provide the product for the market. During expansion of operations, entrepreneurs need to form an entity to manage the ownership of the growing business. The entity allows for outside investors, including friends and family, to invest in the business, allowing for an acceleration of growth. As the business expands, it moved from the garage or dorm room into a formal office setting. Hatch (2006) used Greiner's model of organization to explain the entrepreneurial stage, which is the point at which every member of an organization is aware of what the others are doing. The entrepreneurial stage is the stage at which products are being created and sold. The control system at work is that the founders of the company have a personal relationship with each member of an organization (Hatch, 2006). Furthermore, the office setting indicates the beginning of formalization policies and

procedures, which the founders use to delegate responsibilities and to empower employees and middle management. Additionally, the collectivity stage helps bring the organization together. Policies and procedures provide guidelines to help create systems that enable a growing business to operate without the daily oversight of the founders. Also, it allows for a professional management team to run the operations more smoothly as the company grows larger (Hatch, 2006).

The management team is established to make the major investors feel comfortable investing major levels of capital. The business has moved past the personal savings of the founders, contributions from friends and family, and initial angel investors. It is now receiving formal funding from venture capitalists that must be registered with the SEC. At this stage, the company has created a marketing budget that includes public relations and branding awareness campaigns. The company has grown large enough to have multiple stakeholder groups such as customers, employees, partners, investors, and shareholders as well as the general public. Greiner's collaboration phase is about teamwork, sharing responsibility, and assigning tasks in a formal structure (Shamir & Howell, 1999). As the number of investors grows and the revenue increase reaches an ideal point, the company may have an IPO.

Companies need to determine the best time to go public. Smith and Brown (1986) stated that founders are sometimes more suited for early stages of the company (Smith & Brown, 1986). An IPO is the spreading of ownership and beginning of

community ownership. The community helps influence the direction of the company. Furthermore, the shareholders demand an acceleration of growth. To fulfill this demand, the board of directors and management team begin to enter into new business activity. Now the company has surplus of capital, and the board of directors and management team can plan for the future. This level is the final level, where the entity becomes a living enterprise because it has the ability to grow without the need for outside capital. Thus, the 10 levels from concept to living enterprise were used to provide context in each company case study. Based on the speed at which the company grew, some levels were interchanged. Table 3 shows a description of each level.

Table 3. The 10 Levels from Concept to Living Enterprise

Level	Description
First Level: Concept	Idea Paper prototype Wireframe web/software application
Second Level: Initial Product Development	Functional prototype Retuning prototype
Third Level: Overcoming Their Catch-22	Initial capital raise Alpha testing Recruiting of beta customers
Fourth Level: Proof of Concept	Beta testing Customers using the product
Fifth Level: Forming the Entity	Legal structure Incorporation Investment vehicle
Sixth Level: Operations	Full-time founders

Level	Description
	Customers Employees Offices
Seventh Level: Systems	Formal policies and procedure Management team Formal department Multiple product lines Research and development
Eighth Level: Community	IPO Investment in the community Participation in government policies Exiting of genius founders
Ninth Level: Segmentation	Multiple business ventures Mergers and acquisitions Large-scale international operations
Tenth Level: Living Enterprise	Blue Chip Status on Company's Stock High Credit Rating High Level of Liquidity

4 B's Growth Strategies

The four companies used a combination of Build, Borrow, Buy and Abroad in order to grow their companies to living enterprises. The data research was used to develop the 4 B's Growth Strategies Model. Figure 13 shows four circles with Build as the largest circle the other three circles as an extension of the Build circle. Each company's case study shows a different version of Figure 13 based on how the company used each growth strategies. The larger the circle the more the company used that growth strategy.

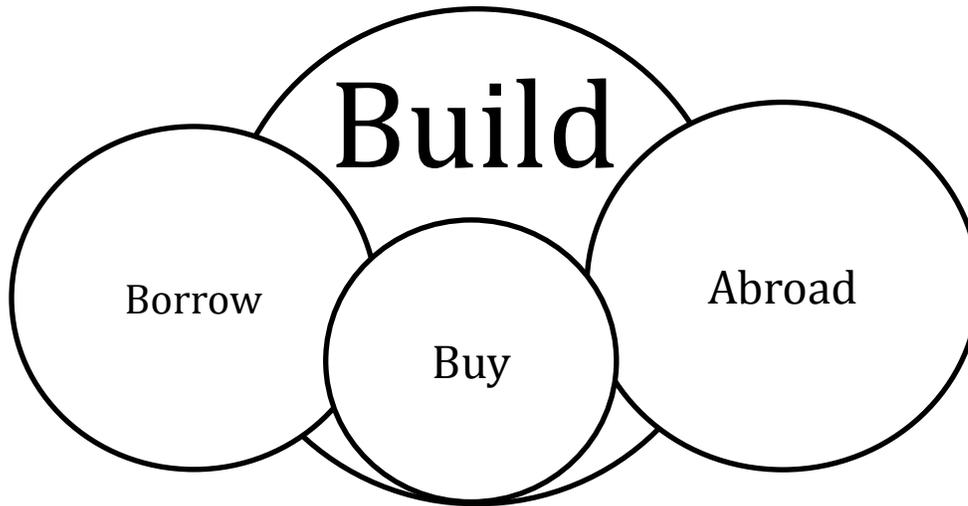


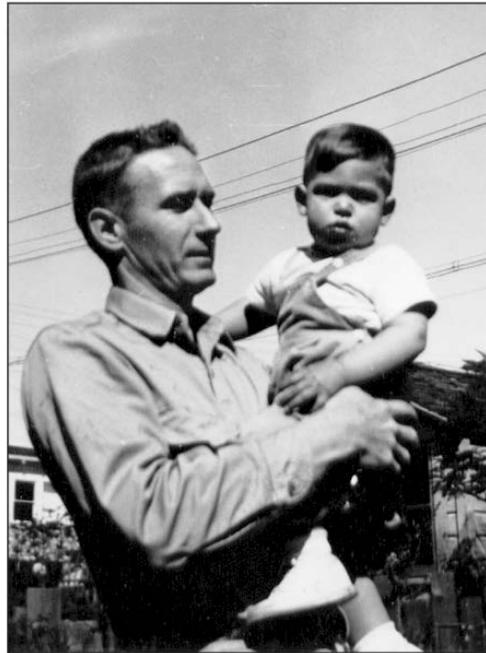
Figure 13. 4 B's Growth Strategies Model

Case Studies

Apple Computer

Leader founder: Steve Jobs

On February 24, 1955, Steven Paul “Steve” Jobs was born to Joanne Carole Schieble and Abdulfattah Jandali (Isaacson, 2011). They gave him up for adoption at birth to Clara and Paul Jobs, because Schieble’s father could not accept the boy as part of the family. Schieble set a condition that the Jobs would make sure Steve Jobs attended college. Jobs’ adoptive father was a mechanic and his adoptive mother an accounting clerk. Figure 14 shows Paul Jobs holding a young Steve Jobs (Isaacson, 2011).



Paul Jobs with Steve, 1956

Figure 14. Steve Jobs as a Toddler

Source: Isaacson (2011), p. 24.

Early schooling

Jobs attended Monta Loma Elementary School in Mountain View, California, where he was known to goof around in class. The school performed tests on Jobs to assess his learning abilities. Jobs scored well on the tests and had an opportunity to test out of two grades, but his parents did not believe it was a good idea (Isaacson, 2011).

After elementary school, Jobs went to Homestead High School in Cupertino, California, where he met Bill Fernandez, a neighbor of Steve Wozniak. Fernandez introduced Jobs to Wozniak (Isaacson, 2011).

College

Jobs' adoptive parents kept their promise to his birth parents (Isaacson, 2011). He attended Reed College in Portland, Oregon, but dropped out in six months. He spent 18 months auditing creative college courses such as calligraphy (Isaacson, 2011).

Early career

Jobs wanted to learn about Hewlett Packard (HP), so he contacted Bill Hewlett from information he obtained from a telephone book (Isaacson, 2011). Hewlett saw great things in Jobs and offered him a summer job in 1970 (Isaacson, 2011). In 1973, after dropping out from Reed College, Jobs was hired by Atari's founder, Nolan Bushnell (Isaacson, 2011). In 1974, he took a leave of absence to travel to India, and later returned to Atari. The company held a contest to eliminate computer chips from the Atari circuit board. Jobs contacted Wozniak to help him with the contest. Wozniak was able to eliminate 50 chips. Jobs won the contest and received \$5,000, from which he paid Wozniak \$350 (Isaacson, 2011). Jobs teamed up again with Wozniak to sell blue boxes, which were devices that allowed users to make free long-distance calls.

Genius founder: Steve Wozniak

On August 11, 1950, Stephen Gary "Steve" Wozniak was born to Margent Wozniak, a board member of Sunnyvale community players, and Francis "Jerry" Wozniak, an electrical engineer at Lockheed Missiles and Space Company (Wozniak & Smith, 2006). Steve Wozniak grew up in the heart of the Santa Clara Valley in California, now known as the Silicon Valley (Wozniak & Smith, 2006). Francis Wozniak taught

his son engineering at an early age. He gave his son a crystal radio kit and helped him with his science projects (Wozniak & Smith, 2006).

Early schooling

Wozniak attended Cupertino Junior High School (Figure 15), where he won a blue ribbon for the best electronics project at the Bay Area Science Fair (Wozniak & Smith, 2006). In 1966, he attended Homestead High School, where he took advanced electronics and math courses and was the best math student (Wozniak & Smith, 2006).



Figure 15. Steve Wozniak at Science Fair

Source: Wozniak and Smith (2006), p. 15.

College

Wozniak attended the University of Colorado for his freshman year. His parents could not afford to continue to send him to an out-of-state university, so he returned to California and was enrolled at De Anza Community College. Wozniak stated, “I spent a lot of time designing and redesigning computers on paper, which is what I’d

been doing in high school” (Wozniak & Smith, 2006, p. 71). Later he enrolled at the University of California, Berkeley. In 1975, he dropped out of college. He went back to college years later and completed degrees in computer science and electrical engineering (Wozniak & Smith, 2006).

Early career

Wozniak worked at HP after his junior year of college. He went on to become a full-time engineer working on calculators (Wozniak & Smith, 2006). HP permitted its employees to work on side projects after work, so he used this time to create the first graphics card for computers and computer games. He designed the personal computer at HP. HP had the first rights to his personal computer (Wozniak & Smith, 2006). He met with HP’s management and showed them his personal computer, but HP decided not to pursue the personal computer business. Therefore, he was able to pursue the project on his own.

First level: Concept stage

Apple Computer began when Wozniak, while working at HP as computer engineer, created a prototype of a personal computer for himself in 1976. At this time, computers were used mostly by governments and large corporations. However, hobbyists, computer enthusiasts, engineers, and other technical people wanted their own computers for their personal projects (Linzmayr, 2012). Wozniak showed his personal computer to Jobs, who was amazed by it and wanted to sell it to friends and others (Isaacson, 2011).

Second level: Initial product development

The second level overlaps with the concept level. Wozniak did not intend to sell the personal computer; it was Jobs who was the driver by turning Wozniak's personal computer into a commercialized product. The prototype was made from spare parts from HP and spare wood connected to a television. The personal computer was a personal project HP allowed for their employee to do after hours as long as HP receives the first rights of refusal (Linzmayr, 2012). Wozniak had the skill set and technical knowledge necessary for this product. Bhidé (2000) recognized the importance of having direct industry experience, and Wozniak had the work experience from HP that provided the skill set to create the prototype. He had access to HP resources, which included computer parts to build the prototype. Bhidé (2000) noted the difficulties founders have in securing resources. In Wozniak's case, his employment with HP provided all of the resources he needed to secure the parts for this prototype. Wozniak developed the Apple I as a circuit board. The user would need to buy additional parts for it to work. As Figure 16 shows, "the original Apple I was little more than a circuit board to which customers were expected to add a case, power supply, monitor, and keyboard" (Linzmayr, 2012, p. 4).



Figure 16. Wozniak's Personal Computer Prototype

Source: Linzmayer (2012), p. 4.

Third level: Overcoming their catch-22

Jobs and Wozniak entered the third level when they went to the Homebrew Computer Club, where members showcased their personal computer projects to a group of computer enthusiasts. They gained buy-in from the initial target market when Paul Jay Terrell, the operator of the Byte Shop, expressed an interest in keeping in touch with Jobs. The next day, Jobs went to the Byte Shop (Figure 17) to negotiate a deal with Terrell to sell computers (Linzmayer, 2012). Jobs would deliver 50 fully assembled computers at \$500 each and receive \$25,000 in cash on delivery. This was Apple Computer's catch-22 moment.



Figure 17. Byte Shop Storefront, California

Source: Linzmayer (2012), p. 7.

Jobs was successful in getting an order for 50 fully assembled computers from Paul Terrell at the Byte Shop, but he would receive no money until he delivered the computers to the Byte Shop. Moreover, he had no experience completing and filling orders.

Jobs overcame the catch-22 by using the order as a way to get financing. Parks (1976) discussed the importance of raising capital to take advantage of opportunities, and this was a critical opportunity for Jobs. All he needed was funding—or, more to the point, finished product. After he discussed the order with Elmer and Allen Baum, they loaned him \$5,000 for three months (Linzmayr, 2012). Jobs negotiated a 30-day term with suppliers to pay for parts and supplies. In addition, he sold his van for \$1,200 to help pay for the order. Also, friends and neighbors helped assemble the circuit boards. Upon completion, Wozniak and Jobs delivered the order and received payment that covered their initial cost. Hence, no equity was needed. Wozniak recalled (Linzmayr, 1999): “[The Byte Shop order] was the biggest single episode in the company’s history. Nothing in subsequent years was so great and so unexpected. It was not what we had intended to do” (p. 3).

Fourth level: Proof of concept

Jobs and Wozniak entered the proof-of-concept level when they completed the first order. Apple Computer profited \$8,000 from the Byte Shop (Linzmayr, 2012). Jobs and Wozniak proved that their business venture could attract a customer, accept an order, raise capital to obtain the necessary components, hire adequate personnel, fill the order, and deliver the finish product to the customers. It is at this point that the business ventures began operations. Apple Computer was no longer a concept or a prototype; it was business venture operating out of Jobs’ family garage. Furthermore, it was capable of delivering product to the customers. Jobs attracted additional dealers who sold their circuit boards for the Apple I. To grow their business venture, Jobs and

Wozniak needed to attract investors. This was a hurdle Jobs and Wozniak needed to jump over to push the company to the next level (Parks, 1976).

Fifth level: Forming the entity

Jobs and Wozniak entered the forming-the-entity level when they attracted investors to help expand Apple Computer and moved the company out of Jobs' family garage. With the formation of the entity, Apple Computer, Inc., was born and provided a vehicle for investors to invest their money. Parks' (1976) capitalization hurdle shows how Apple needed additional capital to grow its business beyond the Jobs garage. Parks (1976) stated that companies that want to grow have two options: long-term bank financing and equity financing from venture capitalists. Bank financing is available for established businesses, which Apple was not. Therefore, Jobs needed to find venture capital to grow Apple.

Jobs found an investor, Michael Markkula, through a contact from his former boss, Nolan Bushnell, the founder of Atari, Inc. Bushnell recommended Don Valentine, a legendary venture capitalist from Sequoia Capital, which had backed Atari, to Jobs. Valentine in turn recommended Markkula. Markkula had worked with Valentine at Fairchild and Intel. Markkula had retired at the age of 33 with the stock option that he received from Fairchild and Intel. Markkula invested \$92,000 and guaranteed a line of credit of up to \$250,000 from Bank of America (Isaacson, 2011; Linzmayer, 2012). Markkula received an equal share of the equity with Wozniak and Jobs: 26% each. The remaining 22% would be reserved for future investors. He also provided

business experience as a former Intel executive, and helped attract Arthur Rock, another venture capitalist. Vesper (1990) noted that receiving a large sum of funding as Apple did can help the company solve problems.

Sixth level: Operations

With capital in hand, Apple Computer entered the operations level.

Build

The investment from Michael Markkula enabled Steve Wozniak to work on the turnkey computer called the Apple II (Figure 18), which provided a circuit board, molded computer case with logo, keyboard, and Beginner's All-Purpose Symbolic Instruction Code (BASIC) programming language (Apple Computer, 2013). The Apple II was the first commercial product of Apple Computer, Inc.



Figure 18. Apple II Computer

Source: Adapted from Apple II Computer (2013), para. 2

In addition, the money was used to hire a local manufacturing company to build 1,000 Apple IIs and provide public relations and marketing for the product. The Apple II was priced at \$1,298.

Borrow

Apple borrowed the resources of the local manufacturing company instead of building its own facility and hiring its own workers so it could get the computer to market sooner. Another term for this type of service is *outsourcing*. Cross (2011) discussed how outsourcing provides companies such as Apple with the flexibility to increase or decrease production without any fixed cost.

In 1977, the company moved out of the Jobs family garage and into offices at 20863 Stevens Creek Boulevard Suite B3, Cupertino, California. Between April 16 and 17, 1977, the Apple II was launched at the West Coast Computer Faire (Isaacson, 2011). Steve Jobs negotiated a space for Apple's booth near the front of the entrance (Figure 19), so Apple would be the first company that people saw (Linzmayr, 2012).



Figure 19. Steve Jobs at West Coast Computer Faire Held in San Francisco in April 1977

Source: Linzmayer (2012), p. 13.

Apple Computer, Inc., ended the year of 1977 with \$773,977 in revenues and \$41,575 in earnings (as shown in Appendix A) (Apple Computer, Inc., 1980). In January 1978, the company closed a private placement of \$517,500, or 5,520,000 shares at \$0.09 (as shown in Appendix A) (Apple Computer, Inc., 1980). The investors were Arthur Rock, Venrock Ventures, Sequoia Capital, Andre L. Sousan, and Andrew S. Grove.

Build

Apple Computer used the additional capital to hire more employees, improve the Apple II product to include a printer port, and increase marketing. In January 1978, the company had 31 employees (Apple Computer, Inc., 1980).

Apple Computer Company's growth strategy was to improve the functionality of the Apple II and build up the workforce to manage the demand for the Apple II. To keep

up with the demand and create additional demand for the Apple II, Apple Computer needed additional capital. Parks (1976) described how growth creates expenses and how companies need more capital to maintain their growth. Apple received a bank line of credit of \$20,000,000 based on its accounts receivables (Apple Computer, Inc., 1980). The company used the build strategy to develop internal resources, and the borrow strategy to outsource business functions to other companies that had the experience and resources to complete business tasks, increasing revenues from \$773,977 in 1977 to \$7,883,496 in 1978 (as shown in Appendix A) (Apple Computer, Inc., 1980).

Build

Apple closed a private placement of \$6,343,801.50 with Brentwood Capital Corporation; Broventure Computer, Inc.; Cuyahoga Management Corporation; Fifty-Third Street Ventures, Inc.; First Century Partnership; Hellman & Gal Investment Associates; Hixon Venture Company; Geraldine and David Karetzky; Morganthaler Associates; and Nautilus Fund, Inc. (Apple Computer, Inc., 1980).

Seventh level: Systems

In 1979, Apple Computer entered the system level as the company grew from 31 employees to 1,015 employees and revenues of \$47,933,981 (as shown in Appendix A). The growth in revenue and employees, meant the organization needed to create a formal organization chart. In Greiner's (1972) life cycle model, Apple was in the formalization phase. At this level, institutional investors did not feel that Jobs had the experience necessary to manage a company of Apple Computer's size, so Michael M.

Scott was brought in to manage the growing business as CEO (Apple Computer, Inc., 1980).

Apple Computer included a board of directors, management team, and over 1,000 employees, and it needed formal systems in place to manage the company. These systems included employee compensation, payroll, legal, pricing, and marketing policies. Also, the company's formal divisions were set up: a software division to create software for the Apple II product, and a research and development division to create new products. In July 1979, one of its first research and development products was the Lisa Project (Cringely, 1993).

Borrow

Apple licensed Applesoft BASIC from Microsoft for \$21,000 and had a new software division, but it needed the BASIC language immediately. Licensing the proven software from Microsoft meant that the Apple computer could go to market faster.

Borrow

Another software product that helped Apple Computer was VisiCalc, the first spreadsheet. VisiCalc made Apple II more than a hobbyist's computer; it made it a business computer. It gave businesses a reason to buy Apple II to create business spreadsheets to help run their companies (Table 4).

Table 4. Build: New Products Released in 1979

Apple II Plus	Apple SilenType
Apple II EuroPlus	Apple Writer 1.0
Apple II J-Plus	Bell & Howell Apple II Plus

Source: Adapted from Weyhrich (1991-2014), link. history, 6-The Apple II Plus, 13-Peripherals, 18-Software.

Eighth Level: Community

Apple's 1980 IPO raised \$53,300,000 for the company. Also, in 1980, Apple had \$117,901,543 in revenues, \$11,697,983 in earnings and 1,015 employees (as shown in Appendix A) (Apple Computer, Inc., 1980).

The IPO allows investors in the company to resell their shares to the public. The reselling of shares allows for the spreading of ownership of the company, which means that influence on how the company operates is the focus of the shareholder.

Borrow

Apple Computer's growth was being noticed by the larger companies (Table 5). In November 1979, Xerox agreed to allow Jobs and his team to visit its research and development center, known as the Palo Alto Research Center (PARC) (Cringely, 1993). Xerox received the right to buy \$1 million worth of options. Jobs saw the graphical user interface and the mouse for the first time. Johnson (2010) commented that Xerox should have been the exploiter, but Xerox was too established in its core business to see the white space.

Table 5. Build: New Products Released in 1980–1982

Apple III	Apple ProFile
Modem IIB	Apple III Revised
Printer IIA	Apple Dot Matrix Printer
Monitor III	Apple Letter Quality Printer
Disk III	

Source: Adapted from Sanford (1996-2014), link 1980; Adapted from Weyhrich (1991-2014), link history, 13-Peripherals.

Ninth level: Segmentation

Between 1982 and 1984, Apple grew rapidly and entered the segmentation level because it had the resources needed to enter different product lines and business operations.

Build

The local integrated software architecture (Lisa) project failed because the price of the computer was too high (Isaacson, 2011).

Build

Apple Computer used a 1984 Super Bowl commercial to launch the Macintosh computer (Figure 20), which Jobs personally oversaw the development of the commercial (de Moraes, 2013). This commercial was seen by the largest viewership of the year and helped build name recognition for Apple and Macintosh.



Figure 20. Commercial for the 1984 Super Bowl

Source: de Moraes (2013), para. 7.

Abroad

In 1980, Apple Computer, Inc., began to form foreign subsidiaries in Ireland and Germany. Apple used the subsidiaries to distribute its products overseas. Between 1982 and 1984, Apple formed foreign subsidiaries in the Netherlands, the United Kingdom, Belgium, France, Italy, Australia, Japan, Mexico, Sweden, and Austria. Jobs wanted to be the CEO, but the board of directors believed he did not have the experience to do the job so it agreed to let Jobs handpick the CEO. He selected John Sculley, the president of PepsiCo. Sculley later quoted Jobs as having asked him, “Do you want to be selling sugared water for the rest of your life? Or do you want to come with me and change the world?” (Gau & Sen, 1996)

On April 8, 1983, John Sculley became the CEO of Apple Computer, Inc. According to Kroeger’s (1974) model of managerial roles, during this stage of Apple Sculley would have been the administrator-operator, because Apple had grown to the point that it needed someone to focus on marketing the company’s products. Sculley’s

strength was marketing. Sculley and Jobs had a poor working relationship, which led to a board showdown, and in 1985 Jobs left the company (Cringely, 1993). Jobs was not the majority shareholder and could therefore be removed from the company. The company was no longer two guys in a garage but a company with nearly \$2 billion in sales, \$61 million in earnings, and 4,300 employees (Apple Computer, Inc., 1986).

Build

Sculley increased investment in the marketing and sales of the Macintosh.

Borrow

Macintosh attracted additional software developers by focusing on computer graphics (Table 6). Start-ups such as Adobe created software for the Macintosh, which provided Apple the niche that it needed to increase sales (Capron & Mitchell, 2012).

Table 6. Buy: Acquisitions

Purchase Date	Company	Industry
March 2, 1988	Network Innovations	Software
June 2, 1988	Orion Network Systems	Satellite Systems
June 27, 1988	Styleware	Software
July 11, 1988	Nashoba Systems	Software
January 3, 1989	Coral Software	Software

Source: Adapted from AAPL Investors.net (2014). Para. 2.

Tenth level: Living enterprise

According to the definition of a living enterprise, Apple Computer reached it in 1989 because it had grown without additional capital during the last two years and had cash flow generated from operations (Apple, 1989). Both founders had left the company,

and the decision making came from the board of directors and a professional CEO. Sufficient levels of shares were owned by the public. Also, the company was a mid-cap stock with a market capitalization of \$5 billion (Apple, 1989), so many mutual caps and pension funds also owned the stock. The company had revenues of \$5,284,013,000 and \$454,033,000 in earnings (Apple, 1989) and it employed over 12,000 people (as shown in Appendix A). Finally, the company had \$2,743,899,000 in assets (as shown in Appendix A) (Apple, 1989).

Apple's growth strategy

Figure 21 illustrates Apple's build, borrow, buy, and abroad strategy. The illustration shows building as the primary strategy and the other strategies of borrow, buy, and abroad all extension from it to assist the primary build strategy. Therefore, borrow, buy, and abroad are inside the build circle. The borrow circle size is based on Apple's outsourcing the manufacturing of its products. The circle size for the abroad strategy is based on the foreign revenue number. The size of the buy circle is based on the number of acquisitions completed. Also, Apple financial data have been thoroughly documented (as shown in Appendix A) and Figure 22 shows the annual growth rate.

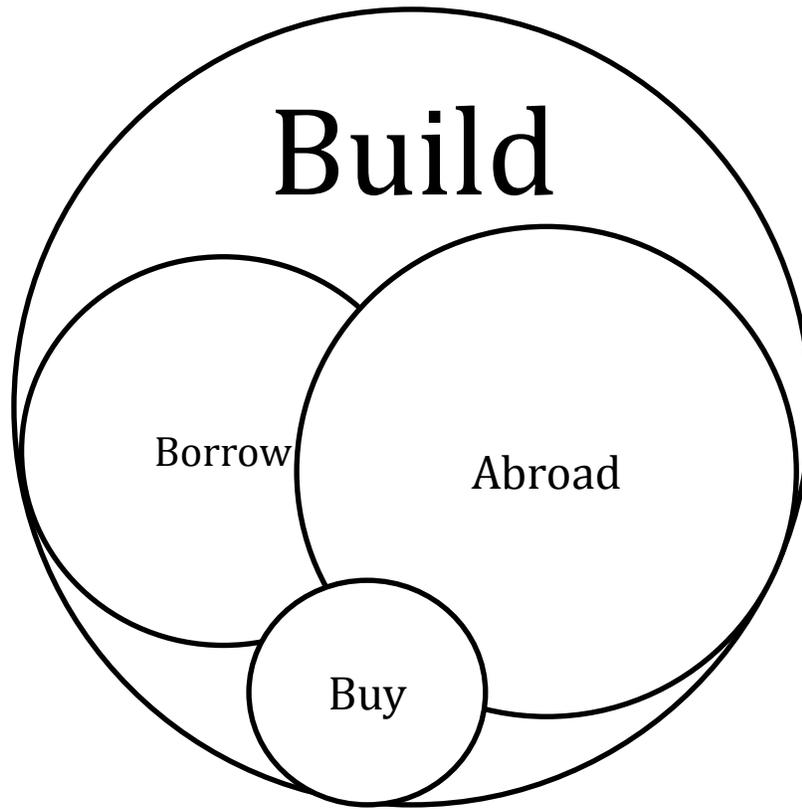


Figure 21. Apple Growth Options: Build, Borrow, Buy, and Abroad

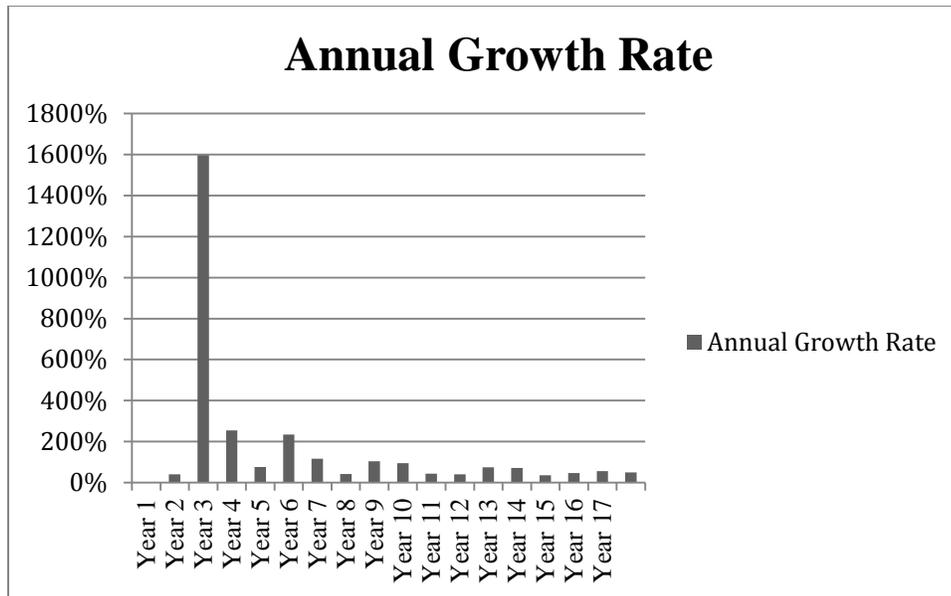


Figure 22. Annual Growth Rate

Figures 23, 24, and 25 provide additional information on Apple. Apple Computer primarily used the build growth strategy. It developed its own products. As shown in Figure 23 Apple spent an average of 7% of its revenue on research and development and 20% on marketing and distribution. Apple used the borrow strategy to outsource its product manufacturing to other companies located primarily overseas. Apple bought other companies during the end of the study period. Figure 24 shows Foreign revenue was a significant purchase of the overall revenue. Additional financial data can be viewed in Appendix A for Apple. Figure 25 shows the timeline of events that caused Apple to enter the next level.

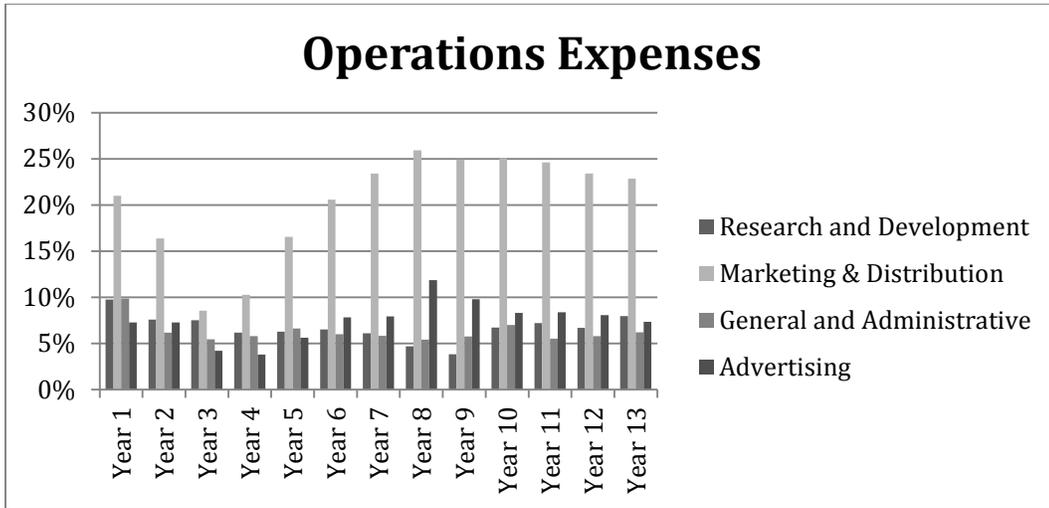


Figure 23. Operations Expenses

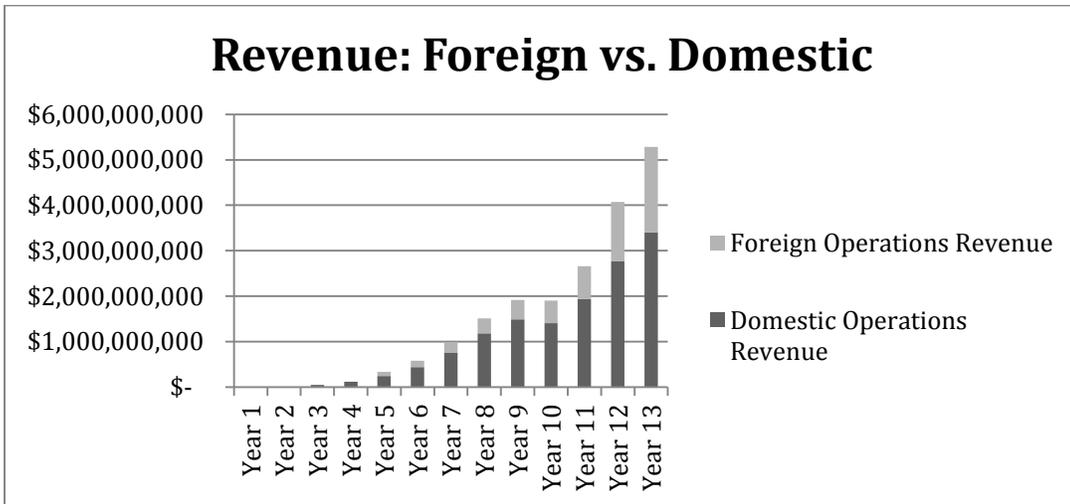


Figure 24. Revenue: Foreign vs. Domestic

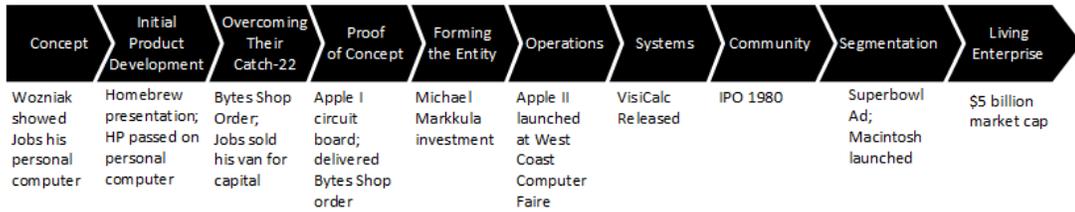


Figure 25. Apple Timeline

Microsoft

Leader Founder: Bill Gates

On October 28, 1955, William “Bill” H. Gates III was born to William H. Gates, Jr., a local lawyer, and Mary Maxwell Gates, a businessperson and board member for Seattle’s Swedish Hospital (Manes & Andrews, 1993). Bill Gates was the second of their three children (Figure 26) (Manes & Andrews, 1993).



Figure 26. Bill Gates with His Sisters Kristi and Libby, 1971

Source: Manes and Andrew (1993), [Kindle edition], chp. 2. para. 4.

Early schooling

Bill Gates went to Lakeside School, an exclusive preparatory school in Washington State. He was a B student (Manes & Andrews, 1993). Gates was interested in

programming language of the Basic for General Electric (GE) System and wrote his first computer program for playing tic-tac-toe. Gates and his older classmate, Paul Allen, spent the summer catching bugs in the operating system to earn free computer time. In 1970, Gates went to the Computer Center Corporation to study source code, until the company went out of business (Manes & Andrews, 1993).

College

In 1973, Gates entered Harvard University, where he met Steve Ballmer (Manes & Andrews, 1993). During his sophomore year, Gates created an algorithm for pancake sorting as a solution to one of a series of unsolved problems presented by his college professor, and the solution held the record as the fastest version for more than 30 years. In 1975, Gates dropped out of college after being awarded a contract with Micro Instrumentation and Telemetry Systems (MITS) (Manes & Andrews, 1993). Thus, he was an example of the School to Venture concept discussed by Vesper (1990).

Early career

Before Microsoft, Gates's experience was at Lakeside School, where he was assigned to develop a payroll program written in common business oriented language (COBOL) in exchange for computer time. He also worked on a scheduling program for Lakeside School (Demuth, 2013). In the summer of 1974, he worked with Paul Allen at Honeywell (Demuth, 2013).

Genius founder: Paul Allen

On January 21, 1953, Paul Allen was born to Kenneth Samuel Allen, an associate professor at the University of Washington, and Edna Faye Allen, a fourth-grade teacher at Ravenna School in North Seattle, Washington (Allen, 2011).

Early schooling

Allen attended Lakeside School, where he met Bill Gates. Allen's first experience with a computer was at Lakeside School, using a Digital Equipment Corporation computer. He was exposed to a Teletype model ASR-33 that was linked to a GE mainframe computer. Moreover, Allen was able to read assembly code the way other people can read novels (Allen, 2011). He had an unsuccessful business with Gates when they were teens but learned how to dissect computer code with Gates (Figure 27) (Allen, 2011).

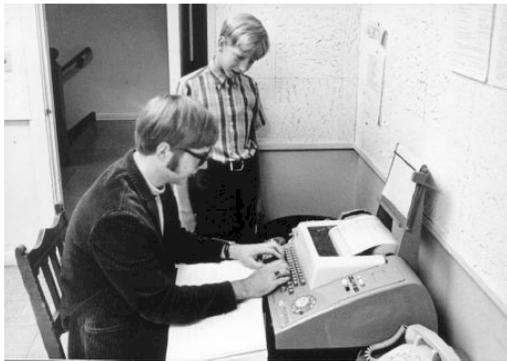


Figure 27. Paul Allen Sitting and Bill Gates Standing, 1960

Source: Allen (2011), p. 408.

College

After Lakeside School, Allen attended Washington State University. He was three semesters from graduation but took two breaks from college during his last two years. In 1972 he dropped out of college (Allen, 2011).

Early career

After dropping out of college, Allen was encouraged by Gates to move to Boston, Massachusetts, so that Allen could visit Gates at Harvard. He sent a dozen resumes to computer related companies and received a \$12,500 job offer from Honeywell to work as a programmer at its Boston office.

First level: Concept stage

Microsoft exists because Allen traveled to Harvard University to show Gates the January 1, 1975, issue of Popular Electronics, which displayed the Altair 8800 (Figure 28) (Allen, 2011). The Altair 8800 was a microcomputer based on the Intel 8080 central processing unit (CPU). Also, the Altair 8800 was designed to be a build-it-yourself computer for computer hobbyists. In the magazine, H. Edward Roberts, the president of MITS, sought a programming language for the microcomputer (Manes & Andrews, 1993). Gates believed that he and Allen had the ability to develop the programming language. They sent a letter to MITS, and later Gates followed up with a call to Roberts, pretending to be Allen. Allen would eventually be the one to do the demonstration because he looked older than Gates (Cringely, 1993). Roberts got 10 calls per day from people claiming to have a BASIC for the Altair. He told Gates that the first person to walk into the MITS offices in Albuquerque, New Mexico, would get the contract (Allen, 2011). Gates and Allen saw the opportunity

and began to work on a BASIC language for the Altair. They saw their white space and their blue ocean opportunity. It was an undervalued market that more-established companies had not focused any attention on (Johnson, 2010).



Figure 28. The Altair 8800

Source: SWTPC (2011), para. 1.

Second level: Initial product development

Gates and Allen entered the initial product development level after Gates told Roberts that they had the programming language for the microcomputer. They did not have a product to license to MITS but were given an opportunity to demonstrate a product to the MITS team in eight weeks. Furthermore, MITS needed the extra time to debug its microprocessor. After the call, Gates and Allen set out to write the language. Allen (2011) recalled: “If we’d been older or known better, Bill and I might have been put

off by the task in front of us. But we were young and green enough to believe that we just might pull it off” (p. 9).

To meet the timeline necessary for the demonstration to the MITS team, Gates and Allen needed additional time, which affected their personal and professional lives. Gates went to class less, and Allen showed up to work at noon and left at 5:30 p.m. They did not have an Altair 8800 on which to test their BASIC language, so they needed to build a simulator. The Altair 8800 name was derived from the Intel microprocessor called the Intel 8080. Gates and Allen built their simulator from a minicomputer. They had previous business with their Traf-O-Data machine, a minicomputer built from an 8008 chip (Allen, 2011). During the product development process, Allen’s task was to generate the macro assembler and simulator, while Gates created the interpreter’s design. Gates and Allen used their skill sets and their traits to develop the BASIC language. Bhidé (2000) noted how important it is for the founders to have skills. The development of the BASIC language shows the need to have talent and experience in the industry in which one is looking to start a new venture. Gates and Allen did not have to hire programmers to develop the majority of the BASIC language. They were able to do it themselves.

Third level: Overcoming their catch-22

Microsoft’s catch-22 was that Gates and Allen did not possess a BASIC for the Altair when they called Roberts. To get a BASIC, Gates and Allen needed assistance with one part of the BASIC language. It was a floating-point math code. Gates and Allen

were having dinner at the Currier House at Harvard University and discussing how to write the math routines when Monte Davidoff, an advanced math student at Harvard, came to Gates and Allen and said he had created a programmed data processor (PDP)-8. Gates and Allen discussed how Davidoff could work with them on their project. Davidoff agreed to assist them for \$400 in services, and additional compensation if they obtained the contract with MITS (Allen, 2011). Allen was able to build an 8800 simulator similar to the Traf-O-Data:

There are times in a programmer's career when everything clicks, when your brain is running full out; for me, this was one of them. I got a boost from Aiken's new video display monitor (or "glass teletype," in the jargon of the day), the DEC VT05. Access to a high-speed printer helped, as did storage on the PDP-10's hard disk drive. Within a month, we had development tools for the new chip that likely existed nowhere else. That 8800 package was quick and powerful, done about as well as it could have been. I'm still proud of that code today. (Allen, 2011, p. 74)

Gates and Allen believed they were making good progress when they called MITS lead engineer, Bill Yates, to ask about the subroutines on the Teletype. Yates commented that Gates and Allen were the first to ask that question. In February 1975, eight weeks after Gates first called H. Edward Roberts, they were ready to show MITS their BASIC language (Allen, 2011). Gates and Allen's BASIC was 3,200 bytes and about 2,000 lines of code. Allen estimated that, excluding his development tools, Gates created 45% of the code, Davidoff created 30%, and he created 25% (Allen, 2011).

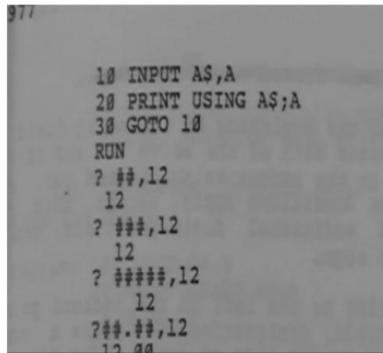
Gates and Allen overcame their catch-22 when they told Roberts about their BASIC language, although when in reality they had not created it yet. Also, they used their personal savings to buy computer items needed to build the simulator and pay for Davidoff's services, with a promise to work with him if they got the deal with MITS (Cringely, 1993). Parks (1976) has pointed out the difficulty of raising capital as a hurdle. Gates and Allen needed the services of Davidoff; they were able to use personal savings to pay the initial fee but made an agreement with Monte Davidoff to get what they needed done for the demonstration. Also, Gates and Allen did not have to give any equity to Davidoff.

Fourth level: Proof of concept

Gates and Allen entered the proof-of-concept level when they used their homemade simulator instead of an Altair 8800 computer to create their BASIC language. There was a good chance that the BASIC language might not work on an Altair 8800 computer. Gates stayed up the night before Allen was to travel to Albuquerque, New Mexico, to make sure that the code was correct. Gates assured Allen that the code was error-free (Microsoft, 2009).

Allen demonstrated the BASIC language to Roberts, Yates, and a few others. He ran a memory test (Figure 29) (Microsoft, 2009). Allen loaded the Altair 8800 with twenty-first instruction, then set the starting address and pressed the run switch. The Altair 8800 executed Allen loader's step that he had created on the plane to Albuquerque after forgetting to bring a loader to the demonstration (Microsoft, 2009).

Allen pulled their BASIC interpreter which consisted of a paper tape. The teletype's printer printed MEMORY SIZE. Yates commented, "It printed something!" (Allen, 2011, p. 81). Because of this result, Allen knew that 5% of the BASIC was working (Allen, 2011).



```

377
10 INPUT A$,A
20 PRINT USING A$;A
30 GOTO 10
RUN
? ##,12
12
? ###,12
12
? ####,12
12
? ##.##,12
12

```

Figure 29. BASIC Language

Source: Microsoft (2009), video clip, section: episode: 1975, time: 1:35.

The next test was the proof-of-concept moment that turned a project that college students did in their free time into a business. Allen (2011) recalled:

The acid test would be a standard command that we'd used as a midterm exam for our software back in Cambridge. It relied on Bill's core coding and Monte's floating-point math and even my "crunch" code, which condensed certain words (like "PRINT") into a single character. If it worked, the lion's share of our BASIC was good to go. If it didn't, we'd failed. I typed in the command: PRINT 2 + 2. The machine's response was instantaneous: 4. that was a magical moment. Ed exclaimed, "Oh my god, it printed '4'!" (Allen, 2011, pp. 81-82)

After the demonstration, Roberts wanted to license the BASIC language to sell with the Altair. Roberts made the decision to work with Gates and Allen because they had a working BASIC. Evans and Webster (2007) discussed how many companies make

product-offering decisions based on the marketplace. The Altair was selling, and Roberts need a BASIC language. Gates and Allen were the first to demonstrate a working BASIC language. Gates and Allen needed to form an entity. Allen was offered the director of software position at MITS a month later. He accepted the offer and moved to Albuquerque, New Mexico (Microsoft, 2009).

Fifth level: Forming the entity

Gates and Allen entered the fifth level after their BASIC language was successfully demonstrated at MITS. On July 29, 1975, they formed the Micro-Soft partnership (Microsoft, 2009). Figure 30 shows that the contract with Altair generated \$16,005 for the start-up (Microsoft, 2009). On November 26, 1976, Microsoft was incorporated in the state of New Mexico near the offices of MITS (Microsoft, 2009). Microsoft's relationship with MITS generated nearly all of the company's revenue. Kaats and Opheij (2014) discussed the notion that collaboration must yield benefits. MITS and Microsoft entered into a partnership deal to provide a language to the marketplace. MITS benefited by having a working product from Microsoft. Microsoft benefited by having access to the Altair's customer base.

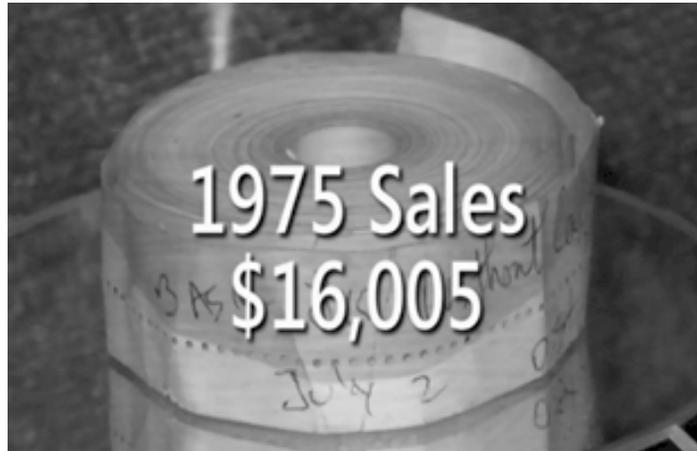


Figure 30. Altair BASIC Software

Source: Microsoft (2009), video clip, section: episode: 1975, time: 6:42.

Sixth level: Operations

Microsoft entered the operation level when it began to ship the Altair BASIC to customers who were already using the Altair 8800.

Build

In 1976, Microsoft developed the BASIC product to work with several different systems. Microsoft BASIC was popular with computer hobbyists, but a premarket copy leaked into the market and caused Microsoft to lose sales. By the end of 1976, Microsoft had generated around \$22,496 in revenues with a workforce of six, mostly interns (Microsoft, 2009). The company branched into new systems, which allowed them to become more independent from MITS. MITS still accounted for nearly all of their revenues, but the company had a product and a workforce to maintain the product. In November 1, 1976, Allen resigned from MITS to join Microsoft as the vice president (Microsoft, 2009).

Build

Microsoft introduced its second software language product, Fortran-80, and terminated its exclusive licensing agreement with MITS for BASIC. It immediately released BASIC versions for 8800 and Z-80 microprocessors and thus increased the market share for its products. With Microsoft BASIC and Fortran-80, Microsoft had products to sell. Gates was the sole salesperson for the company, and the other employees were programmers and administrators. During 1977, Microsoft revenues grew to \$381,715 and had nine employees (Table 7) (Microsoft, 2009).

Table 7. Build: New Products Released in 1980

Typing Tutor	TRS-80 Editor/Assembler	Olympic Decathlon
Z-80 Softcard	XMacro-86 Cross Assembler	M/SORT
XENIX OS	COBOL-80 Compiler 4.0	FORTTRAN
Basic Compiler 5.3	BASIC Interpreter	COBOL
TRS-DOS COBOL	RAMcard	muMATH
Basic muLISP		

Source: Microsoft (2009), episode 1980.

Microsoft's strategy was not to have one dominant software product but to have a full product line in high-volume markets. They made everything that was on the minicomputer available to the microprocessors. They hired more programmers to assist with the development of additional software products. Kim and Mauborgne (2005) discussed value innovators as people who view their own business and all of their opportunities based on their existing resources. Gates and Paul focused their resources only on software that could be sold to the masses.

Abroad

Microsoft established ACSIII Microsoft, a sales office in Japan, because of contracts it received to design custom machines for the Japanese (Microsoft, 2009).

Build

In 1979, Microsoft moved from Albuquerque, New Mexico, to Bellevue, Washington (Microsoft, 2009), near Seattle, because it had difficulty recruiting personnel in Albuquerque. Microsoft was no longer solely dependent on its revenue from the MITS, so there was no reason to stay in Albuquerque. Also, Gates and Allen were from Seattle. Microsoft released three new products: Cobol-80, Edit-80, and Macro-80. It had revenue of \$1,355,655 (as shown in Appendix B) and a headcount of 13 employees (Figure 31) (Microsoft, 2009).

Build

Microsoft was awarded a \$1 million contract from the ICP Million Dollar Award for Microsoft BASIC on the 8800 version. In 1979, Microsoft released four new products MS BASIC, MS BASIC Compiler, Level III BASIC, and CODASYL. It had revenues of \$2,390,145 and a headcount of 28 employees (as shown in Appendix B).

Build

Allen invented the Softcard to run on the Apple II so Microsoft could focus on 16-bit microprocessors.



Figure 31. Photo of Microsoft Staff in 1978

Source: Microsoft (2009), video clip, section: episode 1978, time:4:37.

Abroad and borrow

In November 29, 1979, Microsoft entered into an agreement with Vector International to form Vector Microsoft and had a sales representative located in Hassrode, Belgium, to serve the European market (Figure 32) (Microsoft, 2009).



Figure 32. James Porzak of Vector International with Bill Gates

Source: Dhar (2007), para. 2.

Borrow

In 1980, Microsoft's first operating system, a variant of UNIX, was publicly released (Microsoft, 2009). Microsoft acquired the operating system from American Telephone and Telegraph Company (AT&T) through a distribution license. The company outsourced the adaptation of the operating system to several platforms to the Santa Cruz Operating. In 1980, Microsoft generated \$8,000,000 in revenue and had a headcount of 40 employees (as shown in Appendix B). Between 1978 and 1980, Microsoft contracted with IBM on the Microsoft BASIC interpreter. IBM was preparing to enter the personal computer market in 1980 and needed an operating system.

Borrow: The IBM DEAL

Jack Sams, an executive at IBM, approached Microsoft about the operating system in July 1980. Gates referred IBM to Gary Kildall, the president of Digital Research Inc. (DRI), which had developed the CP/M. IBM's discussions with DRI fell through quickly. Sams told Gates about the meeting with DRI and told him to get an acceptable operating system. Bill Gates was concerned about Microsoft's other products with IBM. Previously, the company had licensed its BASIC, FORTRAN, Typing Tutor, COBOL, and other Microsoft products to IBM. Allen proposed using 86-DOS (QDOS), an operating system similar to CP/M developed by Tim Paterson of Seattle Computer Products (SCP). Paterson used the manual from DRI to develop his operating system. Allen made a deal with SCP for \$50,000 to become the exclusive licensing agent and later the full owner of 86-DOS (Allen, 2011). Microsoft closed a

contract with IBM for the operating system (Cringely, 1993). IBM also signed a contract with Digital Research because it was concerned about a copyright dispute, and focused its attention on personal computer disk operating system (PC-DOS) and not on CP/M. PC-DOS was sold for \$40 and CP/M was sold for \$240. What's more, Gates poured his entire company into the relationship with IBM (Cheifet, 1995).

Microsoft invested additional time and money in adapting the operating system, PC-DOS, to IBM specifications. Microsoft received \$50,000 but kept ownership of the copyright, which allowed them to resell the software to other personal computer hardware vendors called IBM clones (Cringely, 1993). Microsoft's IBM clone version of DOS was called Microsoft disk operating system (MS-DOS) (Cringely, 1993). The PC-DOS was priced at \$40. IBM and Microsoft demonstrated another example of Kaats and Opheij's (2014) substantial motives for collaborating.

Microsoft's deal with IBM meant that IBM would market and distribute a copy of PC-DOS. Also, a second motivation was that a demand for cheaper computer products with IBM specifications would mean an increase in IBM clones that would also be marketing Microsoft operation system as MS-DOS. The IBM-Microsoft deal fits within Kaats and Opheij's (2014) positioning of the collaboration model as a preferred supplier of operating systems (Figure 33).

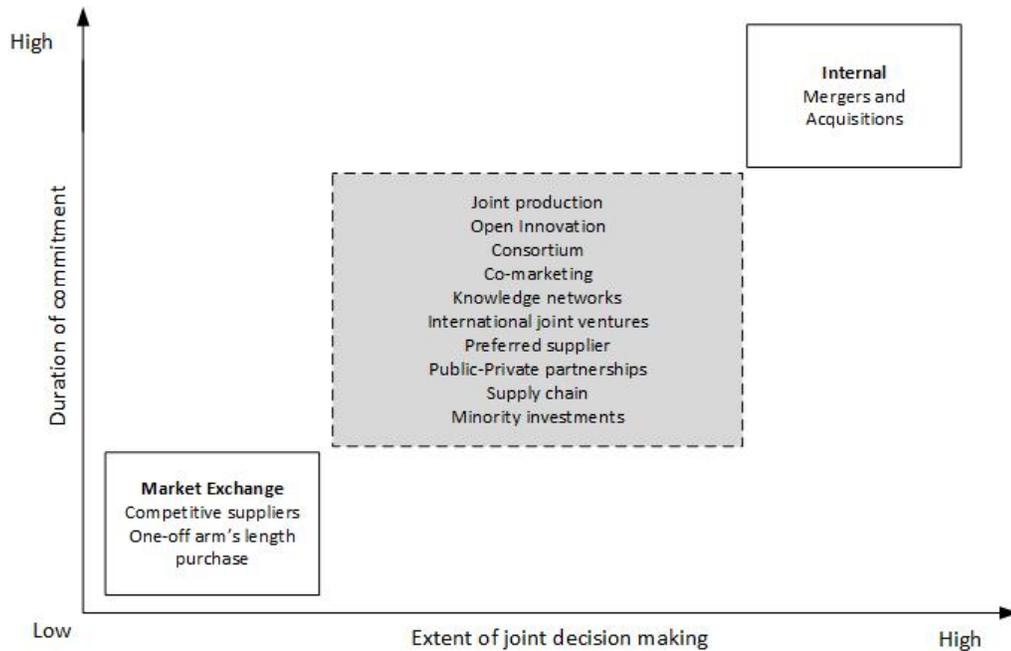


Figure 33. Positioning of Collaboration Based on Gomes-Casseres, 2003

Source: Adapted from Kaats and Opheij (2014), [Kindle edition] chp 2.2.1, para. 2.

On August 12, 1981, IBM introduced its personal computer (PC) with PC-DOS (Microsoft) version 1, BASIC, COBOL, and other Microsoft products. Between 1980 and 1983, the deal with IBM meant a rapid increase of revenue, from \$8 million in 1980 to \$50 million in 1983 (Microsoft, 2009).

Figure 34 shows the cover of *PC* magazine, which asked if Bill Gates was “The Man Behind the Machine” (Bunnell, 2006). Microsoft received only \$50,000 from IBM, but was able to license the software to IBM clones for \$40 per license and would make money on nearly every computer sold in the world (Cringely, 1993). The company that could make a product the standard in the market was IBM. During this

period, IBM wanted to compete with Apple on the personal computer. Its strategy was to enter the market early using an open technology to develop its personal computer. Therefore, other computer hardware vendors could reverse the engineered IBM personal computer components and sell their version of the IBM personal computer for a lower cost (Cringely, 1993). The market would accept the IBM clones because it worked as well as the IBM personal computer, but at a much lower cost, and Microsoft would get a piece of every personal computer sold.

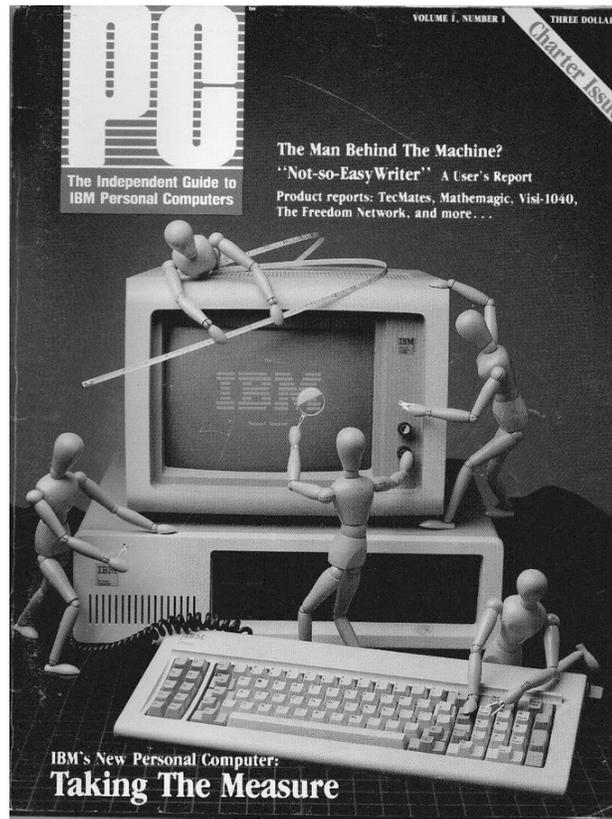


Figure 34. PC Magazine Cover of IBM Personal Computer

Source: Bunnell (2006), para. 1.

Bill Gates, Paul Allen, and Steve Ballmer were the owners of the company. In 1981, Microsoft had revenues of \$17,331,000 and a headcount of 129 employees (as shown in Appendix B). It was able to grow revenue to \$24,486,000 in 1982—a 41% increase—and expand its headcount to 220 (as shown in Appendix B).

Abroad

In March 24, 1982, Microsoft was incorporated as Microsoft United Kingdom to establish United Kingdom operations (Microsoft, 2009). Microsoft released three products in 1982: Multiplan version 1.0, muMATH/muSIMP, and Flight Simulator.

Seventh level: Systems

Between 1981 and 1985, Microsoft entered the system level after the deal with IBM (Cringely, 1993). The deal allowed Microsoft to grow rapidly. Microsoft needed to hire additional employees to handle the increase in demand for its software products and grew from 40 to 998 employees (Microsoft Corporation, 1986). Therefore, it was time for Microsoft to create policies and procedures for the employees to handle accounts receivable, accounts payable, and payroll. Microsoft also needed to create formal departments such as legal, accounting, marketing, sales, human resources, and software development. Gates and Allen needed to be able to delegate responsibility to new managers. Hurley (2006) stated that the trust factor is between management and employees. During major structural changes, as in a transition from a 40-employee company to a 998-employee company, executives need to build systems that can influence action (Neilson et al., 2008). Because Microsoft was a software development company, it did not require the level of investment that a hardware

company would have. On February 18, 1983, Allen resigned because of health issues (Microsoft, 2009). Microsoft's revenue was \$50,065,000 in 1983 (as shown in Appendix B). It continued in 1984 with \$97,479,000 in revenue and 860 headcount and in 1985 with \$140,417,000 in revenue and 998 employees (as shown in Appendix B). Microsoft released over 30 products between 1983 and 1985 (Table 8).

Table 8. Build: New Products Released in 1983–1985

Product	Product	Project 1.0
MS-DOS 2.0	Multiplan	Multiplan for Mac 1.0
MS Word	Chart	Chart 1.01
Microsoft Press Division Formed	Word	Serial Mouse 2.5
Windows (In Development)	File	SoftCard II
BASIC Interpreter 1.0	BASIC	PCjr Booster w/Mouse
Multi-Tool Budget 1.0	The Apple Macintosh Book	Pascal 3.2
Microsoft Sort	Exploring the IBM PCjr Home Computer	Fortran 3.2
C Compiler 2.0	MacEnhancer 2.0	Cobol 2.1
Excel	Basic 2.1 Interpreter for the Mac	LOGO
Windows Retail Version	Chart for DOS	QuickBasic Compiler
MS-DOS 3.2	Word for Networks	Microsoft Access 1.0

Source: Adapted from Microsoft (2009), episodes 1983, 1984, and 1985.

Abroad

In 1983, Microsoft had an abroad acquisition when it acquired the assets of Wisser Laboratories Pty, Ltd, of Australia, a distributor of Microsoft products. Microsoft also

formed a subsidiary in France and Germany in 1984. Microsoft formed a partnership with four Japanese companies to establish industry standards for the Japanese market in 1984. Microsoft began the development of its world headquarters in Redmond, Washington.

Build

In August 1985, Microsoft contracted with IBM to develop another operating system called OS/2 (Microsoft, 2009). IBM wanted to compete against the IBM clones. However, Microsoft depended on the clones for most of their revenue. Microsoft was worried about losing its relationship with IBM and agreed to develop OS/2. At the same time, Microsoft was developing Windows. Steve Ballmer, an executive at Microsoft, believed that it should split the productivity into two Microsoft teams: one team to focus on Windows and another team to focus on OS/2 which was a product that could hurt them (Cringely, 1993).

Abroad

Microsoft selected Ireland as its first product facility overseas.

In 1985, Microsoft released the first retail software of Microsoft Windows, a graphical version of MS-DOS (Microsoft, 2009). All Microsoft operating systems were sold to IBM clones such as Compaq, Columbia Data, and Eagle Computer. Each computer had Microsoft branding. A user could buy a computer from any IBM clone and get the Microsoft operating system. Therefore, if an individual's work computer was IBM and home computer was Compaq, he or she could use the same user interface, so the learning curve was nonexistent. Thus, everyone was able to use a PC.

Microsoft and PCs were widely considered to be one and the same. Microsoft Windows was the upgraded graphical user interface operating system. Instead of using commands, users would use a mouse to click on icons. This idea was first developed at Xerox PARC in the early 1970s. Microsoft needed this idea so it could compete against Apple. In earlier times, it was believed that there was a war between Apple and IBM. Apple and IBM dominated the personal computer market in hardware versus hardware. IBM had an open system, which meant that anyone could reverse-engineer its products (Cringely, 1993). Therefore, the real war was between operating systems, which meant Microsoft Windows versus Macintosh, or PC versus Mac. Apple sued Microsoft over Windows.

Eighth level: Community

Microsoft entered the community level when the company went public. In February 1986, Microsoft relocated to Redmond, Washington, in its worldwide headquarters campus (Microsoft, 2009). On March 13, 1986, Microsoft began trading at \$21 and ended the first day at \$28, raising \$61 million (Microsoft, 2009).

Borrow: Alliance

On October 10, 1986, Microsoft teamed up with Aldus and HP to form an alliance to market a complete desktop publishing solution (Microsoft, 2009). The companies spent \$2 million on the marketing effects (Microsoft, 2009).

The company's revenue in 1986 was \$197,514,000 with 1,153 employees (as shown in Appendix B) (Microsoft Corporation, 1986). Gates was able to remain on as chairman and CEO because Microsoft required less equity funding rounds. Gates could be considered a planner-organizer at this level because he was managing the capital Microsoft needed to invest in new business opportunities (Kroeger, 1974). Microsoft's revenues grew by 75% to \$345,890,000 in 1987, and it employed 1,816 workers (as shown in Appendix B). Microsoft had over 30 products from 1986 to 1987 (Table 9). Microsoft's abroad strategy was to expand overseas by setting up 12 international operations between 1986 and 1987 (Table 10). Microsoft then acquired two software companies: Forethought, a presentation company that was rebranded PowerPoint, and Intermail, an e-mail software program. Both were completed in 1987.

Table 9. Build: New Products Released in 1986–1987

Windows: The Official Guide to Microsoft's Operating Environment	Fortran Compiler 2.20	Excel
Microsoft MACH 10	Mouse 6.0	PageView
Microsoft Works	Microsoft Word 3.10	Quick C 1.0
New Mouse	Word for Networks 3.0	Microsoft C Optimizing Compiler
File	Microsoft Project 3.0	QuickBASIC 4.0
Multiplan	Windows 1.03	MS-DOS CD-ROM Extensions 1.0
Extensions to MS-	Microsoft Learning DOS	Fortran Optimizing Compiler

Windows: The Official Guide to Microsoft's Operating Environment	Fortran Compiler 2.20	Excel
DOS		4.0
Multiplan 3.0	XENIX V/386 OS	Windows Software Development Kit 1.03
Microsoft Systems Journal Magazine	C Compiler 4.0	Word 3.0
Microsoft BASIC Interpreter v3.0	QuickBASIC 2.0	XENIX System V/286 2.23
BASIC Compiler	Microsoft File 1.02	Word 4.0
Microsoft Networks for XENIX System V/286	GW-BASIC 3.2	Bookshelf
Word 3.0	Flight Simulator 1.0	Macro Assembler 5.0
Multiplan 3.0	Microsoft Access 1.01	Chart 3.0
Project 2.0	LISP 5.01	Project 4.0
Multiplan 1.1	MS-DOS v 3.3	Word 3.01
OS/2	QuickBASIC 3.0	OS/2 Software Development Kit

Source: Adapted Microsoft (2009), episodes 1986 and 1987.

Table 10. Abroad: International Operations in 1986–1987

Australia	Mexico	Sweden
Japan	Ireland	West Germany
Canada	Italy	Spain
England	France	Netherlands

Source: Adapted Microsoft (2009), episodes 1986 and 1987.

Ninth level: Segmentation

Microsoft entered the segmentation level when it needed to reorganize its application division and create five business units headed by business unit managers. The application division is Microsoft's largest division. It grew so large that it was difficult for the company to be well managed. Microsoft believed that it would grow even larger in the next five years. Each business unit would be in charge of managing, developing, and marketing its own software products (Figure 35).



Figure 35. Microsoft Business Unit Managers, 1980s

Source: Microsoft (2009), video clip, section: episode: 1988, time: 3:26.

Ghosh (2010) explained strategies that businesses can use to manage their primary activities in operations, marketing, sales, procurement, and services. Microsoft needed to find a way to manage its growing application division by creating business unit managers. Furthermore, Microsoft could treat each unit like a separate business in which unit managers could make decisions on their own. Strategies such as Microsoft's are used to help increase sales and develop new products (Ghosh, 2010).

Borrow: Joint Venture

Microsoft teamed up with Ashton-Tate to release the Microsoft structured query language (SQL) server. This server was Microsoft's entry into the relational database server product market. Microsoft launched a targeted program for the education market to promote its products to educational institutions. Also, Microsoft released 60 products between 1988 and 1990 (Table 11). It had revenue of \$590,827,000 in 1988 with 2,793 employees (as shown in Appendix B), and was able to grow revenue to \$1,183,446,000 in 1990 with 5,635 employees (as shown in Appendix B). Microsoft set up 12 foreign subsidiaries or sales offices between 1988 and 1990 (Table 12).

Table 11. Build: New Products Released in 1988–1990

Word	Excel for OS/2, Word 5.	Microsoft LAN Manager for UNIX 1.1
SQL Server	QuickBASIC 4.5	OS/2 Presentation Manager 1.21
Microsoft Online	Excel for Windows 2.1	Windows 3.0 Device Development Kit (DDK)
Learning DOS 2.0	OS/2 Software Development kit 1.2	Word for Windows 1.1
Microsoft Stat Pack	Microsoft Programmer's Library on CD-ROM	Microsoft LAN Manager 2.0
MS-DOS 4.01	QuickBASIC 1.0 for Mac	Microsoft SQL Server 1.1
Small Business Consultant 1.0 on	MS-DOS CD-ROM Extensions 2.0	Programmer's Library on CD-ROM 1.2
SQL Server Network Developers Kit 1.0	COBOL Optimizing	DCA/Microsoft Communications Server 1.0
Flight Simulator 3.0 for PC	Compiler 3.0	TrueImage 1.0

Stat Pack 1.0	PowerPoint 2.01 for Mac	Windows Supplemental Driver Library (SDL)
Learning DOS 2.0	Software Development Kit for Gateways (MS Mail)	Microsoft Productivity Pack for Windows
MS-DOS	Software Development Kit for Applications (MS Mail)	Microsoft Game Shop
Microsoft Flash File System	Software Development Kit for HyperCard (MS Mail)	Microsoft Flight Simulator Aircraft and Scenery Designer
Quick C Compiler 2.0	Works 2.0 for PC	COBOL Professional Development System 4.0
OS/2 LAN Manager 1.21	MS-DOS ROM 2.0	Microsoft Professional Advisor Library
Programmer's Library 1.10	Flight Simulator 4.0 for PC	Microsoft C Developer's Toolkit
Word 4.0 for Mac	Excel 1.0 for OS/2	Microsoft MS-DOS ROM Developer's Kit
QuickC Compiler with QuickAssembler 2.01	Microsoft BASIC Professional Development System 1.0	Word for DOS 5.5
Quick PASCAL Compiler 1.0	OS/2 Presentation Manager SDK 2.0	OS/2 Presentation Manager 2.0
FORTTRAN Optimizing Compiler 5.0	Microsoft Mail 2.0	Excel for OS/2
Word 5.0 for MS-DOS & OS/2	Excel Mac 2.2	Voice Messaging Capabilities
OS/2 Presentation Manager Toolkit 1.0	PowerPoint 2.0 for Windows	Russian MS-DOS 4.01
Microsoft License Paks	Microsoft BASIC Professional Development System 7.1	Windows 3.0
TrueType	Windows to OS/2 Software Migration Kit	Microsoft Consulting Services Group

Microsoft Entertainment Pack	Project for Windows 1.0	Excel
C Professional Development System version 6.0	PowerPoint	Windows Software Development Kit 3.0

Source: Microsoft (2009), episodes 1988, 1989, and 1990.

Table 12. Abroad: Foreign Subsidiaries or Sales Offices in 1988–1990

Brazil	Israel	Netherlands
Switzerland	Belgium	Portugal
Taiwan	Norway	Singapore
Puerto Rico	Denmark	Korean

Source: Microsoft (2009), episodes 1988, 1989, and 1990.

Buy: Acquisition

Microsoft Press acquired the publication rights for computer books from the Cobb Group, Inc. (Microsoft, 2009). Microsoft acquired 20% ownership in Santa Cruz Operating in 1989 (Microsoft Corporation, 1989). As Gates remarked, “Our vision is that there will be a personal computer on every desktop and it will be the key tool for the information age” (Microsoft, 2009, episode 1989).

Tenth level: Living enterprise

In 1991, Microsoft became a living enterprise with a market cap of over \$5 billion, and this meant that a large group of institutional investors became shareholders to help manage their mutual funds and pension (Microsoft, Inc., 1992). The market cap was needed to increase liquidity, which allowed the investors to enter and exit ownership of the shares easily. Finally, the company had assets of \$1.6 billion and

current liabilities of \$293 million (as shown in Appendix B), so it had the ability to pay off all of its creditors (Microsoft, Inc., 1992). According Greiner's model of organizational life cycle Microsoft has reach a level of maturity. Microsoft during this time may best be described by Greiner's collaboration phase because Microsoft needed to be able manage its MNC with multiple management teams for each division and each region it services.

Microsoft ended the relationship with IBM, but the Microsoft partnership with IBM had been critical for the company's operating system to become the industry standard. IBM's influence in the personal computer was lost early because of its decision to use an open architecture system, which led to the creation of IBM clones. Microsoft therefore became the dominant player in the personal computer market because of the licensing agreement for its operating system with the IBM clones. From 1986 to 1991, Microsoft grew from \$197 million in revenue to \$1.8 billion in revenue (as shown in Appendix B) (Microsoft Corporation, 1986; Microsoft, Inc., 1992). Gates announced the end of the IBM partnership with OS/2 (Microsoft Corporation, 1986). Microsoft also founded Microsoft Research. In May 1992, Microsoft released Windows 3.1 (Microsoft, 2009). In 1993, Windows became the most widely used graphical user interface (GUI) operating system in the world. Microsoft became the leader in the personal computer market. Microsoft released only six products in 1991: Bookshelf, MS-DOS 5.0, Wizards, Excel 3.0, the Solution series, and Open Database Connectivity. Microsoft established seven foreign subsidiaries in 1991 (Table 13).

Table 13. Abroad: Foreign Subsidiaries in 1991

Venezuela	Hong Kong
New Zealand	Mexico
Austria	Argentina
Thailand	

Source: Adapted from Microsoft (2009), episode 1991.

Buy

In 1991, Microsoft acquired Consumers Software, which provided PC local-area network products.

Abroad

Microsoft also purchased a minority stake in a United Kingdom book publisher, Dorling Kindersley, Ltd. Markides (1998) explained that many companies like Microsoft begin to acquire unrelated business to expand their product lines and enter new markets.

Borrow

Microsoft teamed up with 21 computer hardware manufacturers to build pen-based computers based on Microsoft Windows for Pen (Microsoft, 2009).

Microsoft growth strategy

Within its first five years of operations, Microsoft had an office in Japan. Going abroad was a key growth strategy for Microsoft, which launched several foreign offices. However, Microsoft borrowed the influence and distribution channel of IBM. The deal with IBM to be the vendor of its personal computer operating system meant that everyone who brought an IBM PC would buy a copy of MS-DOS. Microsoft also

entered an agreement with IBM clones vendor to also shipped MS-DOS. This meant that every PC would be using MS-DOS as its operating system. Figure 36 below provides a graphical illustration of Microsoft's build, borrow, buy, and abroad strategies. The illustration shows that the build and borrow are most equal in size. However, borrow, buy, and abroad intersect with build. Buy is the smallest circle because Microsoft had very few acquisitions during the study period. Microsoft primarily used the build and borrow growth strategies. It developed its own software products, services, and publishing. Figure 37 shows the annual growth rate.

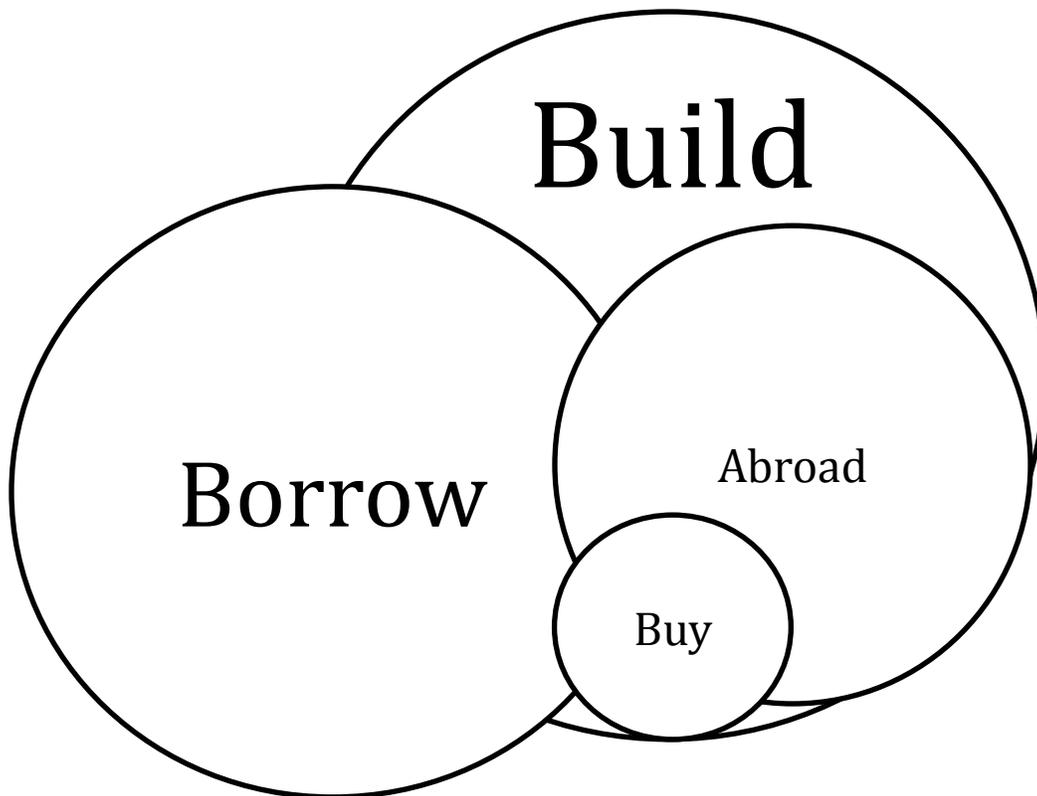


Figure 36. Microsoft Growth Options: Build, Borrow, Buy, and Abroad

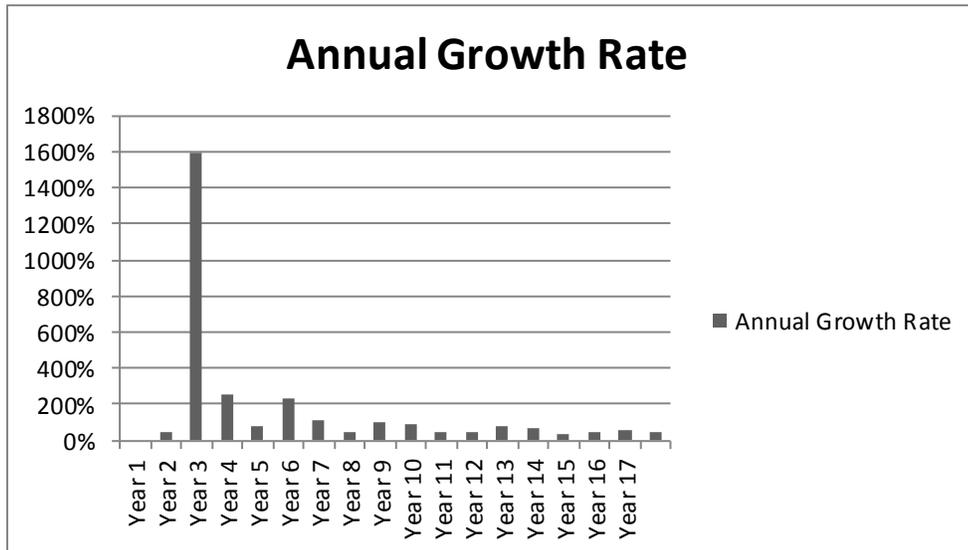


Figure 37. Annual Growth Rate

Figures 38, 39, and 40 provide additional information on Microsoft. Figure 38 shows that Microsoft spent on average 13% of its revenue back in on research and development and 27% on marketing and distribution between year 7 and year 17. As Figure 39 shows, foreign revenue was a significant portion of the overall revenue. Additional financial data can be viewed in Appendix B for Microsoft. Figure 40 shows the timeline of events that caused Microsoft to enter the next level.

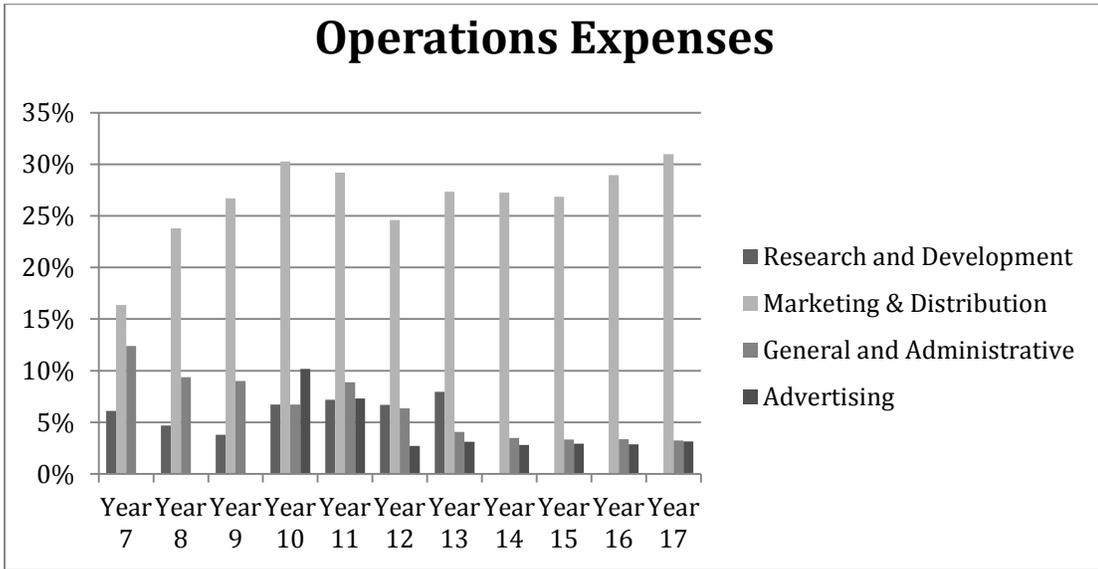


Figure 38. Operations Expenses

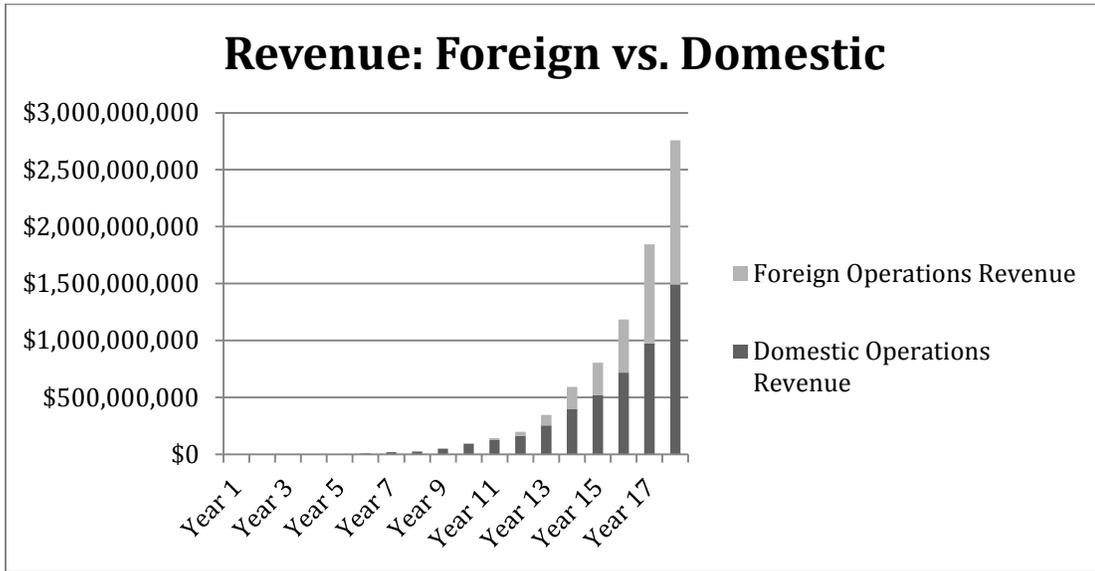


Figure 39. Revenue: Foreign vs. Domestic

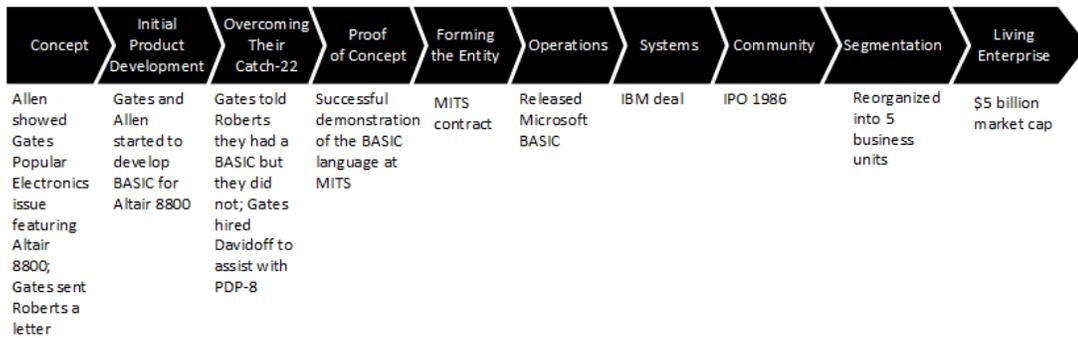


Figure 40. Microsoft Timeline

Oracle

Leader founder: Larry Ellison

On August 17, 1944, Lawrence Joseph “Larry” Ellison was born to Florence Spellman, his biological mother, and an Italian American US Air Force pilot, his biological father, on the Lower East Side of Manhattan, New York (Symonds, 2003). His biological mother gave up parental rights to her cousin, Lillian Ellison, and Louis Ellison, a bomber pilot in World War Two (Symonds, 2003). Larry Ellison had contracted pneumonia and nearly died, and his biological mother believed that she could not afford to raise him (Southwick, 2003). When Ellison was an adult, his attempt to locate his biological father was unsuccessful.

Early schooling

In January 1958, Ellison went to elementary school in Chicago and later to South Shore High School when the family moved to the South Shore of Chicago (Symonds, 2003). Ellison had average grades in school. In 1962, he graduated from high school (Southwick, 2003).

College

Ellison was enrolled at the University of Illinois at Urbana-Champaign. During this time period, he studied physics. He had issues with authority similar to issues that occurred previously (Symonds, 2003). In his sophomore year, Ellison's adoptive mother was dying from pancreatic cancer. He dropped out of college and later enrolled at the University of Chicago, where he encountered computer programming for the first time. Ellison dropped out at age 20, bought a Ford Thunderbird, and headed to Berkeley, California (Symonds, 2003).

Early career

Ellison traveled to Berkeley, California and for a period of eight years, he bounced from job to job. He worked as a technician for the Fireman's Fund and Wells Fargo Bank. In 1970, he was employed with Amdahl Corporation as a part-time programmer who worked on IBM-compatible mainframes. In 1973, he was laid off (Symonds, 2003). Later, he was employed with Ampex Corporation to work on storage for audio and video data. Ampex had invented the magnetic tape recorder, and Ellison worked on increasing the amount of data that the company could store in their databases. At Ampex, the CIA funded a project, code-named Oracle, using the Ampex terabit member system. Ellison worked for Bob Miner and Ed Oates. Later, he worked for Omex as the vice president of research and development.

Lost founders of Oracle Corporation

Oracle Corporation was founded by Larry Ellison, Bob Miner, and Ed Oates. In Arun Rao's (2010) essay "Database Lords: Larry Ellison and his Lost Co-Founders (1977

through 2010),” the term *lost co-founders* alludes to the lack of information available about Miner and Oates (Rao, 2010). Although there are books and interviews about the two, I could not find specific information other than some mentions in books written about Ellison. Additionally, the information about what they did prior to founding Oracle Corporation was limited. I therefore questioned whether they should be considered founders. Oracle Corporation was Ellison’s idea to persuade his employer to allow him to bid on a contract. He knew two programmers, Miner and Oates, who could do the job, and he contacted them. He could have contacted any other two programmers and there might still be an Oracle.

The contract with the CIA is the critical point of the company’s history, and without the contract there would not been a database product to market. However, Rao (2010) stated that Miner and Oates were uniquely qualified for the project because of their “significant experience designing customized database programs for government agencies” (Rao, 2010, p. 219). Therefore, if Ellison had not worked with Miner and Oates in the past, he would not have asked for the opportunity to bid on the contract that led to the important contract with the CIA (Southwick, 2003). Oracle needed all three founders for it to exist, with Ellison as the leader founder and Miner and Oates as the genius founders (Figure 41).



Figure 41. Three Founders and First Employee

Source: Oracle (2011), right link year 1977.

Genius founder: Bob Miner

Robert N. “Bob” Miner was born on December 23, 1942. His parents were from a village in northwestern Iran. Miner grew up in Cicero, Illinois.

College

Miner received a degree in mathematics from the University of Illinois at Urbana-Champaign in 1963 (New York Times, 1994).

Early career

After graduating from college, Miner worked at the Applied Data Research Corporation (New York Times, 1994). He was Larry Ellison’s boss at Ampex. He worked on a storage system project (Symonds, 2003).

Personal Life

Miner was married and had children before cofounding Oracle.

Genius founder: Ed Oates

Ed Oates was born in 1946.

College

Oates received a degree in mathematics from San Jose State University in 1968 (San Jose State University, 2012).

Early career

Oates was part of the U S Army Personnel Information Systems command, and he worked for Ampex and Memorex before cofounding Oracle.

Personal life

Oates was married prior to cofounding Oracle Corporation.

First level: Concept stage

In 1977, Ellison worked with mass storage system for Precision Instruments, which had changed its name to Omex, as the vice president of research and development (Southwick, 2003). Ellison recalled:

I had always believed that at the top of these companies there must be some exceptionally capable people who make the entire technology industry work. Now here I was, working near the top of a tech company, and those capable people were nowhere to be found. The senior managers I saw were conformist, bureaucratic, and very reluctant to make decisions. Much to my surprise, I gradually became convinced that I was better at solving problems and making decisions than they were. Or at the very least I was willing to make a decision to do something, while they seemed paralyzed by endless analysis and fear of making the wrong decision. (Symonds, 2003, p. 58)

Ellison's work experience at Omex led him to believe he should start his own consulting company, but he worried that the consulting firm would not be able to find enough work. An opportunity arose at his job at Omex when the company was preparing a contract for a storage system. Ellison told the CEO that he knew of two

super programmers who could do the job. He asked the CEO if they could place a bid on the project. Ellison contacted Oates and Miner to form a consulting firm called Software Development Laboratories (SDL) in 1977. He owned 60% of the company, and Oates and Miner each got 20% of the company (Symonds, 2003). Ellison invested \$1,200, and Miner and Oates invested \$800 each (Symonds, 2003). All three founders would be considered Job to Venture entrepreneur because they left their current jobs to start their consulting firm (Vesper, 1990). SDL won the Omex contract for \$400,000 (Symonds, 2003). It also won contracts with Tandem, Amdahl, Memorex, and other computer firms. The consulting work helped fund product development, so the firm did not need any venture capital. Ellison, Miner, and Oates's prior work experience and relationships were an organizational asset to their new consulting firm (Oe & Mitsuhashi, 2013).

Miner showed Ellison a white paper written by Edgar (Ted) F. Codd called "A Relational Model of Data for Large Shared Data Banks" (Codd, 1970). Unfortunately for Codd, IBM had not seen commercial value in the SQL, but Ellison was inspired by the paper (Symonds, 2003).

Ellison began to read a series of Codd's papers. He commented that Codd's paper was theory and could not be used to develop a product. Later, IBM published a series of papers by Don Chamberlain that specifically discussed a prototype for a relational

database that IBM had built called System R. The papers also discussed SQL. Ellison said,

After a lot of careful reading and rereading of the System R papers, I decided we should throw out the work I had done on the CODASYL database and use the IBM papers as an architectural blueprint for our new database product. The opportunity was huge. We had a chance to build the world's first commercial relational database. Why? Because nobody else was even trying. (Symonds, 2003, p. 60)

Ellison's decision to abandon the current project and focus on developing a product based on the IBM papers could be an example of Bonabeau et al. (2008)'s suggestion that companies identify poor product projects in the early stages and eliminate them.

Second level: Initial product development

SDL entered the initial product development level when it decided to focus on developing a relational database. The founders believed that IBM would not be interested in developing a relational database for minicomputers because IBM wanted to protect its information management systems (IMS) database business and would focus on mainframes, not minicomputers.

Miner and Oates were the software developers on the project. Thanks to their extensive experience at Ampex Corporation, Miner and Oates developed the first version of the database software. The first version did not work well, but they believed their intellectual property would help them become a software company. During the 1970s, there were few pure software companies (Symonds, 2003).

Third level: Overcoming their catch-22

In 1977, SDL was able to overcome its catch-22 by initially starting a consulting company. By owning the consulting firm, they bid on database contracts and used their skills to generate revenue, which they used to pay bills and invest in the relational database product. The primary funding came from the Omex project.

However, the initial version of the software did not work really well and they did not have any customers to test the software in order to improve it to the point where it would be commercially viable; therefore, they would need additional funding and customers (Symonds, 2003).

SPECIAL NOTE: The revenue numbers from 1977 to 1980 were not available. To provide some idea of their revenue between 1977 and 1980, I needed to assume that the Omex contract and CIA contract started being funded in 1978. The Omex contract was for \$400,000 and the CIA contract was for \$50,000. In their books Southwick (2003) and Symonds (2003) mentioned that the company used the funds from Omex to fund the software development during 1978 and 1979. Therefore, 1977 had zero revenue, because the consulting firm started in October 1977. Also, the company had consulting work from Tandem, Amdahl, Memorex, and other computer firms. The consulting firm had \$200,000 in cash in its bank account during 1979 (Southwick, 2003). Based on Southwick (2003) and Symonds (2003), the best estimated revenue for Oracle was \$0 in 1977, \$200,000 in 1978, \$450,000 in 1979, and \$600,000 in 1980 (as shown in Appendix C). These numbers are based on available books and articles I was able to pull together to come up with each number. These are not the

actual numbers, but an assumption from the research material available. The actual numbers though provided full clarify. The actual numbers would have minimal impact on the study because the key events are the two contracts with Omex and the CIA that allowed Oracle to advance to the next level. A special note would indicate those years.

The CIA searched for a vendor that utilized Codd's research. First it went to IBM, but IBM was not interested in undermining its IMS database business. Dave Roberts from the CIA was in charge of finding a vendor. He founded SDL, which he renamed Relational Software, Inc. Roberts believed that the team had the experience from the Ampex terabit memory project to entrust it with the agency's money. Also, Relational Software was committed to the SQL language. Finally, Roberts knew that the company was developing the database to run on the PDP-11 minicomputer, which was being used by the government (Symonds, 2003).

Fourth level: Proof of concept

In 1979, SDL entered the proof-of-concept stage when the CIA awarded it a 3year contract (Symonds, 2003). SDL completed it in 2-years and spent the next year developing the commercial version of the software (Symonds, 2003). The CIA contract was worth \$50,000 (Pederson, 2005). SDL experienced its S-curve, as defined by Luecke (2003)—the point at which, in 1979, time and money intersected to indicate product performance or cost competitiveness.

In 1978, SDL began alpha testing of Oracle version 1. Later, the firm released its first product, called Oracle. Version 1 was written in assembly language and run on PDP-11 under RSX-11 in 128k of memory. The implementation separated the Oracle code from User code. Oracle 1 was never officially released (Oracle, 2011). As Ellison noted:

The first version of our database was called Oracle Version 2. I didn't think anyone, not even the government, would buy Version 1 of a database from five guys in California. Unfortunately, the Version 2 label didn't change the fact that we were experiencing those very serious performance problems predicted by conventional wisdom. We just couldn't make our database go fast enough. We tried one thing after another. Finally we got a breakthrough that delivered the tenfold performance improvement we needed for commercial viability. In our final test we ran faster than the CODASYL system, which was then considered the fastest PDP-11 database. (Symonds, 2003, p. 62)

In October 1979, the best testing of the Oracle version 2 occurred with Wright-Patterson Air Force Base (Symonds, 2003).

Fifth level: Forming the entity

The company reached the fifth level of forming an entity when it switched from being a consulting firm to being a software company. On June 16, 1977, the company was incorporated to serve as a vehicle for the Omex contract (Symonds, 2003). In June 1979, SDL was renamed Relational Software, Inc. to identify it with the product under development. The consulting firm was transformed into a software company with its product, Oracle. Oracle was the code name of the project that the founders had worked on when they were employed by Ampex Corporation (Symonds, 2003).

Sixth level: Operations

Relational Software, Inc., entered the operations level when it started to actively promote its database software, called Oracle version 2.

Build

The company was transitioning into being a software company. In 1980, it invested capital in scalability to increase the number of CPU 4. As a result, its revenue increased to \$1,218,000, with a headcount of 12 employees (as shown in Appendix C) (Oracle Systems Corporation, 1986).

Borrow

In 1981, IBM adopted Oracle for its mainframe systems (Oracle, 2011). This situation led to the doubling of Rational Software's sales every year for the next 7 years.

Rational Software invested in the development of interactive application facility that allowed customers to enter, retrieve, and format data in reports (Oracle, 2011).

Build

Oracle could run on different operating systems; before that, customers had had a choice only of hardware manufacturer (Oracle, 2011).

Build

As Oracle grew, it would only hire what Ed called "super programmers":

We decided, that there was at least a tenfold difference between your worst programmers and your best programmers. So we term those guys super programmers, and say so when we start a company, we are only going to hire super programmers, super engineers, super sales people, and super support people. We don't need, if you look at a bell curve, we don't need anybody on the left side of bell curve. We are looking at this top 10%. You rather leave a chair empty, than hire the

wrong person in that chair. (Oracle 2011, "Prototype Help Sell RDBSMS," right link year 1981)

Build

Rational Software attracted a major player, Umang Gupta, to the company. He wrote the first business plan and served as vice president and general manager. Part of writing the business plan also helped lay out the business model. Oracle's value proposition was scalability (Osterwalder & Pigneur, 2010). Oracle set up multiple sales offices so employees could meet customers in person to show off the products. In 1982, the company had revenues of \$2,473,000 and 35 employees (as shown in Appendix C) and the Rational Software was renamed Oracle Systems Corporation (Oracle, 2011).

Build

In 1982, 26 of Oracle's 35 full-time employees focused on sales and marketing efforts. The company had revenues of \$2.5 million (as shown in Appendix C) (Oracle Systems Corporation, 1986). It reinvested a quarter of the revenues in research and development. Oracle spent \$958,000 on marketing and distribution (as shown in Appendix C) (Oracle Systems Corporation, 1986).

Build

In 1982, Oracle released Oracle v2.3, which provided a new user interface and allowed for non-programming technicians to use the software (Oracle, 2011).

Build

In 1983, Oracle invested \$1,287,000 in research and development (as shown in Appendix C) (Oracle Systems Corporation, 1986). It released Oracle v3, which was written in C language and available for mainframes, minicomputers, and personal computers. The company's revenues grew to \$5,037,000 in 1983 (as shown in Appendix C).

Build

In 1983, Oracle's marketing campaign was to compare its products to those of its competitors (Oracle, 2011). The marketing campaign was successful. Oracle was able to reach \$12,715,000 in revenue (as shown in Appendix C).

Borrow

In 1984, Oracle received its first venture capital investment: \$25 million from Sequoia Capital (Oracle Systems Corporation, 1986). It had revenues of \$12.7 million (as shown in Appendix C) (Oracle Systems Corporation, 1986).

Seventh level: Systems stage

Oracle reached the system level, when it received \$25 million from Sequoia Capital (Oracle Systems Corporation, 1986). Oracle was able to attract Sequoia Capital because it had revenue, customers, and experienced managers and was part of a growing industry (De Clercq et al., 2006). The capital infusion allowed the company to continue to grow rapidly, and the management team started to take shape.

Build

In 1984, Oracle invested \$2,009,000 in research and development (Oracle Systems Corporation, 1986). It released Oracle v4, which introduced Read Consistency. This

feature made sure that a set of data from a query would be executed consistently. The added feature provided more accuracy which attracted additional vertical markets such as banks, which would get fewer data errors. Other improvements made version 4 fifteen times faster and provided export and import of information (Oracle Systems Corporation, 1986). The improvements in the software and the investment in research and development brought Oracle's revenue to \$23,159,000 as shown in Appendix C).

Build

In 1986, Oracle released new features such as Easy Link, Oracle Ada, Oracle SQL CALC, and the SQL Star open system (Oracle, 2011).

Eighth level: Community

Oracle entered the community level when it filed to go public. In 1986, Oracle went public and raised \$55 million (Table 4.56) (Oracle Systems Corporation, 1986). The funds were used to increase the operations and software development. In 1986, Oracle had \$55,383,000 in revenue and 556 employees (as shown in Appendix C) (Oracle Systems Corporation, 1986).

Build

In 1987, Oracle created an application development division to compete with SAP (Oracle, 2011). It created a value authorized-reseller alliance program. Oracle wanted to be a product leader. Cross (2011) stated that companies need to focus on key capabilities in order to be a product leader. Oracle invested over \$7 million in research and development. Oracle had 4,500 business customers in 55 countries (Oracle, 2011). It created a consulting and support service to help its growing

customer list with the installation of the Oracle software program and launched a magazine that provided up-to-date information to its customers. In 1987, Oracle surpassed the \$100 million mark, with \$131,271,000 in revenue and a headcount of 1,072 employees (as shown in Appendix C) (Oracle System Corporation, 1987).

Buy: Acquisition

Oracle's first acquisition was TCI for its project management software (Oracle Systems Corporation, 1988). Oracle had reached a point in its life cycle it could differentiate its product and services (Hatch, 2006). The acquisition boosted Oracle's revenue to \$282,113,000 with a headcount of 2,207 employees in 1988 (as shown in Appendix C) (Oracle System Corporation, 1988).

Borrow

In 1988, Oracle campaigned with hardware and other software companies for partnership deals (Oracle, 2011). In the second year of its value-added resellers, Oracle attracted 225 companies (Oracle, 2011).

To attract more personnel, Oracle's human resources department created a college hiring program. Based on Oracle's standard for higher education, the company went to the best computer science degree programs to recruit employees (Oracle, 2011).

Build

In 1988, Oracle released an update that would support database management systems (DBMS) for high-speed transaction processing and fault tolerance. Oracle also offered row-level locking, which meant that a transaction being performed would

lock only the affected rows and not the whole table (Oracle Systems Corporation, 1989). The improvement helped revenue reached \$583,673,000, and the company had a headcount of 4,418 employees in 1989 (as shown in Appendix C) (Oracle Systems Corporation, 1989).

Buy

Oracle bought Falcon Systems, a system integrator (Oracle, 2011). The acquisition would be considered a full acquisition, based on Cross's (2011) definition, because Oracle acquired 100% of the company.

Ninth level: Segmentation

Oracle entered the segmentation level, when it was added to the Standard & Poor's 500 Index with revenues of \$583,673,000 and 4,148 employees in 1989 (Oracle Systems Corporation, 1990). It moved its headquarters to Redwood Shores, California. The new campus allowed Oracle to expand and grow (Oracle Systems Corporation, 1990). However, Oracle was forced to amend its SEC filings. The amended filings showed that those revenues were overstated. Unfortunately, Oracle had a first-ever quarterly loss, forcing the company to lay off hundreds of employees (Oracle Systems Corporation, 1990). Oracle reported \$970,844,000 and had a headcount of 6,811 in 1990 (as shown in Appendix C) (Oracle Systems Corporation, 1990).

Greiner (1972) discussed the crises that companies face as they grow their business (Hatch, 2006). Oracle was nearly doubling its sales every year for many years, but it

was facing a crisis of control. As Hatch (2006) described it, during that time Oracle was establishing formal policies and procedures and decentralizing decision making through delegation. It lost a level of decision making. Ellison therefore restructured the management team. In an interview with Charlie Rose, Ellison commented, “We changed the management team to manage a \$1 billion company, not a \$50 million company” (Rose & Castleman, 1996). In 1991, Oracle was able to surpass the \$1 billion in revenue mark, but it had a loss of \$12,401,000 (as shown in Appendix C) (Oracle Systems Corporation, 1991). The company had 7,466 employees (as shown in Appendix C) (Oracle Systems Corporation, 1991). Larry Ellison was the chairman, CEO, and president. He commented, “You pay a price for growing too rapidly” (Rose & Castleman, 1996).

Build

In 1991, Oracle created a new division, the New Technology Division, to develop multimedia systems, client/server applications, and pen-based computing packages.

Abroad and borrow

In 1991, Oracle took a minority stake in the Nippon Steel Corporation (Oracle Systems Corporation, 1991). Minority stake allows a company to gain access to a new product, market, or distribution channel that can be useful to the company (Cross, 2011). Oracle’s reason for buying a minority stake in Nippon Steel was to sell its products on the Japanese market (Software Industry Report, 1991).

Build: Software development

In 1991, Oracle released Oracle 7 with new features and enhancements: forms and case tools to assist customers in building their own business applications (Oracle, 2011). The forms and case tools were renamed Oracle Designer.

Build: 1992: Software

Oracle added full auditing and administration features. It recoded the Oracle software with new technologies (Oracle, 2011). In 1992, Oracle's stock bounced back and the new management restructuring took place (Oracle Systems Corporation, 1992).

Build: 1993

Oracle released the cooperative development environment (CDE) Toolset, delivering a visual object modeling approach for automating every step of the application development life cycle.

Tenth level: Living enterprise

Between 1994 and 1995, Oracle became a living entity. In 1995, revenues were \$2.9 billion; it had 16,882 employees worldwide (as shown in Appendix C) and a market cap of \$12.9 billion (Oracle Systems Corporation, 1995). Oracle had \$480 million in cash and \$2.4 billion in total assets (as shown in Appendix C) (Oracle Systems Corporation, 1995). Based on the definition of living enterprise, Oracle reached that point between 1994 and 1995, after it recovered from the financial overstatement of revenue. Oracle's revenue for 1994 was \$2,001,147,000, with a headcount of 12,058 employees, and for 1995 it was \$2,966,878,000 with a headcount of 16,882 employees.

Buy: 1994

Oracle acquired Digital Equipment Corporation for its OpenVMS technology (Oracle Systems Corporation, 1994).

Build: 1994

Oracle developed multimedia server for image, video, and audio. In the same year, Oracle released the authoring tool for the multimedia server (Oracle, 2011).

Build: 1995

Oracle announced the network computing model, which saved data on the server instead of the personal computer. Ellison embarked on a public relations campaign (Oracle, 2011).

Buy: 1995

Oracle acquired Information Resources, Inc., for \$100 million to gain online analytical processing capabilities and data warehousing. It developed parallel query for data warehousing (Oracle Systems Corporation, 1995). This was a full acquisition. Cross (2011) discussed the importance of integrating the two companies to make sure the acquisition was a successful one.

Build: 1995

Oracle released a web system, its web application platform, and Designer 2000 for modeling business functions (Oracle, 2011).

Oracle growth strategy

Oracle primarily used the build, borrow, and abroad growth strategies, as shown in Figure 42. It developed its own software products and consulting services. Oracle's

strategy was to develop a strong sales force with sales offices around the world. It was able to benefit from IBM's selecting the Oracle database, which helped Oracle double its sales every year (Figure 43). The appointment from IBM meant that major organizations viewed Oracle as an option.

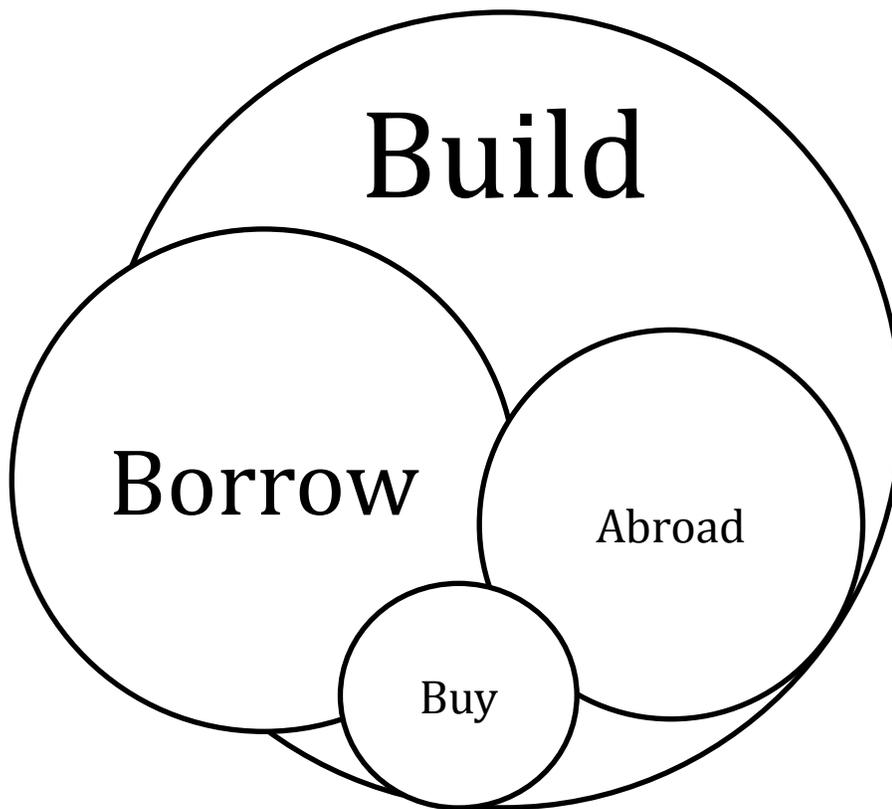


Figure 42. Oracle Growth Options: Build, Borrow, Buy, and Abroad

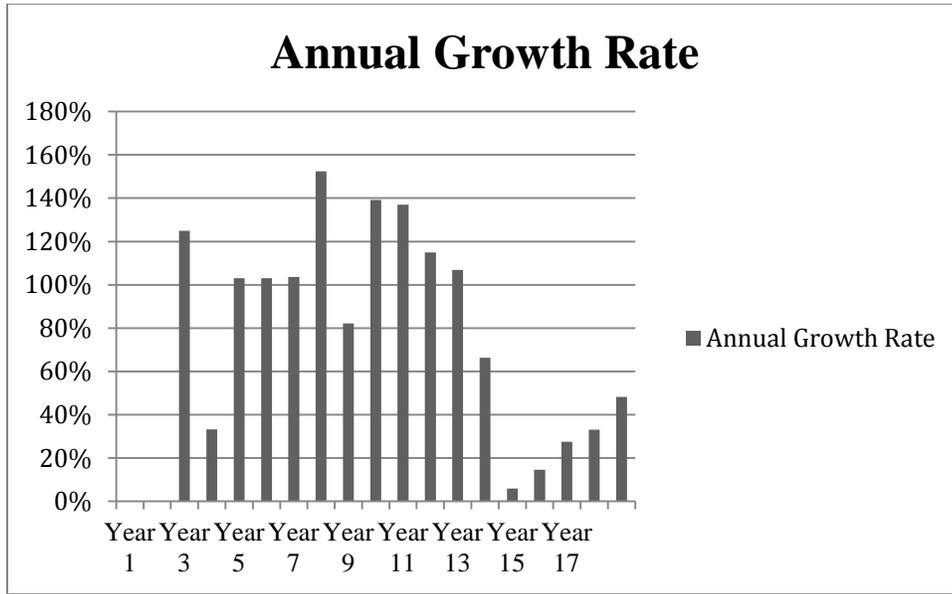


Figure 43. Annual Growth Rate

Figures 44, 45, and 46 provide additional information on Oracle. Figure 44 shows that Oracle spent on average 15% of its revenue on research and development and 47% on marketing and distribution between year 5 and year 19. Figure 45 shows that foreign revenue was a significant portion of overall revenue. In some years, foreign revenue exceeded domestic revenue. Additional financial data can be viewed in Appendix C for Oracle. Figure 46, shows the Oracle timeline with the events that caused Oracle to enter the next level.

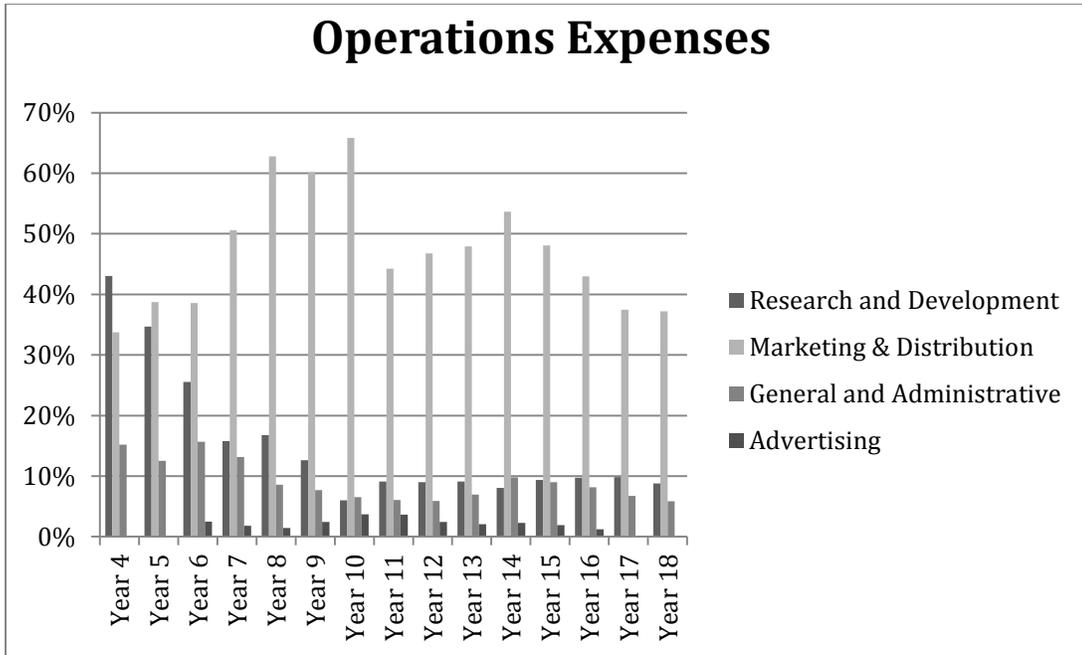


Figure 44. Operations Expenses

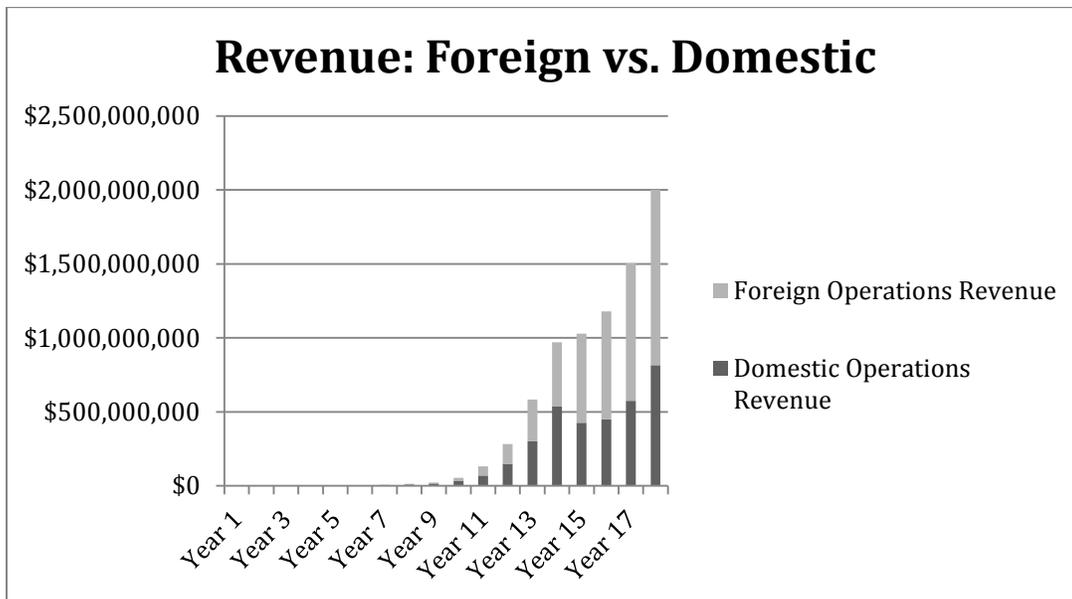


Figure 45. Revenue: Foreign vs. Domestic

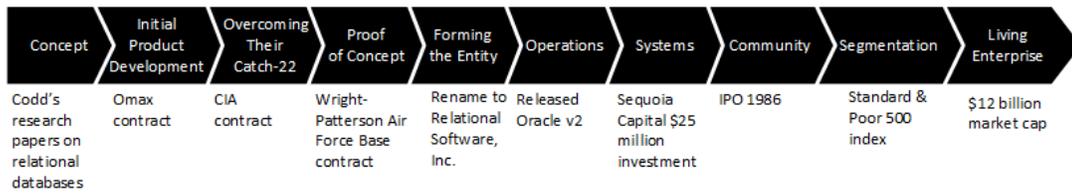


Figure 46. Oracle Timeline

Google, Inc.

Leader founder: Larry Page

On March 26, 1973, Lawrence “Larry” Page was born in East Lansing, Michigan to Carl Page, a computer science professor at Michigan State University, and Gloria Page, a professor at Michigan State University (Vise & Malseed, 2005).

Early school

Page went to Okemos Montessori School and attended East Lansing High School. At the early age of 12, he already wanted to start his own company (Vise & Malseed, 2005).

College

Page was enrolled at the University of Michigan, where he received a bachelor’s degree in computer engineering. Afterward, Page went to Stanford University, where he earned a master’s in computer science and enrolled in the Ph.D. program in computer science (Vise & Malseed, 2005). His proposed dissertation was on exploring the mathematical properties of the World Wide Web by understanding how its structure links. Terry Winograd, his dissertation advisor, encouraged him to explore his idea. Page believed that when a website publisher posts a link to another

website, it is a sign that the website has valuable information. In March 1995, he met Sergey Brin, who was working on data mining (Vise & Malseed, 2005).

Early career

Page was a full-time Ph.D. student at Stanford University.

Genius founder: Sergey Brin

On August 21, 1973, Sergey Mikhaylovich Brin was born in Moscow, Russia, to Mikhail “Michael” Brin, a professor of mathematics at the University of Maryland, and Eugenia Brin, a housewife (Brandt, 2011). Mikhail Brin wanted to be an astronomer, but he was discriminated against in the Soviet Union based on his religion and moved his family to America (Brandt, 2011).

Early schooling

Sergey Brin immigrated to the United States from Russia. He went to Paint Branch Montessori School in Adelphi, Maryland. Sergey Brin got a Commodore 64 computer when he was 9 years old (Brandt, 2011).

College

Sergey Brin enrolled at the University of Maryland to study computer science. He was accepted into a fellowship program from the National Science at Stanford University and went on to pursue a Ph.D. at Stanford University.

Early career

Brin worked for Wolfram Research, General Electric Information Services, and the University of Maryland Institute for Advanced Computer Science (Brandt, 2011). Also, he was a full-time Ph.D. student at Stanford University.

First level: Concept

In 1995, Larry Page and Sergey Brin entered the concept level when Page was a Ph.D. Student in Stanford University's Department of Computer Science (Brandt, 2011). Page was interested in finding topics for his dissertation and wanted to explore the mathematical properties of the World Wide Web, which led him to the linking structure of the Internet. Winograd encouraged him to explore his idea. Page focused his attention on the problem and on how and why different websites were linked to other websites. He considered the nature and the number of links, and determined how links posted on different websites provided relevant and important content. Page used academic citation experience to cite the web and believed that the "...entire web was loosely based on the premise of citation after all; what is a link but a citation?" (Battelle, 2005). He called the project "Backrub" after the backlinks.

In 1995, Page met Brin at Stanford when Brin showed him around campus (Brandt, 2011). Luecke (2003) explained that when a person has a concept he or she seeks feedback and assistance from friends and family. Page reached out to Brin, who was interested in data mining for human knowledge. He joined Page on his Backrub project. They tried to develop a method of counting and qualifying each backlink so they could rank their importance.

Second level: Initial product development

In 1996, Page and Brin entered the initial product development phase when they developed Backrub as a web crawler that would measure the importance of a given web page (Brandt, 2011). A part of Backrub was an algorithm that they called

PageRank, which would rank the web pages based on importance. PageRank analyzed the relevance of backlinks pointing to a web page. The higher the ranking of the web page, the higher the importance attributed to it. Luecke's (2003) S-curve helped explain how two Ph.D. students were able to compete against fully funded search engine competitors. The S-curve suggested that when a technology is out in the marketplace and more competitors enter the marketplace—in this case, Internet search engines—the cost of producing or developing the technology decreases, allowing even more competitors to enter the marketplace at a cheaper cost than the first player (Luecke, 2003).

Third level: Overcoming their catch-22

Page and Brin entered the third level when they overcame their catch-22. They had the skill set to develop the initial version of Google and used sweat equity to develop the website by using resources at Stanford to host the website in August 1996 as well as the university's brand name and their established relationship with the university (Brandt, 2011). Furthermore, Page and Brin were Ph.D. students at Stanford, and association with a world-renowned program can help open doors. They raised funds from friends and family as well as from several faculty members. Brin had prior experience working for Wolfram Research, General Electric Information Services, and the University of Maryland Institute for Advanced Computer Science during the summertime, which Eesley and Roberts's (2012) study suggested might have assisted in the performance of his new start-up company. Also, Eesley and Roberts (2012) seemed to view Page's talent in developing the concept as a benefit that also helped

increase the venture's performance and thereby its success, while Oe and Mitsuhashi (2013) could have deemed Page and Brin's computer science degrees an organizational asset. Both studies provided insight that prior experience and talent are more important than venture experience or experience starting companies.

Fourth level: Proof of concept

In August 1996, Page and Brin entered the proof-of-concept level (Brandt, 2011), when they launched the initial version of Google on Stanford University's website (Figure 47) (Blogoscoped, 2006).



Figure 47. The Home Page of Google in 1997

Source: Blogoscoped (2006), para. 1.

In 1997, Page and Brin renamed the webpage Google after the mathematical term *googol*, a number represented by the numeral 1 followed by 100 zeroes (Brandt, 2011).

Fifth level: Forming the entity

In August 1998, Page and Brin entered the forming-the-entity level when they were able to persuade Andy Bechtolsheim, cofounder of Sun Microsystems, to invest \$100,000 after he heard about the website (Brandt, 2011). Additionally, Susan Wojcicki provided workspace for Google (Figure 48) (Blake, 2010).



Figure 48. Susan Wojcicki

Source: Blake (2010), para. 3.

On September 4, 1998, Page and Brin incorporated Google, Inc., and deposited the check from Bechtolsheim. In December 1998, Google appeared in *PC* magazine for providing relevant results and was chosen as one of the top 100 websites in 1998 (Brandt, 2011).

Google then received \$1 million from three angel investors, including Jeff Bezos. In 1999, the company moved its workspace from a garage to 165 University Avenue, Palo Alto, California, with eight employees (Brandt, 2011).

Sixth level: Operations

In June 1999, Google entered the operations level when it received \$25 million from Sequoia Capital. The funding from Sequoia Capital was a major investment in Google at a very early stage. Parks (1976) suggested that a large sum of capital allows entrepreneurs to be able solve problems quickly. They moved to 2400 E. Bayshore to provide more space for their growing workforce (Google, 2013). In November 1999, Google had 40 employees (Google, Inc., 2004). The employees were mainly developers who expanded the website offering and technology. Google achieved revenue of \$220,000 and a loss of \$6 million (as shown in Appendix D) (Google, Inc., 2004).

Build and abroad: Product development

Google released 10 foreign-language versions of google.com for French, German, Italian, Swedish, Finnish, Spanish, and Portuguese. In September 2000, Google released its search engine in Chinese, Japanese, and Korean (Google, 2013).

Build: Product development

Google launched Adwords with 350 customers. Adwords allowed advertisers to create text ads next to organic searches (Google, 2013). Google was making incremental change to its search engine. Kim and Mauborgne (2005) discussed value innovators and how they can find business opportunities. Google wanted to work with advertisers directly rather than going through a third party, and Google wanted to use text advertisements instead of banners (Brandt, 2011).

Borrow

Google signed a partnership with Yahoo to become its default search engine. The Yahoo partnership sent tens of millions of users to Google's search engine. Both Google and Yahoo received millions from Sequoia Capital. Moreover, Sequoia helped form the partnership, and Google had an index of over a billion web pages (Vise & Malseed, 2005).

“The Yahoo people were very interested in Google as a search engine to power their service,” help us become an investor in the company because they thought it would help Yahoo.” Moritz said Sequoia was inclined to invest in Google in part to assist Yahoo—“for us to help ensure that Yahoo was taken care of. They were viewing Google correctly. Nobody understood in 1999 how things were going to evolve. Google was a potential vendor to Yahoo. It seemed to us that the Internet had spawned two useful applications: one was email and the second was search. They had built a better search trap.” (Vise & Malseed, 2005, p. 65)

Kaats and Opheij (2014) noted that when a company is no longer large enough to handle every project, partnering with other companies that focus on one area may provide major benefits. The partnership between Google and Yahoo! provided Yahoo with a better search engine and Google with users and exposure. Google's revenues jumped to \$19,108,000 with the help of the Yahoo partnership (Google, Inc., 2004).

Seventh level: Systems

Between 2000 and 2001, Google entered the system level following the deal with Yahoo and Sequoia Capital. Google began a process of building its management team to manage its rapid growth. Furthermore, Google hired Wayne Rosing as the first vice president of engineering operations.

Buy and Integrate

On February 12, 2001, Google closed on its first acquisition when it bought the Deja.com usenet discussion service, which had 500 million usenet discussions dating back to 1995 (Google, 2013). Deja.com helped to create Google's groups.

The board of directors did not believe that Page or Brin had the experience necessary to manage the growing company. Page and Brin therefore agreed to name Eric Schmidt chairman of the board of directors. Later, in August 2001, Eric Schmidt was named CEO. Page and Brin were named president of products and technology. At the end of 2001, Google had revenue of \$86,426,000 (as shown in Appendix D) (Google, Inc., 2004).

Buy and integrate

On September 20, 2001, Google closed on its second acquisition, Outride (Google, 2013), a search engine company. Google integrated it into its search engine, which helped it personalize its search engine.

Build and abroad

At the end of 2001, Google supported 26 language websites (Google, 2013).

Abroad

Google opened its first overseas office in Tokyo, Japan (Google, 2013).

Borrow

Google built its partnership with Universo Online, which made it the major search engine for Latin America. Kaats and Opheij (2014) stated that search engines are not Universo core competencies, and Google wanted to enter the Latin American market.

The partnership provided Universo Online with a better search engine and Google with entry into the Latin American market (Kaats & Opheij, 2014). They used word of mouth and public relations to increase brand awareness. Other partnerships similar to the one with Universo assisted Google in becoming a worldwide brand. Google released application programming interfaces (API) to allow third-party developers to create applications for the Google search engine. It created a partnership with AOL to offer Google search to its 34 million customers and make them aware of Google. The partnership in Latin America helped Google's revenue grow to \$439,508,000 at the end of 2002 (as shown in Appendix D) (Google, Inc., 2004).

Build and abroad

Google continued to add new languages to its websites. In February 2002, Google supported 72 languages (Google, 2013). Google also introduced its cost-per-click pricing model.

Build

Google launched the News search, which focused on news articles and press releases, and the Product search, which allowed users to compare prices from different retailers. Developing new features and products helped revenue grow to \$1,465,934,000 (as shown in Appendix D) (Google, Inc., 2004).

Buy and integrate

Google acquired Pyra Labs for its blogging platform (Google, 2013).

Build

Google released the Book search, allowing its users to focus on finding relevant books based on keywords. It reached 6 billion web items.

Eighth level: Community 2003–2006

In 2004, Google entered the community level when it was preparing to go public (Google, Inc., 2004). To continue to grow its workforce, Google built Googleplex, a world headquarters with 800 employees on campus (Google, 2013). Google also created an enterprise division to focus on large customers. It fine-tuned its search engine to focus on local communities, which allowed users to find places, people, products, and content in their local area. Google released Desktop search, which allowed users to search for items on their personal computers. It released Google Scholar to search for scholarly articles. Furthermore, Google expanded the number of indexed web pages to 8 billion during this level and had an index of up to 1.1 billion images (Google, 2013). At the end of 2004, Google had revenue of \$3,189,223,000 with a headcount of 1,907 employees (as shown in Appendix D) (Google, Inc., 2004).

Ninth level: Segmentation

Between 2002 and 2004, Google entered the segmentation level when the company was building, buying, and integrating new product categories. Google launched Google Calendar, Google Trends, Google Finance, Google Checkout, Google Reader, iGoogle, Gmail, Google Transit, and Google Talk. It added multiple languages to several of its offerings (Google, 2013).

Abroad

Google opened offices in Dublin, Ireland; Bangalore and Hyderabad, India; and Tokyo, Japan. Google moved up the Greiner life cycle within a short period of time. It was already in the collaboration phase, buying companies and setting up foreign operations (Hatch, 2006).

Buy and integrate

Google acquired Keyhole and rebuilt it as Google Earth. Google acquired Writely, a web-based word-processing application, and rebuilt it as part of Google Docs, buy, integrate, and rebrand (Google, 2013). The Google buy-and-integrate process helped increase revenue to \$6,138,223,000 with a headcount of 3,021 employees (as shown in Appendix D) (Google, Inc., 2005).

Tenth level: Living enterprise, 2006

Google became a living enterprise with revenues of \$10 billion, earnings of \$3 billion, and cash on hand of \$3.5 billion (Google, Inc., 2006). Google's total assets were \$18 billion, and it was able to maintain itself as a public company (Google, Inc., 2006). Moreover, Google ended 2006 with \$10,604,917,000 and had a headcount of 10,674 employees (as shown in Appendix D) (Google, Inc., 2006).

Build: 2006

Google added custom domain names to several product offerings. Google Books added the ability to search PDFs. It provided an archive search for Google News and launched Google Patent Search and Google Hot Trends. Google used a custom-made vehicle built with cameras to develop Google Street View so that users could see

street-level images of locations, and added additional features to Google Earth such as layers for constellations and virtual tours of galaxies. It added Google Presentations to Google Docs to provide a slide-show creator (Google, 2013).

Borrow

Google partnered with China Mobile to provide mobile search.

Borrow

Google partnered with Apple to provide maps to its mobile users.

Borrow

Google partnered with Salesforce to expand its Google AdWords. It launched OpenSocial, a common API for developers to build social network applications.

Google growth strategy

Google's primary growth strategy was to build. Early on, Google recognized the importance of direct relationships with its advertisers and created AdWords, an innovative advertising platform allowing advertisers to use keywords to target their potential customers. Luecke (2003) explained that companies sometimes have an opportunity to discover an idea that solves a problem—in this case, how to find people who want to buy a product. Google also bought over 30 companies during the study period. Google bought and then integrated the acquired company products and services into Google operations and branding, then spent additional capital to improve the product offering under the Google name. Thus, it practiced the buy, integrate, and build strategies. Google used the borrow growth strategy early on with licensing deals with Yahoo!, AOL, and Universo, which allowed the Google brand to quickly enter

the public vocabulary. Figure 49 shows the growth options for Google. The build option is the large circle because the other three growth strategies all lead back to Google building products. The other three—borrow, buy, and abroad—are nearly equal in size because of the impact of each on Google’s operations during the study period. It developed its own products. Figure 50 shows the annual growth rate.

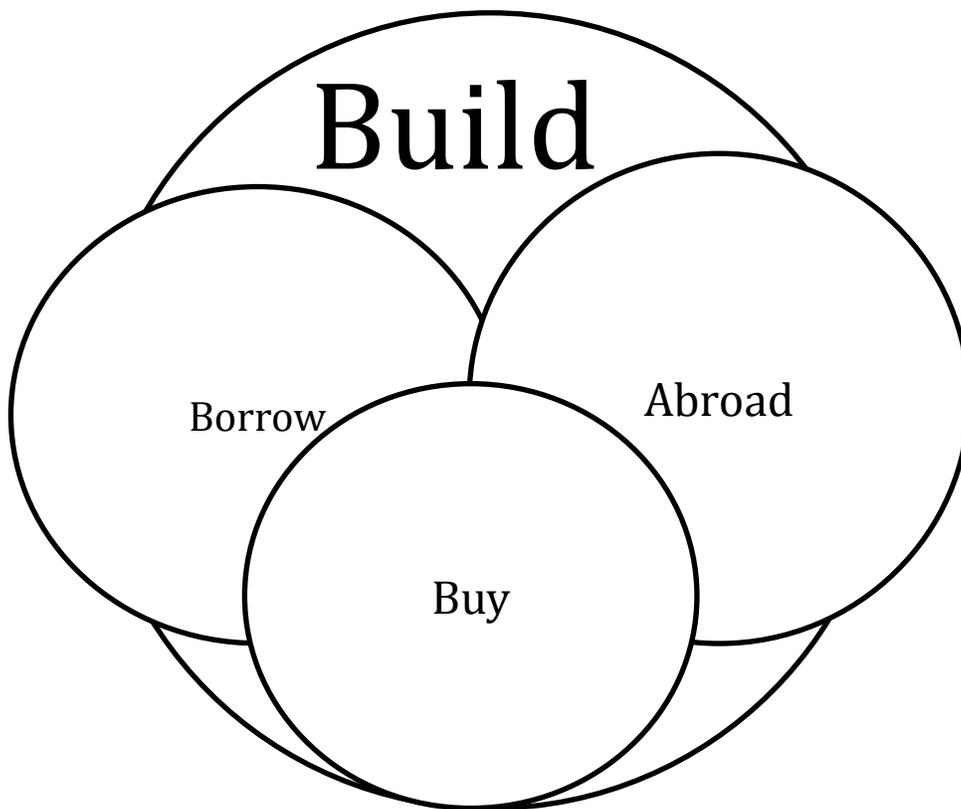


Figure 49. Google Growth Options: Build, Borrow, Buy, and Abroad

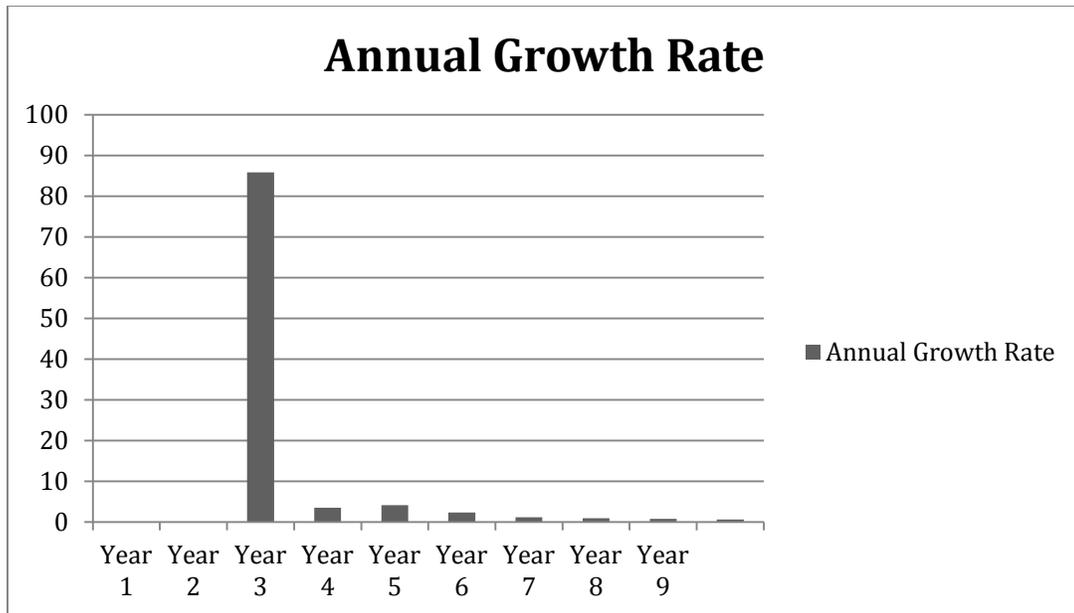


Figure 50. Annual Growth Rate

Figures 51, 52, and 53 provide additional information on Google. Figure 51 shows that Google spent on average 162% of its revenue on research and development and 99% on marketing and distribution; 162% and 99% were possible because Google received venture capital so early in the company life cycle. Google was a three-person company and received \$25 million, allowing it to expand quickly. Google used the investment on research and development. The first year of operations, Google spent \$3 million on research and development, \$1.6 million on marketing and distribution, and \$1.2 million on general and administrative, while taking in only \$220,000 in revenue. However, the next year Google had \$19 million in revenue at a growth rate of 8585%. Figure 52 shows Foreign operations revenues averaged 33% of Google annual revenues during the study period due to its quick entry into foreign markets by creating separate Google websites for each country in its own language. Additional

financial data can be viewed in Appendix D for Google. Figure 53 shows the timeline.

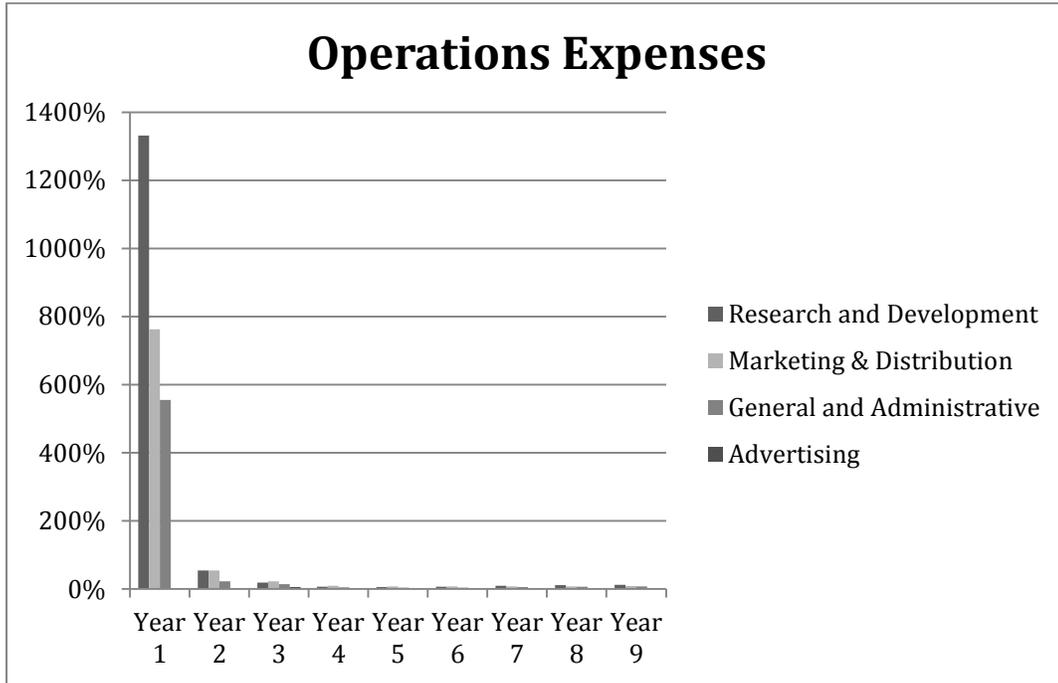


Figure 51. Operations Expenses

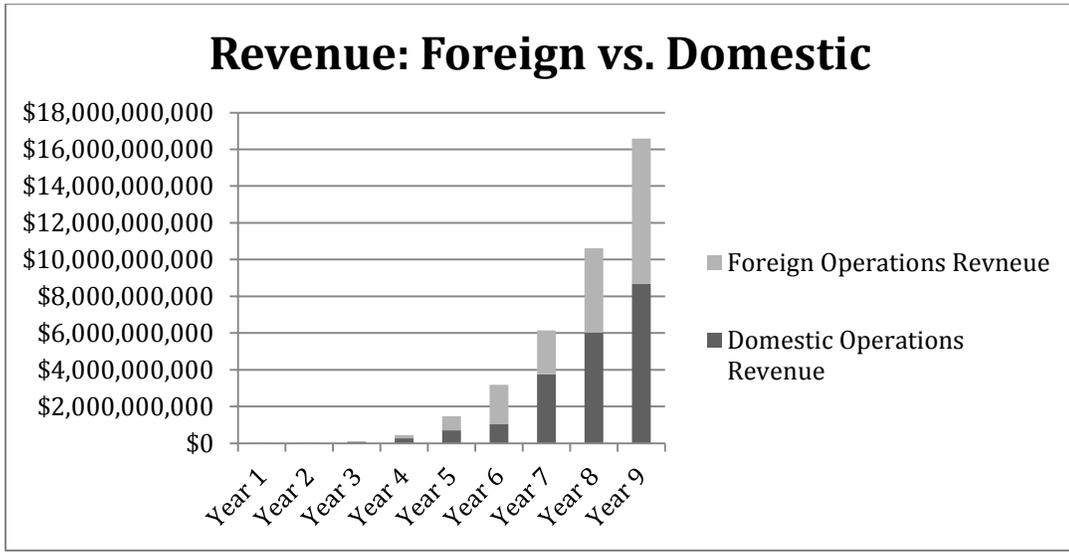


Figure 52. Revenue: Foreign vs. Domestic

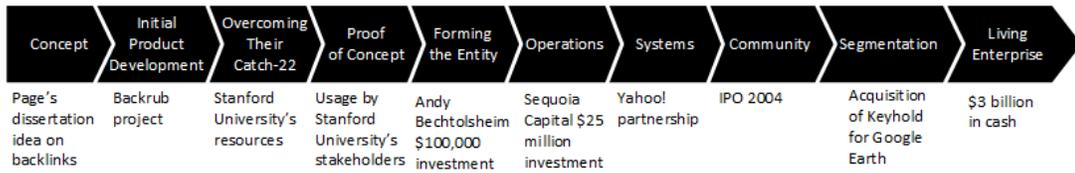


Figure 53. Google Timeline

Chapter 5: Analysis and Discussion

Introduction

The four companies, derived from a selection process among 500 companies (Figure 11), found their white space and used the blue ocean strategy to create new products that exploited existing technologies. They created companies in uncharted territory or underserved markets using different business models that much larger companies did not see as part of their core business or white space (Johnson, 2010). Similar to white space, blue ocean strategy is about creating new demand in uncontested market space, where the company is not competing head to head with many competitors. The blue ocean strategy is also about creating a fair process and changing the status quo (Kim & Mauborgne, 2005). White space and blue ocean strategy have some similarities to Greiner's (1972) explanation on rapidly expanding markets. Greiner (1972) explained that rapidly expanding markets have more companies that need to add new employees, acquire new resources, and make major changes to their organization structures, compared to more mature industries whose organization structures take longer periods to change.

Key Examples

Apple Computer, Inc.

Steve Jobs and Steve Wozniak were not the inventors of the personal computer, the graphical user interface, or the mouse, but they found their white space by creating a personal computer that was easier for mainstream consumers to use (Isaacson, 2011).

Xerox created a personal computer with a graphical user interface and the mouse in the late 1960s to 1970s (Cringely, 1993). But the company's organizational structure had become less interested in taking on big risk and changing its business model (Johnson, 2010). The personal computer market was a new market with few competitors. It was a new blue ocean strategy.

Microsoft

Microsoft found its white space with the IBM deal. Digital Resource Corporation had the opportunity to be the source for the operating system used with every IBM personal computer, but it focused too much time on the language and terms of the contract. Consequently, the two companies were unable to reach an agreement (Cringely, 1993). Bill Gates saw the opportunity to exploit IBM's industry influence to find a distribution channel for Microsoft's products. Paul Allen, who offered an operating system similar to the one created by SCP, developed the operating system from the manual of Digital Resource Corporation (Cringely, 1993). Seattle Computer Products sold the operating system to Microsoft for \$50,000 (Allen, 2011). Microsoft further developed the operating system for IBM and made sure IBM would license the software to other computer hardware vendors (Cringely, 1993). Microsoft's blue ocean strategy was to secure license for the operating system to other computer hardware companies.

Oracle

Oracle's white space was a relational database based on the IBM articles by E. F. Codd. IBM executives were not interested in entering into the database space. Larry

Ellison read Codd's article and believed the technology would be the future of databases. His consulting firm, SDL, used a project to create a database software that was awarded to SDL by the CIA after a former employer was not able to complete it. Larry Ellison used the opportunity to create a relational database called Oracle. IBM later adopted the Oracle database. Oracle's blue ocean strategy was to show customers the benefit of Oracle's in-person demonstrations. Oracle's revenue doubled each year for 10 years (Oracle Systems Corporation, 1986; Oracle, 2011).

Google

Google found its white space when it found a way to create better search results.

Larry Page and Sergey Brin created an algorithm based on the idea that backlinks gave websites more creditability (Brandt, 2011). The backlinks led to page ranks.

Page and Brin did not create the first search engine: they created a search engine that provided users with a better experience (Vise & Malseed, 2005). Google's blue ocean strategy was creating an advertising platform that allowed advertisers a better way to target potential through keywords that users were entering into Google.

In each example of white space, the four company founders saw business opportunities in uncharted, underserved, or uncontested markets by exploiting existing technology. A founder has a vision of how things should work rather than focusing on how things already work (Johnson, 2010). The early decisions a founder makes have a major impact on a company's life cycle and on the industry as a whole (Greiner, 1972). And those decisions are the reason these founders succeeded while others failed.

General Growth Process

I combined the results of this study based on the four companies which led to the creation of the general growth process: concept to living enterprise model (Figure 54). The general growth process model is a useful tool for entrepreneurs seeking a better understanding of the journey from a concept to a living enterprise.

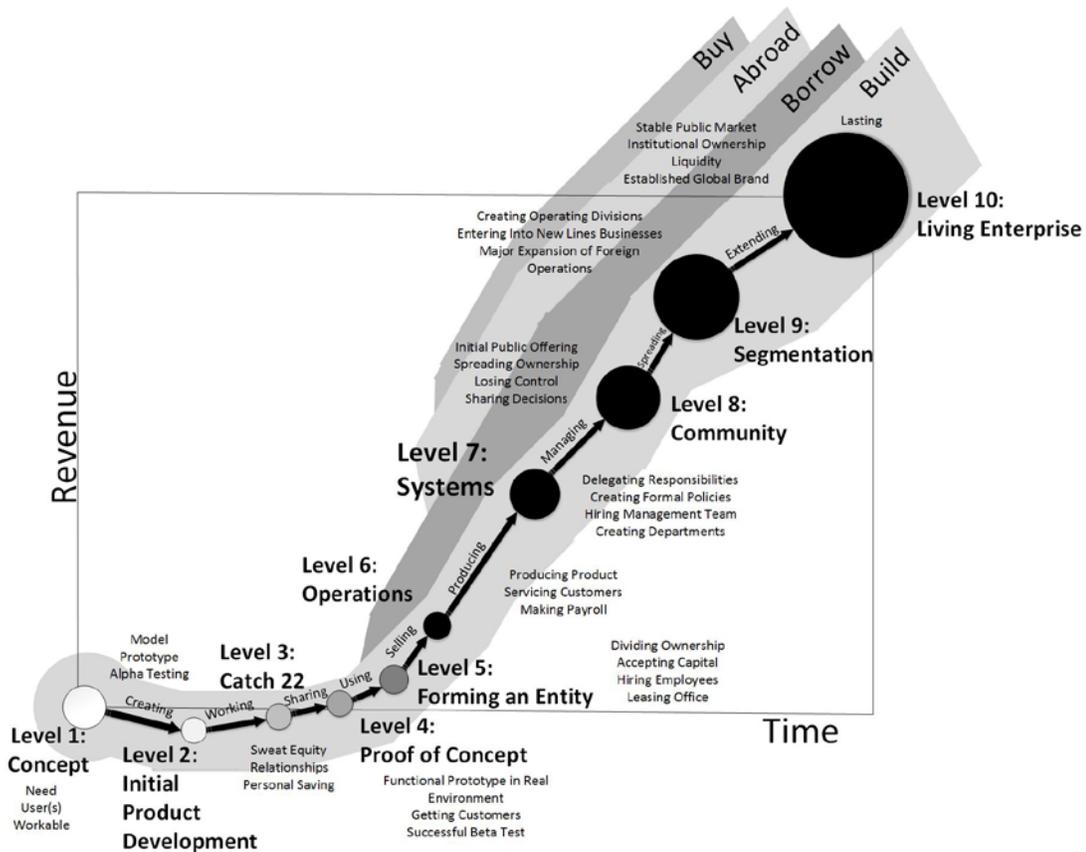


Figure 54. General Growth Process: Concept to Living Enterprise

The general growth process model is a combination of the 10 levels (defined in Table 3) and growth strategies used by the four case study companies to become living enterprises. As shown in Figure 54, the levels are presented in dots. The white to dark gray dots from Level 1 through Level 5 indicate the assembling of a company. A dot

becomes darker the more a company moves into operations. Furthermore, the growth strategies of build, borrow, buy, and abroad show when each strategy is used and at what level.

The growth strategies of Build, Borrow, Buy, and Abroad followed along the 10 levels line with corresponds to revenue and time. Based on the results from the study, Build is the primary growth strategy used throughout the 10 levels. Build is represent as a light gray area which follows the 10 levels line. The large the gray area the more it was used. The second growth strategy used most often was Borrow, represented by the first dark gray area above the build growth strategies. Borrow was usually used in the level 4 when the company need to deliver product to set first of customers. After the level 6, the companies begin to use Abroad as a growth strategies represented by the second light gray area. Finally, Buy growth strategies was used less often and used in later levels usually in level 7 and above. Buy is represented by the second dark gray stage.

The general growth process model describes the items that a company would need to complete in order to enter into the next level. For example, level 2, initial product development, lists model, prototype, and alpha testing as three items that were completed by the four companies in order to enter Level 3. The arrows between the levels shows the “in between” that the effect needed to reach the next level. For

example, between levels 6 and 7 is the word *producing*, which means delivering products to customers and growing the customer base.

The general growth process model and Greiner's lifecycle model

The general growth process was built on Greiner's (1972) lifecycle model (see Figure 1). Greiner's lifecycle model had five phases of growth as well as revolution and evolution stages (Baird & Meshoulam, 1988; Kazanjian R., 1988; Miller & Friesen, 1984; Quinn & Cameron, 1983; Scott & Bruce, 1987; Tushman, Newman, & Romanelli, 1986; Van de Ven & Poole, 1995). Greiner noted several crises the organization would need to work through in order to grow to the next phases. Several authors adapted and built on the lifecycle model (Hunter, 2005; McAdam & McAdam, 2008; Papke-Shields, Malhotra, & Grover, 2006; Piccoli, Brohman, Watson, & Parasuraman, 2004; Scott & Bruce, 1987; Hatch, 2006). In this study, I combined Greiner's lifecycle model with the general growth process model to show the differences between and benefits of the two models (Figure 55).

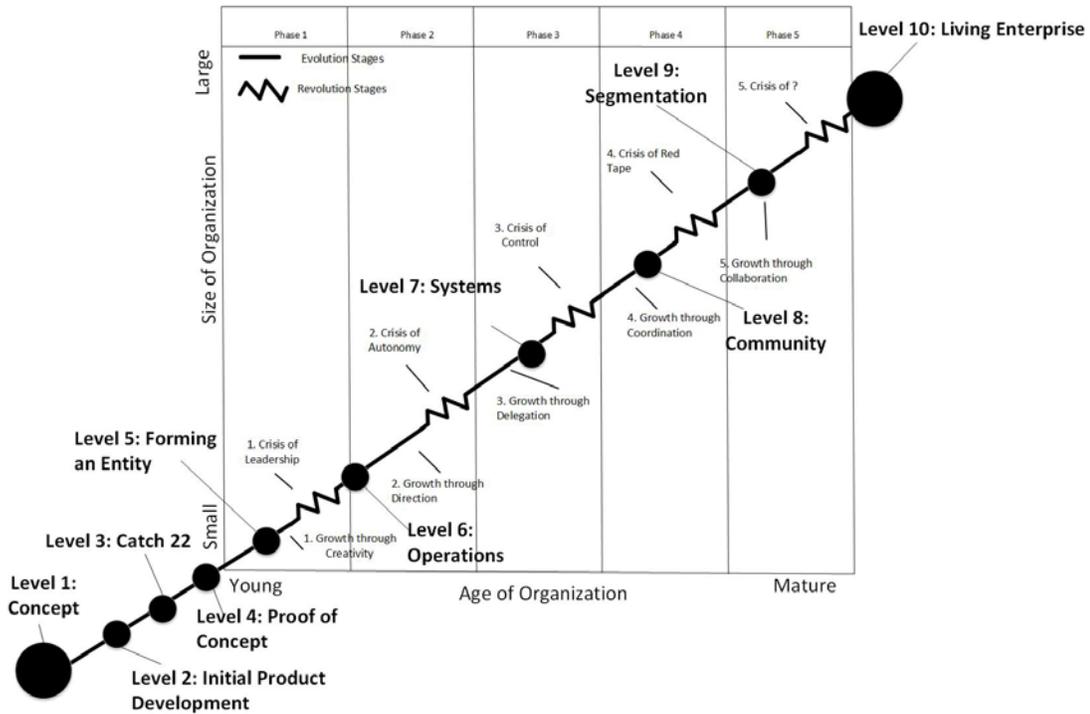


Figure 55. Greiner's Life Cycle Model Combined with General Growth Process Model

Source: Adapted from Greiner (1972), p. 11.

The general growth process model begins with the concept as shown in Figure 54. Levels 1 through 4 are before the Greiner phase 1. The 10 levels focus on understanding the earliest beginnings of the company. Unlike Greiner's growth process, which begins when the company already has a formal entity, full-time founders, employees, and established funding, the general growth process model begins with the company trying to understand how to turn a concept into a product before jumping into a start-up company. Level 2 involves a focus on developing the initial product for alpha testing. Level 3 is overcoming catch-22, which is about the initial product and building a company around the product. Level 4 is proving that the

product concept works in the real world. The founders have beta customers using the product and providing some proof of buy-in such as a payment for the beta test, a purchase order, or a sales contract. Level 5, forming an entity, is within Greiner's phase 1, creativity. According to the results of the case studies, the four companies achieved a major financial milestone (e.g., angel funding, consulting agreement, or licensing agreement) before reaching level 5.

Levels 6 through 10 further illustrate progression. Level 6 is the line between Greiner's phases 1 and 2. Phase 2 describes the formalization of the company with an experienced manager. Furthermore, level 6 begins with the founders running the company, producing the product, and growing the customer base to the point at which they can attract additional capital or grow sales so that the company's cash flow will allow them to begin to hire experienced managers. This solution allows a company to enter level 7, which is the systems level, and phase 3, which is delegation phase. Delegation is about decentralizing, creating an organizational chart, and delegating responsibilities to managers in different departments by creating systems based on a book (Collins, 2001). Level 8, community, and phase 4, coordination, are also closely aligned. This level is the beginning of decentralized decision making by the community of stakeholders who have influence over decisions. Furthermore, the genesis founder may have left the company, meaning that professional management—boards of directors—is fully in charge. The professional management manages the relationship with public shareholders, who seek company performance.

Phase 4 includes the red tape crisis, which comes from decentralized decision making. Level 9, segmentation, and phase 5, collaboration, both regard the division of the company into separate divisions managed from the headquarters. Finally, level 10, living enterprise, falls outside of Greiner's lifecycle model and refers more to Collins's concept of being built to last (Collins, 2001).

Before headquarters, managers, employees, products, or ideas, there is an individual or a group of individuals who comes up with a concept that will literally change the world. Those individuals are referred to as founders. I discussed the 10 levels and four growth strategies and used them to analyze the results from the four company case studies. The discussion begins with the founders and ends with a comparison of the four companies' growth processes.

Founders

To move forward to the next level, it was important that the founders understand their skill set and the skill sets of people around them. The founders needed to make the decision to pursue a venture.

They wanted it

The founders of the four companies wanted to start a business and they wanted it to grow. For example, Larry Page wanted to start a company when he was 12 years old (Brandt, 2011). The founders had a vision of the future and believed that they were the ones who could make their vision happen. They saw big business as a slow elephant in the way of progress. Their views were consistent with Johnson's (2010)

view on white space, which held that large companies have difficulty changing their core business. Moreover, the founders were young; and the average age of the founders when they started their company was 26. They were smart, though five of the nine dropped out of college. Larry Page and Sergey Brin postponed their Ph.D.'s. The founders were enrolled in prestigious universities such as Harvard University, the University of Chicago, and the University of California at Berkeley. Vesper (1990) used the term School to Venture to describe the decisions that five of nine founders made when they decided to pursue their new venture instead of waiting to complete their degrees. The founders were willing and able to take the risk. Seven of nine founders did not have a family of their own when they began.

Fern, Cardinal, and O'Neill (2012) found that founders depended on their past experience to make decisions about how to run their company (Fern, Cardinal, & Hugh, 2012). Therefore, if a founder has many years of experience, he or she is likely to use that experience to run the new company. Because the founders of the four companies had an average age of 26, they had limited work and management experience compared to seasoned professionals. Thus, they viewed their companies as being more casual, flexible, and consumer-friendly. The founders wanted to challenge the status quo. In contrast to Fern et al.'s (2012) findings, a study by Eesley and Roberts (2012) showed that talent was more important than experience. The results of this case study seemed to agree. The founders made decisions that were different from the ones they would have made if they had started their companies with more

experience. Gruber stated how the behavior of the founders affected the decision making of the new company and the social identity of the organization (Fauchart & Gruber, 2011). The results from the case studies mirrored Gruber's findings. The corporate culture was less suit-and-tie and less nine-to-five. The four companies had their employees work overtime and late in the night till the early morning (Brandt, 2011). The founders could take major risks. From their point of view, if they failed, they could go back to school. Bill Gates once said in an interview: "In a certain sense, if things hadn't worked out, I could always go back to school. I was officially on leave. I didn't have like a family to feed or anything" (Microsoft, 2009).

Parents

The results from the case studies showed that the founders had parents who helped provide resources and financial support. Bill Gates's father invested in Microsoft (Wallace & Erickson, 1992). Steve Jobs' parents allowed him and Steve Wozniak to use their garage to run the company (Isaacson, 2011). Wozniak's father taught him engineering at an early age (Wozniak & Smith, 2006). In total, five of the nine founders' parents completed college degrees and lived in a middle-class or upper middle-class neighborhood. Their parents functioned as a support system during the founders' childhood and early adulthood.

Skill set

The case study results showed that from an early age, the founders had an interest in technology. The founders developed their skills through work experience instead of college. Seven of nine founders had experience working at well-known technology

companies. For example, Paul Allen worked for Honeywell as a programmer; Steve Wozniak was an engineer at HP; Steve Jobs worked for Atari as a programmer; and Larry Ellison, Bob Miner, and Ed Oates worked for Ampex as programmers. Roberts, Negro, and Swaminathan (2013) looked at the skill sets of the founders and found that founders having experience in the field increased the success of the organization (Roberts, Negro, & Swaminathan, 2013). Founders with experience, such as Bob Miner, who was Larry Ellison's superior at Ampex, had the skill sets and were good students, which enabled them to use their skills to develop the first products for their companies. Oe and Mitsuhashi (2013) obtained similar results in their study to those of Roberts et al. (2013). Oe and Mitsuhashi (2013) also showed how industry experience benefited the founders, which helped the start-up company break even faster. The results showed that the founders gained their skills primarily from working on personal projects that they enjoyed. Bill Gates and Paul Allen exchanged time on the computer for programming school systems. Larry Ellison programmed for local businesses. Steve Wozniak worked on a project with his father. Larry Page and Sergey Brin completed their bachelor's and master's degrees and therefore had school project to help gain and refine their skills.

First Level: Concept

The concept needs to be something that is achievable with the resources an entrepreneur currently has available. Entrepreneur who focus time and energy on big projects beyond their resources end up spending time and money on something they cannot achieve. Instead, entrepreneurs should focus the initial concept on something

that is within their resource level and for which there is a need. For example, an entrepreneur who is a programmer should focus on developing software for an industry that needs to have a simple problem solved well. An entrepreneur should not focus resources on building a product that needs to be invented from scratch.

The founders of the four companies did not wake up one day with a great idea. The results showed there was no aha moment. A series of events led the founders to the concept for the product that would help them start up their companies. Livingston (2009) stated that "...starting a startup company is a process of trial and error" (p. xviii). What guided the founders through this process was their empathy for the users. They never lost sight of making things that people needed. The following examples from each company show the process the founders went through to develop their concepts.

Apple

Steve Wozniak used his time and HP resources to develop a personal computer.

Later, Wozniak showed the personal computer to Steve Jobs. Jobs encouraged Wozniak to start a business with him (Isaacson, 2011). The first Apple computer was just a circuit board; consumers would need to buy separate parts from different vendors. Jobs believed Apple needed to offer a turnkey solution (Isaacson, 2011). The concept for Apple Computer was to sell a complete computer solution from a vendor to mainstream consumers.

Microsoft

Paul Allen showed up one day at Bill Gates's dorm room with a copy of *Popular Electronics* that depicted the Altair 8800 (Allen, 2011). Gates contacted Ed Roberts, the president of MITS. From the call, Gates knew that Roberts needed a BASIC language for the Altair 8800. Gates and Allen spent weeks developing the BASIC language and demonstrated it to Roberts. The demonstration was a success. The concept of Microsoft was a programming language company.

Oracle

Larry Ellison read a white paper article by E. F. Codd of IBM about relational databases (Symonds, 2003). Ellison and two of his coworkers, Bob Miner and Ed Oates of Ampex, started a software consulting firm called Software Development Laboratories (Symonds, 2003). Ellison was able to get the CIA to award his software firm the project. He used the contract to develop the relational database program later called Oracle. The concept of Oracle was relational database software based on Codd's research paper from IBM (Codd, 1970).

Google

Larry Page was curious about the mathematical properties of the Internet and the nature of links. He believed backlinks are a sign of endorsement. Fortunately, he discussed his project, BackRub, with Sergey Brin, who was interested in data mining. BackRub became a web crawler that indexed millions of web pages based on backlinks and was turned into a search engine. The concept of Google was to produce better search results by using backlinks to define what pages were important.

Concept revolution model

The concept revolution model (Figure 56) was developed to illustrate how a concept is first generated and how it evolves into a commercial product by building on Sääskilähti's (2013) concept thinking model. The concept revolution starts with a need. The current products on the market are not available to fill the need or the current vendors have a business model that could be improved upon. The desire for filling the need grows, and user(s) decide to take on the project. The user becomes the entrepreneur. Based on the available skill set around the entrepreneur, the initial product development begins. When there is something the entrepreneur can share with the network, he or she collects feedback and refinements. The entrepreneur seeks beta customers to test the product to determine whether it works in the real world. If the concept is proven, the entrepreneur seeks additional capital to commercialize the product. Commercializing means working on the look and feel of the product, packaging, manual, and marketing materials.

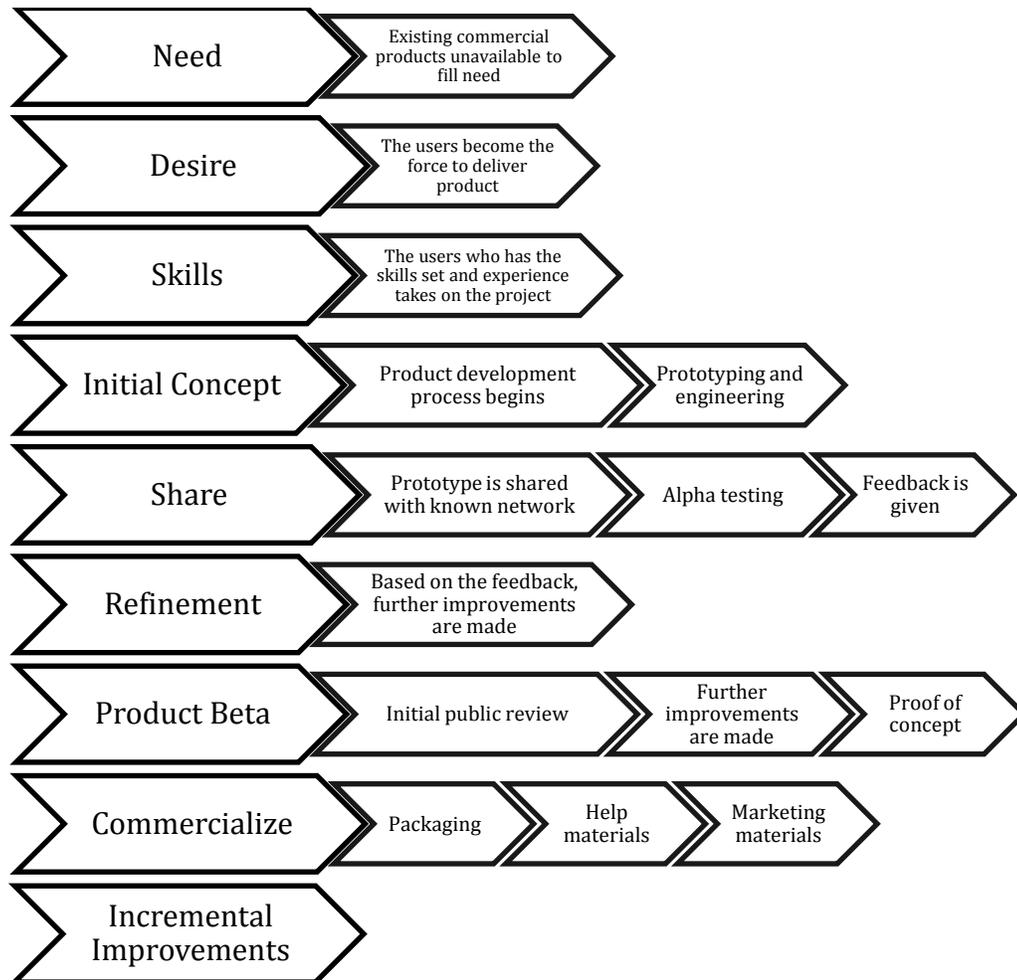


Figure 56. Concept Revolution

Small moments to big events

The concept revolution is the beginning process of a series of events that lead to the primary concept of each company. These are small moments that lead to big events.

Wozniak showed Jobs the personal computer. Allen showed Gates the magazine cover. Ellison read an article. Page received useless search results. The small moments caused actions to be taken, leading to the big event that pushed the founders to the next level. Jobs and Wozniak's attendance at the Homebrew Computer Club

meeting led to the sale of 50 circuit boards. Allen successfully demonstrated the BASIC language at MITS. Ellison, Oates, and Miner were awarded the CIA contract. Page and Brin launched their search engine on Stanford University's website. The founders went from the small moments to the big events because they wanted it. They spent the time and effort and had the skill sets required to complete each action. Sääskilähti (2013) explained the role of concept thinking as being to bring together the business model, branding, user experience, and service. Fortunately, a group of individuals with a specific skill set who focus on the concept can bring together the whole picture (Sääskilähti, 2013).

Second Level: Initial Product Development

The initial product needs to solve one need really well. An entrepreneur needs to have a functional prototype, something that a group can use as the primary feature, something that can be shown and shared. The initial product development involves creating a prototype that can help explain the concept. An entrepreneur should focus on the primary feature of the concept and why it exists. The skill sets of the founders meant that they had the skills and could use their free time to develop the initial product. Oe and Mitsuhashi (2013) wrote that the effort to create a valuable asset is sometimes referred to as sweat equity.

Sweat equity

Sweat equity is critical because it allows founders to use their spare time to provide services to the venture without needing any money. Eesley and Roberts (2012) mentioned that it shows the importance of having talent and prior work experience as

a benefit to new companies. The founders did not have to hire employees in the very early stages. Each founder of the four target companies brought something to the table. Marquis and Margolis (2012) found that sweat equity is worth the knowledge and commitment that a person brings to the table (Marquis & Margolis, 2012). Oe and Mitsuhashi (2013) described sweat equity as an organizational asset. Thus, the founder had to be willing to give up everything in order to launch the business. For instance, Gates and Allen focused all their free time on developing the BASIC language for the Altair 8800; Gates missed his classes and Allen showed up to work at noon (Allen, 2011). The end result was a product that became an organizational asset. Similarly, Page and Brin developed the beta version of Google. Ellison, Miner, and Oates developed the Oracle database software. Wozniak and Jobs developed the Apple I. These organizational assets created in large part from sweat equity were critical to the company. The results from the case studies show how a business can be started with little funding. It does not take millions of dollars; it takes a small team of dedicated people to focus their time and skills on a single concept. At the end of level 2, the team needed to have a prototype to share with others in order to begin the process of launching a company around the product.

Third Level: Overcoming Their Catch-22

Overcoming the catch-22 is about the chicken or the egg—in this case, the customers or the investors. The answer is that the customers always come first and the investors later. When there is no revenue, trying to get the investor is a waste of time and equity. Investors invest in a company, not a concept. The research of the four

companies showed that the longer the founder(s) can wait for outside investors, the more of the ownership they can keep; and therefore the more control they will have over the company's future. Entrepreneurs need to have beta customers and a product to enter the next level. To obtain the needed customers, they need a telephone and a list of people who would want to use the product.

Catch-22 is about launching a company around the prototype. It is the beginning of commercialization, which takes the prototype into a form that is useful to the end user. The companies' founders did not have funds available to buy products and services to launch their companies. Even with sweat equity, they needed cash to buy supplies and parts to fill orders.

To launch their companies, they needed money; in order to get money, they needed customers; in order to get customers, they needed products to sell, and in order to get the product, they needed money to commercialize the prototype. To break the paradox, an entrepreneur needs to think outside the box, beyond angel investors, venture capital, and banks. An entrepreneur needs to understand the end result—what they are trying to accomplish—and then think backward from the end result about how to get there.

The results from the case studies showed that Jobs and Wozniak got their first order from the Byte Shop after a presentation they did at the Homebrew Computer Club.

Steve Jobs sold his Volkswagen van for \$1,200 (Isaacson, 2011). Jonsson and Lindbergh (2013) stated that entrepreneurs can find the capital they need based on strategic relationships (Jonsson & Lindbergh, 2013). The results seemed to agree with this claim, Jobs called the computer parts suppliers to get quotes for the parts and found that the suppliers would credit him as long as they received the payment within 30 days. Jobs also asked friends, neighborhood kids, and other individuals for assistance in assembling the circuit boards. Gates and Allen used interns to help program their early products. Page and Brin used Stanford University's servers for their first version of Google (Allen, 2011). Ellison set up a software consulting firm to fund the first version of Oracle (Rao, 2010).

Rasmussen and Sorheim (2012) explained the gaps between pre-seed funding, seed funding, and venture capital to find other ways of filling the gap. The results from the case studies showed that one company, Oracle, received government funding to develop its product, but the results offered many more avenues for entrepreneurs to use to achieve their goals. Also, Rasmussen and Sorheim (2012) suggested that government funding can fill the funding gap. The results showed that entrepreneurs need to focus on the goal, not on the money. In addition, other sources of capital helped founders complete their goals without giving up large sums of their companies during the very early stages.

Fourth Level: Proof of Concept

Proof of concept is having a product that works well. An entrepreneur's beta customers need to become marketing partners. An entrepreneur should do everything he or she can to make sure a strong relationship exists with beta customers. An entrepreneur should not worry about making a profit from beta customers but rather should focus on making sure the product works to the customers' satisfaction.

Proof of concept is critical for the venture to grow and for showing that the product is able to function and people are interested in using or buying it. Furthermore, proof of concept is about validation, about getting interest from people who are not friends and family, which is critical in turning a hobby or passion into a company.

The results from the case study showed that the founders needed to prove that their product worked in the real world. Furthermore, they needed to understand their initial target customers and overall business opportunity.

Business model

Proof of concept is about the business model, which helps entrepreneurs understand the overall business opportunity of concept and how a company can be formed from the initial product development. The results from the case studies facilitated the development of a business model (Figure 57) that builds on Johnson's (2010) white space model (see Figure 6) to help entrepreneurs understand that proving the concept is also about proving that the business model works.

Developing a Business Model

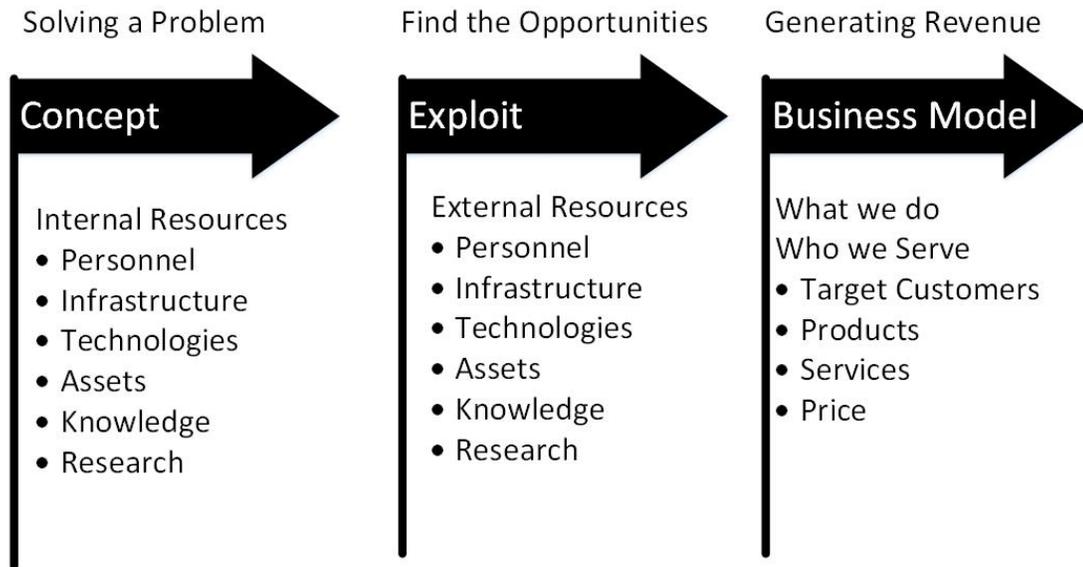


Figure 57. Developing a Business Model

The development of a business model is about understanding how the concept can generate revenue in trying to solve a problem. Apple Computer was solving the problem of personal computing; Microsoft was addressing the software–hardware interface; Oracle was tackling data storage; and Google was perfecting relevant search results. The founders used their internal resources and exploited external resources to solve the problem, create their products, and launch their companies. The companies needed to find the opportunities wherever they could by creating arrangements with external resources to turn their concepts into business.

Unlike Johnson’s (2010) white space model (Figure 6), the founders in this study found not just new customers but different ways of running a company or delivering

products to the customer. Some arrangements were outsourcing business functions, licensing modules, taking components, and affiliating with a third party. Bhidé (2000) stated that it is difficult for start-up companies to secure resources. The results from the case studies showed that the difficulty level depends on how founders viewed securing resources and what resources they were securing. The four companies focused on securing resources through strategic relationships instead of focusing on how much capital they needed. They found the opportunities available to them and created new opportunities by exploiting resources of other companies.

Also, they tried to understand who they were and who they served in order to develop a business model that could generate revenue. Who are we? This is the primary product area the company focuses on initially. Who do we serve? This is the initial market or initial customer base. The results show creativity; searching for a way through; finding the first set of customers; and seeking talented, experienced consultants and vendors. If a company is able to secure the resources it needs to deliver the initial product to the initial target customer and is able to demonstrate that the product solves the problem, it has reached the level of proof of concept.

When proof of concept was achieved, the four companies were able to attract third parties to the company. For instance, when Jobs achieved proof of concept, he was able to tell his story to his former boss, Nolan Bushnell, who shared it with his network (Isaacson, 2011). This led to a \$92,000 investment from Michael Markkula

(Apple Computer, Inc., 1980). Similarly, Oracle was able to use the CIA as a referral customer to attract commercial customers to its database product. Microsoft was able to use its contract with MITS to ship its BASIC program to the community of MITS users. Google was able to display relevant searches. *PC* magazine recognized Google as one of the top 100 websites for 1998 because of the extremely relevant results (Google, 2013). Hence, the proof of concept demonstrated to investors the acceptance of the product in the market, the feasibility of the product's fulfilling a need, the scalability of growing the business, and evident profit potential.

The results from the case studies showed the importance of forming relationships during and after the proof of concept and explored how founders can use those relationships to move their companies forward. Figure 58 shows the relationship development model for how founders help create key relationships.

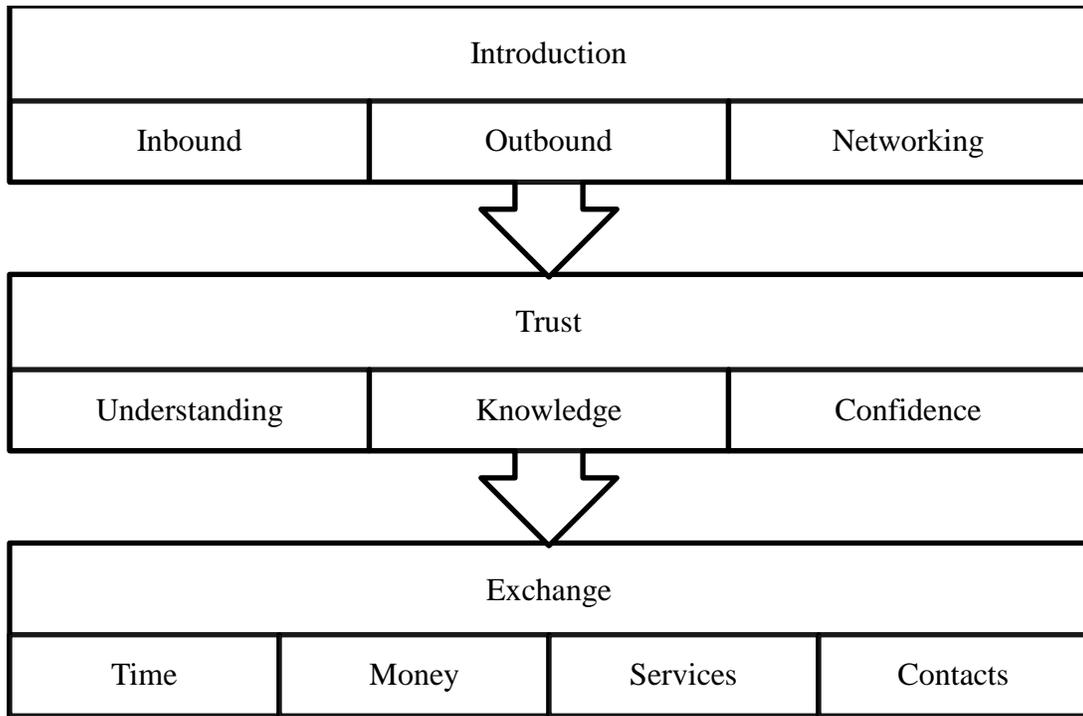


Figure 58. Relationship Development Model

It was Jobs' relationship with Nolan Bushnell that led Michael Markkula to Apple. The relationship development model starts with the introduction through inbound whereas someone finds and contacts an entrepreneur; outbound, whereas an entrepreneur finds and contacts someone, or networking, where a mutual acquaintance makes the introduction. Byham (2009) stated that one's boss can help the potential founder identify the right people to talk to (Byham, 2009). In the case of Apple, Bushnell helped Jobs. If Bushnell had been removed from the relationship, Apple might have remained in the garage. For Oracle, Ellison used his relationship with his boss at Omex to get the contract, which started the consulting firm. IBM contacted Microsoft about an operating system because of its good experience

working with Microsoft in the past. IBM believed in its relationship with Microsoft and signed a deal with Digital Resources to protect the operating system that it had with Microsoft. Page and Brin's relationship with Stanford permitted them to use the university resources to launch their website. The relationship development model is about creating introductions, building trust, and exchanging resources that benefit both parties. Greiner's (1972) life cycle model showed the evolution and revolutions stages. The relationship development model builds on those stages to provide answers as to what is inside those lines and what is needed to move forward.

A relationship can become more important than the product. There were other companies creating personal computers, operating systems, database software, and search engines, but the relationships that these four companies were able to create allowed them to grow faster. The product was the widget they sold, and the relationships pushed them to the next level.

Fifth Level: Forming the Entity

A successful proof of concept is extremely important for raising capital to help get the company into operations. If the entrepreneurs need to write a business plan showing the need for the product and the success of the beta test, an entrepreneur needs to tell the story, form a company, and talk with everyone he or she knows as well as with cold-call investors. At the same time, an entrepreneur should focus on getting more customers and broadcast his or her company. De Clercq et al.'s (2006) study offered some comments on elements of the results of this study and showed that an

entrepreneur who is able to show proof of concept has an easier time raising capital from wealthy individuals known as angel investors.

Angel investors

To persuade people to invest in a company, entrepreneurs need to have an entity that legally allow them to invest. It is important to create an investment vehicle for investors to invest capital in the company. It gives the founders the opportunity to determine the value of their effort and hard work. Page and Brin received a check for \$100,000 from Andy Bechtolsheim, cofounder of Sun Microsystems, before they incorporated the company (Brandt, 2011).

Gates received more equity in Microsoft because he contributed more to the basic product than Allen. Jobs and Wozniak agreed to receive equal shares. The corporate entity provided protection against other parties' seizing personal assets.

Jobs and Wozniak were in their early twenties, and so were Page and Brin. They came from working-class to middle-class backgrounds and did not have the assets to qualify for bank loans. Therefore, to grow their business to the next level, they needed angel investors (Apple Computer, Inc., 1980). Parks (1976) stated that there are risks to accepting outside capital. To get venture capital, founders need to give a piece of the pie and sometimes give up control. Bill Gates's father was able to invest to help his son's business, which delayed the need for external capital. Ellison, Oates,

and Miner had work experience and used their consulting firm to fund the development of Oracle to reduce the need for outside capital.

Vesper (1990) discussed how having a large sum of capital initially helps solve problems and allows a new venture to take advantage of opportunities. Shortly after forming the entity, Google received \$1 million from three angel investors, including Jeff Bezos, the CEO of Amazon. Google and Apple held large sums of capital in the beginning of their ventures. This study's results showed that Google and Apple grew at a much faster pace than Microsoft and Oracle did.

Administrative

The formation of the entity is not only for outside investors and founders but also for employees. In order to hire employees to help with growth, the government requires a legal entity to deduct payroll taxes. Also, having stock options and benefits available helps attract the best and brightest individuals to the company.

The formation of the entity is needed for every aspect of building a company, including leasing offices, buying office supplies, entering into contracts, offering equities, and receiving loans. Three of the four companies had products before the entity was formed. Oracle was the exception because it was originally named Software Development Laboratories and transformed its business model into a software company from a consulting firm after the Oracle product was released.

The formation of the entity is the birth of a company that allows the public to give recognition to the individuals who started the company. It also allows the public to think about the people who are part of the company as a singular entity. The formal establishment of the entity means gathering individuals into an organization with a business purpose.

Sixth Level: Operations

The research has shown that the operations are all about focus. Do what you can with the resources you have. Outsource business functions to other companies. Hire only the people you need. Stay lean; do not get more than you need. Stay flexible and try to keep fixed costs down. You will need to make adjustments, so focus on what the customers want.

The entity has a business purpose. It has a product to sell, customers to service, and employees to serve those customers. These three parts bring about operations. The founders of the four companies did not have any experience running a company. They got to this point by learning on the job. This study's results are consistent with Cope and Watts's (2000) findings on continuing learning experience. Cope and Watts (2000) discussed how many entrepreneurs have no prior new venture experience and are in an ongoing learning experience. After receiving the investment from Markkula, Apple Computer was able to debut its second product, the Apple II, a turnkey computer with a keyboard in the computer case, at the West Coast Computer Faire

(Wozniak & Smith, 2006). The company moved out of the garage with its 12 employees and into offices, and it obtained a line of credit.

Markkula's \$92,000 investment was enough to get the product commercialized, but growing Apple required additional capital. Apple was able to raise additional capital through private placement offerings. In 1978, Apple raised \$517,000, and in 1979, \$6.3 million (Apple Computer, Inc., 1980). It received additional investment from Arthur Rock Ventures, Venrock Ventures, Sequoia Capital, Andre L. Sossan, and Andrew S. Grove.

Venture capital

This study's results showed how critical venture capital can be at different levels of the company. In the previous section, Apple received an additional \$6.3 million of venture capital. The result was a 508% increase in revenue in 1979 compared to 1978. The capital led to Apple's expansion. Furthermore, Apple was able to take advantage of business opportunities sooner and solve problems faster. The results from the case studies seemed to agree with Vesper (1990), who noted that companies that receive large amounts of capital early on are able to solve their problems sooner. Venture capital is usually not the first capital companies receive, according to the results of this study. De Clercq et al. (2006), agreed with these results, identifying the 3Fs—friends, family, or fools—as the initial capital sources. As discussed earlier in this study, Apple, Microsoft, Oracle, and Google received some capital from friends and family and personal savings. Apple and Google received funds from angel investors.

The additional capital allowed them to expand faster. Microsoft and Oracle used mostly cash flow from the business and reinvested it in the company. Ellison had to mortgage his house to keep the business running. The results from the case studies showed how venture capital early in the business affects the growth rate using a model built on Greiner’s model of organization development. Instead of viewing it as industry, Figure 59 was modified to illustrate the four companies based on their revenues.

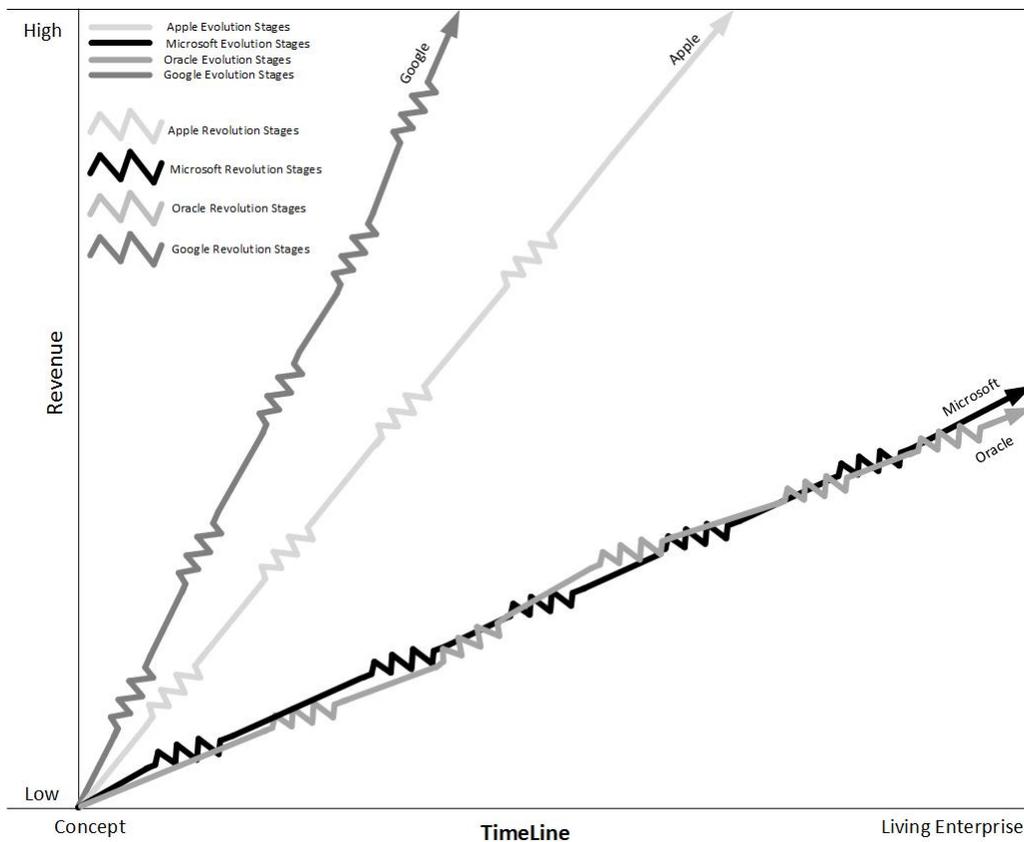


Figure 59. Four Companies' Growth

Source: Adapted from Greiner (1972), p. 10.

Figure 59 shows that Google's revenue grew much faster than Apple's, Oracle's, and Microsoft's. During Google's first full year of operations, it raised \$25 million from Sequoia Capital (Google, Inc., 2004). Its first full year of business generated revenues of \$220,000 and losses of \$6 million (Google, Inc., 2004). Google lost millions of dollars because venture capitalists and investors were more concerned about the first mover advantage than about making profits.

Google received \$25 million less than a year after the company was incorporated, which created an acceleration of growth. Vesper (1990) discussed how receiving a large amount of capital enabled Google to grow. The company went from \$220,000 in 1999 to \$19 million the next year (Google, Inc., 2004). Similarly, Apple received outside capital early in its life cycle, which also created an acceleration of growth. Apple's revenues were \$770,000 in 1977 and \$7.8 million in 1978 (Apple Computer, Inc., 1980). Microsoft and Oracle did not receive outside capital until the later stages of the companies' organizational life cycles. During the first year of full organization, Microsoft and Oracle had under \$1,000,000 of revenue. Outside capital helped to build the infrastructure needed for growth. The \$6 million loss during Google's first year of operations was invested in people, servers, software development, public relations, consultants, sales, and marketing teams. Google had 11 employees in May 1999 and 40 after receiving the \$25 million investment (Brandt, 2011).

In contrast, Oracle had only 35 employees during its fifth year of business, and \$2.4 million in revenue (Oracle Systems Corporation, 1986). However, Oracle received little outside capital. Ellison had to mortgage his home to receive financing from a bank (Symonds, 2003).

The tradeoff was slow growth for Oracle. Oracle was able to grow because of its relationship with IBM, which was far more valuable than any money acquired from venture capitalists. Oracle was able to borrow IBM's resources. Fortunately, Oracle was able to use the IBM brand, IBM marketing, and IBM sales force to sell its product globally (Symonds, 2003).

Two of the four companies, Microsoft and Oracle, did not receive venture capital in the first two years of operations, but they received assistance from IBM through borrowing its influence and resources.

Industry standard maker

This study's results showed that borrowing growth strategies can be as effective as venture capital. Kaats and Opheij (2014) argued that partnerships can be built at any point in the company's life cycle. The authors mentioned four things that are important when finding partners: market development, cost advantage, knowledge development, and external pressure (Kaats & Opheij, 2014). The relationship Microsoft established with IBM seemed to cover all four things.

IBM was an industry standard maker. During the 1970s and 1980s, IBM had enough influence in the marketplace that if it selected the component as part of its offering, the component instantly became an industry standard (Cringely, 1993). In 1978, Microsoft's dealings with MITS helped it increase its revenue from \$381,715 in 1977 to \$1.3 million a year later, with 13 employees (Microsoft, 2009). Microsoft focused on expanding its BASIC product to work on other platforms and therefore was less dependent on sales via MITS. In 1979, Microsoft released a variant of its BASIC for Apple, Commodore 64, IBM PC, and IBM Cassette Basic (Microsoft, 2009).

When IBM was ready to enter the personal computer market, it went to Microsoft first to provide an operating system. In turn, Bill Gates referred IBM to a company called Digital Resources, but Digital Resources and IBM did not sign a deal. Next, IBM went back to Microsoft for an operating system. At this time, Paul Allen acquired the operating system from another local company, SCP. The deal with IBM to develop the operating system did not produce much revenue, approximately \$50,000 (Cringely, 1993). Kaats and Opheij's (2014) collaboration positioning showed how Microsoft and Oracle benefited from being a preferred supplier for or an affiliate with IBM. Though Microsoft did not receive much revenue directly from IBM, it was able to get a term in its contract that allowed Microsoft to license the operating system to other computer hardware vendors. The value of IBM was its ability to create an industry standard. When IBM released the personal computer with the Microsoft operating system, Microsoft began to receive phone calls from other

computer vendors about using its operating system for their IBM clones. Microsoft's sales went from \$2.4 million in 1979 to \$8 million in 1980 (Microsoft, 2009). Lastly, Charlie Rose and Lawrence Ellison discussed the past events:

Rose: It is one of the best business stories in the history of business, how Bill Gates and his relationship with IBM got and owned its operating system. Is it not?

Ellison: Oh, it's the single worst mistake in the history of enterprise on earth made by IBM.

Rose: The single worst mistake of history of enterprise made by IBM, by giving away . . .

Ellison: Right . . .

Ellison: While they not only gave away all of the software to the personal computer, but they also gave away all of the important hardware to Intel. . .

Ellison: Intel and Microsoft have a higher market valuation than IBM. IBM gave away two thirds of its market value (Rose & Castleman, 1996).

Similarly, in 1981, when IBM adopted the Oracle database, Oracle reached sales of \$1.2 million (Oracle Systems Corporation, 1986). The results from this study are consistent with Kaats and Opheij's (2014) four items. Oracle benefited from IBM's marketing development and external pressure. In 1982, Oracle reached sales of \$2.4 million and \$5 million, and starting in 1983 its sales began to double every year (Oracle Systems Corporation, 1986). Microsoft and Oracle were able to borrow the influence that IBM had over the market. It did not matter if their competitors had better software at lower prices. What mattered was the influence that IBM had over the market. The IBM relationship made Microsoft and Oracle the industry leaders. The results from the case study showed that IBM selected smaller companies to complete individual projects such an operating system and database software even

though IBM had the resources to do those projects itself. Kaats and Opheij (2014) found that some organizations have core competencies in different areas. IBM wanted to finish its personal computer as soon as it could to compete against the Apple II. IBM was therefore willing to give up some control of the process to get to market sooner (Cringely, 1993). According to Bill Gates,

they talked about how something could be done fairly quickly if a machine was designed to run standard software. In fact, we found out later that, behind the scenes, different labs within IBM had been charged with looking into how they could get a project done on a very quick basis. The typical product design time for a large one like IBM, and they keep track of this, is a little over four years. That is partially because that they do such a complete job, and yet, in the personal computer industry, which they had a desire to participate in. You really couldn't be competitive if you spaced out your product in 1976 and sold it in 1980. You would be selling an Altair computer against an Apple II. (Bunnell , 1982, para. 9)

Microsoft and Oracle had an industry powerhouse, IBM, which had the power to make them industry leaders. Apple and Google had venture capital to grow their business quickly. They were able to invest in sales and marketing and additional product development to get their names out there. The difference between Microsoft and Oracle's growth and Apple and Google's growth was the speed with which they were able to enter each level. Oracle and Microsoft stayed in the operations level between years 5 and 6. Apple and Google were in the operations level for mere months before entering the systems level.

Seventh Level: Systems

The seventh level, systems, is about the management team and allocation of resources, expanding product profitability, delegating responsibility to qualified

people, establishing a research and development department that produces new products, furthering developing relationships, and expanding overseas.

Relationship between leader founder and venture capital

This study's results from the case studies showed that the four companies found ways to create a relationship with either venture capitalists or industry influencers. These relationships helped the companies grow to the next level, where additional employees were needed to help service customers, support products, collect payments, pay vendors, market products, and develop new products. During an organization life cycle, a company grows to a point at which the founders are unable to handle the responsibilities a growing company demands without causing serious issues (Hatch, 2006). When companies reach revenues over \$10 million and over 100 employees, they need an experienced management team to help handle the responsibilities and make sure that the proper systems are in place. Greiner (1972) called this a crisis of control in which the leader needs to delegate so that the organization can survive and grow. In the case of Apple and Google, the boards of directors did not feel that Jobs or Page had the required experience to be CEO of their companies. Their investors had enough voting power to select who they wanted for CEO. Their investors wanted an experienced professional to be CEO. Microsoft and Oracle used a combination of personal savings, funding from friends and family, partnerships, and side projects to reinvest in their products, thereby reducing the need for outside capital, which allowed them to keep more equity. Thus, Gates and Ellison had the controlling interest to select themselves as CEO.

During a company's life cycle, the company needs different managerial roles to be fulfilled so it can grow to the next level. Kroeger (1974) explained that during a company's beginnings, there needs to be an originator-inventor to develop the product and business model. Based on the results from this study, Jobs, Gates, Ellison, and Page filled that role as the leader founders. As a company grows, the manager changes to a planner-organizer to develop the business plan for financing. This role may be filled by the leader founder or a consultant. As the company enters different levels and more people become involved with the company, the investors may require the leader founder to step aside for the experienced professional manager to run the company and fill the role as administrator-operator.

Wyld and Maurin (2009) and White et al. (2007) mentioned leadership and financing. White et al. (2007) discussed the fact that 50% of venture capital firms replace company CEOs. Wyld and Maurin's (2009) study suggested that the founder may not be necessary for a company to succeed. White et al. (2007) indicated the same thing; their study showed that ideas, capital, and leadership were the keys to success.

At the system level, a company has research and development departments to generate ideas and new products. The four companies had capital from operations and investors and banks. Also, the four companies had leadership from the management

team. The results of this study seemed to be consistent with those of White et al.'s (2007) study.

When companies reach the system level, it become a matter of managing resources and less about creating products. An entrepreneur should understand the business functions to manage costs and increase profits. When a company is growing rapidly, it does not have time or capital to build everything on its own. As stated earlier, IBM needed to use Microsoft to create an operating system because it wanted to go to market sooner. Microsoft also partnered with other companies to borrow their operations and their core competencies. Kaats and Opheij's (2014) study was consistent with the use of outsourcing.

Borrow: Outsourcing

Part of Apple's growth strategy was to outsource the production of the Apple II to a local manufacturing company. Outsourcing is a quick way to borrow the resources of other companies to produce one's product. Apple did not have time to build its own manufacturing facility. It needed to focus its funds on research and development as well as marketing and distribution. Apple Computer grew from \$7.8 million in 1978 to \$47.9 million in 1979, with earnings of \$5 million by outsourcing (Apple Computer, Inc., 1980). Wee, Peng, and Wee (2010) stated that a good relationship with an outsourcing partner is critical for competing in a global market (Wee, Peng, & Wee, 2010). Outsourcing one or more business functions can help drive growth (Whitaker, Mithas, & Krishnan, 2010).

The management team

The results of this study showed two options for growth speed. One, accelerated by venture capital, allowed the company to move rapidly through levels within months. The other depended on reinvesting cash flow and developing relationships that the company would be able to exploit. Growth speed also shows how the management will be formed. Venture capital firms help determine who is on the management team and who is on the board of directors. This was the case for Google and Apple. Microsoft's and Oracle's management teams consisted of the founders and friends of the founders.

The system level showed that the four companies were able to spend more capital on several departments such as research and development, marketing, sales, human resources, finance, and accounting. These departments were governed by policies and procedures. Hurley (2006) explained that the CEO or founder needs to trust in the policies and procedures once they have been established, and also understand his employees concerns. His study showed that most employees did not know who to trust in their organization. A lack of trust can make it difficult for a company to grow. Further, Greiner (1972) showed that one of the crises in his lifecycle model is the crisis of autonomy. Greiner (1972) explained that lower-level employees feel restricted by a centralized hierarchy. The direct managers to whom many of the founding employees once reported have moved on to other companies. Either the founder is busy running the company as CEO, or the founder is not in control and the professional CEO does not have time to communicate with every employee because

the company has grown large enough department heads manage people within their departments. Cope and Watts (2000) built on Greiner's research to provide an understanding of the learning patterns of founders. Their research showed that many founders are not serial entrepreneurs and therefore learn from experience. They may have trouble delegating responsibilities. For example, Jobs was known for being a micromanager and focused on very detail, which later caused him problems with employees and the board of directors (Isaacson, 2011).

The department heads reported to the management team. The management team reported to the board of directors. This hierarchical management or organizational structure enabled the four companies to develop the systems needed to manage a growing enterprise and allowed them to use resources more efficiently. Moreover, it allowed them a chance to plan, set goals, and create objectives and a vision for the company. Greiner (1972) explained that the second revolution is where company develops more systems for greater delegation. Further, Greiner (1972) stated the circumstances under which a company can enter phase 3, with the decentralized organization structure providing department heads and managers with greater responsibility.

Kazanjian and Drazin (1990) built on Greiner's understanding of the centralization and formalization of decision making. They viewed functional specialization as a function to manage operation issues. Kazanjian and Drazin's (1990) results were

similar to the results of this study on creating systems. Executives should refrain from micromanaging and instead examine business activities by reviewing reports. Figure 55 shows level 7—systems—as being within Greiner’s phase 3. This study’s results showed a critical need for growing companies to hire a management team to manage the new responsibilities that arise through growth taking the company to next level (i.e., becoming a public company).

Eighth Level: Community

A company’s IPO allows for the spread of ownership over a large group of people and financial institution enters the companies at the community level. Community is about the management team managing expectations through communication to establish relationships with the general public on an ongoing basis. It also spreads the power of the organization to the public. Furthermore, the company is able to raise additional capital on better terms and in larger amounts by issuing additional shares to the public.

This study’s results showed that the founders of the four companies still had influence over their companies after the companies went public. However, new shareholders have a major say in how the company is run. The shares once owned by a few now belong to thousands of people who rely on the shares to help pay for college, retirement, and leisure. Mutual funds buy the shares for their portfolios. This situation places the companies under new regulations and filing requirements. The added responsibilities provide the early investors, venture capitalists, and employees with

the opportunity to receive money for all of their sweat equity, risk, and performance (Wongsunwai, 2013).

This study's results showed that the four companies were able to raise capital faster and at better terms, speeding up the growth process. Apple started in 1976, and four years later it went public and raised \$53 million (Apple Computer, Inc., 1980). The company had \$117 million in revenue and earnings of \$11 million, with 1,015 employees (Apple Computer, Inc., 1980). Microsoft went public in its eleventh year of operations. It reached revenues of \$197 million and raised \$53 million (Microsoft Corporation, 1986). Oracle went public in its ninth year of operations. It reached revenues of \$55 billion and raised \$29 million (Oracle Systems Corporation, 1986). Lastly, Google went public in its sixth year of operations with \$3.2 billion and raised \$2.7 billion (Google, Inc., 2004).

When the four companies went public, they developed strategic growth plans that forecasted the areas in which they wanted to invest their capital. The four companies spent 7% to 13% of annual revenues on research and development, 8% to 43% on marketing and distribution, and 1% to 3% on advertising.

Ninth Level: Segmentation

Segmentation is about expanding into new areas of business and markets and creating a management team for each line of business and a growth strategy for years to come.

Once the four companies became public companies, they dealt with the shareholders' demand for growth. The results from the study showed that between levels 1 and 8 the four companies primarily used the build and borrow growth strategies. Figure 54 illustrated the use of the four growth strategies in shades of gray. During the first eight levels, the four companies were focused on creating their own products, raising capital to build infrastructure, and borrowing resources from other companies. Once the four companies reached level 8, they were able to access the public markets to raise as much as capital as needed. Furthermore, they were able to access debt capital on better terms.

As the companies entered level 9, they were able to build a long-term strategy to implement their vision of the future because capital was less of an issue. In Greiner's (1972) formalization phase showed the company still growing and beginning to differentiate its products and services consistent with this current study. Level 9 and the formalization phase are displayed together in Figure 55.

The buy growth strategy is used most often in level 9. The four companies were able to use their stock as currency to acquire other smaller companies. Cross (2011) classified three terms under acquisitions: asset acquisition, minority stake, and full acquisition. Most of the acquisitions done by the four companies were full acquisition rather than minority stake. Apple made five full acquisitions during level 9. The Microsoft Press division did a minority stake acquisition with Santa Cruz Operating

during level 9. Oracle did a full acquisition of Digital Equipment Corporation. Apple, Microsoft, and Oracle did a few acquisitions during the period of the study. Google, on the other hand, did several acquisitions during the period of the study. Google's process of buying companies and integrating them into Google created a new business process that was identified with Microsoft and Oracle but was clarified by Google. The new business process is referred to as buy-integrate-build.

Buy, integrate, and build

Figure 60 was created to help explain Google's buy-integrate-build strategy. Google bought a company, removed the company's brand, created a new business unit, gave the business unit a name with Google in it, and changed the look and feel to look like Google. For example, Google bought a company called Keyhole, Inc., created a new business unit, and named the new business unit Google Earth. The look and feel became Google's look and feel. Google invested capital and resources to extend the product offering and integrates other products as part of the offering.

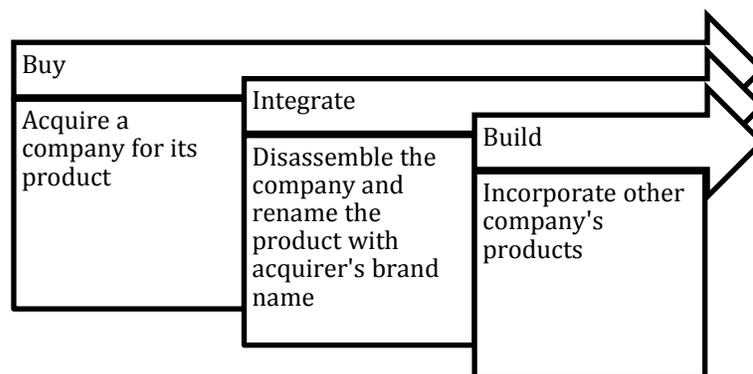


Figure 60. Buy, Integrate, and Build

Of the four growth strategies, the buy strategy was the least used. It was also shown to have minimal impact on financials. Once an acquisition is completed, the companies need to invest capital and resources. The acquisition is a shortcut to enter the marketplace sooner without having to build a product and market from scratch. The acquired company usually represents less than 1% of the revenue. However, once new versions of an acquired product line were released through the parent company's distribution channels, there was an impact on revenue. Buy-integrate-build is not about the initial revenue impact; it is about saving time. The four companies could have developed the technology in house but, like IBM, wanted to enter the market sooner, so they used their capital to buy time and decrease their risk. Thus, the four companies' primary growth strategy was to build, using buying to save time. Luecke's (2003) S-curve, as in Figure 5, showed technology A and technology B. According Luecke's (2003) study, the longer a technology product is in the marketplace, the less of an innovation it become. Johnson's (2010) white space indicated that larger, more mature companies have trouble being innovative. They become risk-averse. For some companies to stay innovative, they need to buy smaller, more innovative companies to acquire technology B. Once the company has technology B, it can use its distribution channels to deliver the product through its global network.

Abroad: Foreign operations

The results from the case studies showed that the four companies expanded globally in level 9 by setting up foreign subsidiaries and sales offices. The four companies also

needed to expand their operations overseas. When Apple entered level 9, it formed additional foreign subsidiaries in 10 other countries. When Microsoft entered level 9, it formed foreign subsidiaries or opened sales offices in 12 countries (Microsoft, 2009). Oracle acquired a minority stake in the Nippon Steel Corporation into enter the Japanese market (Oracle, 2011). Google opened offices in Ireland, India, and Japan (Google, Inc., 2004) and later opened offices around the world and sold localized versions of its products.

Guillen and Garcia-Canal (2012) stated that it is a major undertaking to become a global brand. This is consistent with the finding of the case studies; companies began to establish foreign operations when their domestic operations were further along in the organization life cycle, when they had the capital to invest in building up an infrastructure and had the advertising dollars to build a global brand. Notably, the four companies' foreign operations revenue accounted for 5% to 10% during the first three years, with an increase to nearly 30% to 40% in the next three years.

Greiner's (1972) collaboration phase suggested that the four companies invest in building their global infrastructure, they encountered a crisis of renewal meaning that the organizations needed to find new ways to generate growth. Hatch (2006) stated that the collaboration phase requires changes to the organization's form because the period of growth causes companies to increase their infrastructure in terms of personnel, offices, communication, and IT systems, to such an extent that the

company may not know what it is doing. Oracle experienced some level of this during 1990, when it had to restate its financials. Ellison explained that Oracle was over \$1 billion in 1990 and believed the management team at that time was experienced with running a \$50 million company. Ellison therefore restructured the management team to run a \$1 billion company (Symonds, 2003). Greiner's crisis or renewal comes because the organization feels burned out. The rapid growth of the four companies pushes many of the employees to the breaking point. The company reaches the point that it needs to renew its innovation and direction. Level 9 is about making the company into a multinational corporation, building it into a global brand for massive global expansion, and delivering its products into multiple languages through foreign operations in pursuit of the goal of building a company to last.

Tenth Level: Living Enterprise

Creating a living enterprise entails reaching the level at which the mature and stable blue chip company makes its decisions through a community, has enough capital to grow without the need for outside capital, and is able to sustain growth for years to come.

A living enterprise can grow without outside capital. This enterprise is generating enough cash in the bank with adequate positive cash flow to pay off its expenses. Funds are available for investment in new projects, products, divisions, and acquisitions. The company has reached the level of maturity and now needs to be alert to decline. Kroeger (1974) stated that the managerial role for a company that

needs to stay innovative should be a successor-reorganizer. The successor-reorganizer needs be a change agent, willing to take risks and have a vision for the company (Kroeger, 1974). Apple, Microsoft, Oracle, and Google needed to stay innovative to maintain their edge. As they became living enterprises, all four companies began to acquire smaller, more innovative companies. Then they rebranded the companies as a product of the parent company, as shown in Figure 56.

Living enterprises are a unique category of businesses. They are similar to De Geus's (1998) definition of a living company and its four traits. De Geus's four traits of a living company—conservation in financing, sensitivity to the world around it, awareness of its identity, and tolerance of new ideas—were apparent in the results of the case studies. Each of the four companies has enough assets to cover its liabilities, consistent with De Geus's (1998) findings. The four companies listened to their community and provided discounted prices to college and universities. They built global brands and extended beyond their core business. The difference between of a living company and a living enterprise according to De Geus's (1998) is its size and ability to join the community. A living company can be a closely held entity.

A living enterprise is an open entity. I used the eligibility criteria of Standard & Poor's 500 to determine when the four companies achieved living enterprise status. Standard & Poor's presented five criteria. The first was market capitalization of \$4 billion or more. The second was liquidity, which is based on the ratio of annual dollar

value traded to float-adjusted market capitalization, which should be more than 1.00 and the company security needs to move 250,000 shares in a six-month period. Third was domicile: the company must be US based and 50% of revenue and fixed assets should not exceed. Lastly was financial viability, which measures positive as-reported earnings (i.e., net income excluding discontinued operations and extraordinary items). Also, they are listed on the Standard & Poor's Index and on the Dow Jones Index. Some mutual funds are required to own shares of any company on the Standard & Poor's Index or Dow Jones Index as part of their index-fund products, providing the maximum level of liquidity in the stock market so shareholders can enter and exit on a daily basis. When the four companies entered these indexes, it confirmed their living enterprise status. Google was the fastest of the four companies to reach living status; it was included in the Standards & Poor's 500 in 2006. For Apple, Microsoft, and Oracle, the information was not available based on Standards & Poor's criteria. I estimated the years they entered the index and concluded that they became a living enterprises in 1989 for Apple, 1993 for Microsoft, and 1995 for Oracle.

Conclusion

The notion that “the benefit goes not to the one who invented it but to the one who knows how to exploit it best” is the key finding of the results obtained from the study. This notion assisted in the development of the 10 level from concept to living enterprise. The four companies used existing technologies to develop their products. They did not invent the initial technology, but rather took advantage of the technology that was available to everyone, using their skill sets to develop products to

start their companies and to market products that could be used into different applications. The founders wanted to start and grow their companies. They had a vision of the future, and how things should be done.

Many of the founders from this study dropped out of college. However, only Bill Gates, Larry Page and Sergey Brin actually dropped their degree programs to start their ventures. The others had full-time jobs and quit those jobs to work on their companies full-time. The discussion on transition to working full-time in the company provided insight on the process of growing a company. At some levels the company is able to support the founder's basic needs to pay their bills, freeing the founders from the obligation to work for someone else. At higher growth levels the founders were able to exit their companies partially or completely having spent time with the company both as an employee and at higher levels.

Chapter 6: Reflections

Introduction

This study was a journey to gain knowledge and understanding of how the top technology companies made it from concept to living enterprise. I wanted to understand the steps they took to get to the different levels, understand the character of the founders, how the organization was formed, and the struggles and milestones that they overcame. I wanted to go beyond the highlights to an in-depth review of what made Apple, Microsoft, Oracle, and Google the top four companies. There are thousands of college students around the world who want to start companies, grow their companies to the top of the field, and take their companies public.

During my senior year of college, I took a course on entrepreneurship. The course gave me some ideas about how to develop a product, raise capital, and hire employees. What I felt, though, is that the course did not tell me what it takes to start a company, how to deal with failures of product development, difficulties in finding investors, and the hard work it takes to find and retain customers. I had a concept, so I had founded my company before the course and was hoping for detailed answers. I made several mistakes and spent time on fruitless ventures. This study helped me understand that I was not alone.

Though Apple, Microsoft, Oracle, and Google are giant companies today, they were once only a concept in the minds of their founders: a personal project that was shown

to a friend, a magazine article that inspired a language, a government project to make data easier to read, and a Ph.D. dissertation that studied the hidden patterns of links.

This study aimed to understand the growth processes these companies used to become living enterprises. Based on my review, I was able to identify a process that I hope will allow others to gain some level of success.

Limitations

This study examined four technology companies that attained the highest level of living enterprises. Furthermore, the study focused on the most successful technology companies based in the US. This study's conclusions were limited due to studying only four technology companies. The study did not review companies which could not reach the level of living enterprise. Though the general growth process model may be used in non-technology companies, it was intended for entrepreneurs looking to start technology based companies.

Recommendations for Future Research

The art of business needs to be thoroughly explored. I used the term art of business to describe execution of all internal functions and external factors that affect the success of a company. During the research stage of this study, I discovered that having a talent to deal with a situation was more important than having the best product. The talent to develop an innovative business model from existing technology with slight changes in product design and product's feature could mean the beginning of a concept that would grow to become a living enterprise or a missed opportunity for an established company. The key business case example which needs to be examined in

detail is the decision Digital Research, Inc. made not to sign the agreement with IBM immediately. Digital Research had the opportunity to be one of the biggest in history, but did not know what to do to and created a poor relationship with IBM. When the industry standard knocks at your door, you need to answer it quickly. Digital Research allowed its fear of risk to overtake the benefits of the opportunity. Bill Gates saw the opportunity, understood the value and structured a deal. This brings up the next research area which should be explored further in order for a company to understand when opportunity knocking at their door who should examine the opportunity. If Digital Research had hired a professional CEO during its growth cycle, its story may have ended differently.

Digital Research had the opportunity but missed out on it. This example will provide assistance to entrepreneurs to be able to identify opportunities and be able to seize on those opportunities. This study focused on the four top technology companies however more research can be done to provide an understanding on what companies could have become the top companies had they made the right decisions. The study provided examples of IBM and Xerox which were established companies, however, it would be interesting to know why MITS did not become one of the leaders during the computer age as well as hundreds of other companies which did not reach any level over 6.

Future research could be done to provide an understanding of when the founder should exit the company. With Digital Research, Gary Kidall and Dorothy McEwen grew the company to over 200 employees, but treated the company like a small business. If Digital Research had hired a professional management team and had more professional office settings they would have fully understood the opportunity that IBM presented to them (Cheifet, 1995).

Do What You Can with the Resources You Have!

Building a company is not about being the inventor, it is about having something to sell. The inventor role is important in terms of creating new technology. However, the inventor may not benefit from his or her invention. The people who develop products based on the technology maybe the ones who benefit the most. It is not necessary that the entrepreneur is the inventor of the product. Entrepreneurs must have a proven product that works in real world situation. It is important that their product is better than the alternatives in some way. Apple was not the inventor of the personal computer. Xerox had a personal computer with graphic user interface and mouse 10 years before Apple existed. What Apple had was the vision and ability to take a risk. It was the vision of the founders that everyone should have a personal computer that drove them forward in their beliefs. Being able to take risk, having a vision of the future, and the will to succeed is more important. Investors invest in the people, not the product. Anyone could have a good idea, but it is the ability to take the idea and skills and turn them into a product that is what builds a company.

Bill Gates and Paul Allen spent eight weeks developing the BASIC language for the MITS. H. Edward Roberts did not know what he had. Gates knew, then used MITS as a launching pad for his company. MITS could have become Apple. The Altair 8800 could have been the Apple II, but without having a vision of the future, it was difficult for them to create products.

IBM adopted Oracle database because they were late to enter the market. Oracle added new features to their database every year. IBM developed the idea of the relational database. They allowed E. F. Codd to publish a white paper for the world to view instead of developing it themselves. IBM was a living enterprise; it was the industry leader, but it also was the giant unable to take risk. Their executive just wanted to play it safe so they did not try to change things.

The founders of the four companies focused on the customers, they tried to understand what the customer wanted because they saw themselves as the customers. They saw a different way of doing business. Larry Page and Sergey viewed the search engine as a cornerstone for the Internet. They wanted the Internet to be a media that was useful and actual which would provide relevant search results to the users. Their concept of using backlinks provided a better way of doing things. Their company, Google, became a verb for searching on the internet.

The startups have the advantage of being able to move quickly. With a few decision makers and willingness to work all night and on weekends, entrepreneurs can compete against the industry giants because industry giants are slow to move. The entrepreneurs can make decisions faster, develop product cheaper, and service the customer better because of their size. The initial product from the four companies cost less than \$10,000. When they became giants in the marketplace, they had to spend millions to hire more people and needed to make tougher decision in developing the product with strict legal reviews.

Contribution to Fellow Entrepreneurs

The contribution I am making to this area of study is to provide a guideline for fellow technology entrepreneurs showing that it is possible to build a living enterprise. For me it began with exploring an idea that could be used to develop a useful product. This idea led to the creation of my company. Along the way, I experienced many setbacks and pitfalls. As an entrepreneur in the beginning, I was told “No” many times, but through great effort and hard work, the negative replies sometimes became positive replies. From this study, I learned that I was not alone. As I studied each of the founders, I realized they also experienced struggles like me, but they believed in themselves and what they needed to do in order to move their companies forward. The founders’ struggles from the beginning to present day can be a lesson for all aspiring entrepreneurs. The founders should be viewed as regular people with a vision, who came from working class and middle class backgrounds, who worked hard every day to make their vision a reality.

Founders as Values-Driven Leaders

The four genius founders, Steve Wozniak, Paul Allen, Bob Miner, and Sergey Brin, acquired strong engineering skills compared to their leader founder counterparts.

They acquired the skills needed to create the initial products but they did not have the leadership skills necessary to bring the product to market. As the companies grew, the genius founders would be the first to exit the business because of the research and development departments' achievements. These departments were established and headed by experienced directors, so the companies were less reliant on the genius founders' expertise. The companies acquired plenty of capital to hire the best engineers and programmers from around the world. The founders became geniuses among geniuses.

The leader founders, Steve Jobs, Bill Gates, Larry Ellison, and Larry Page, acquired the skills to take the product to market and run with it. When a company is operational, the execution of the business plan becomes more important than the product. The operations grew into systems, with a system taking over a business function. The growing company needed to be able to handle accounts receivable and accounts payable. It needed to have a procedure and policy in place to hire and terminate an employee.

The founders are values-driven leaders in their own way. Each placed importance on the differences that translated into the companies they were building. Steve Jobs

valued product design and consumer loyalty. He placed importance on being different, providing quality and ease of use. Bill Gates valued building relationships and made sure that he had a good relationship with IBM in order for his company to grow. He understood the importance of hardware manufacturing and creating integrated relationships. Larry Ellison valued marketing and sales and focused on building a strong sales force that could communicate the value of its products and services. Larry Page and Sergey Brin valued information. They wanted to share as much information as possible with the world. They wanted to make it easy to access relevant information. Each of the founders showed that they are values-driven leaders.

Appendix A: Apple Financial Data

Apple Computer	Year 0	Year 1	Year 2	Year 3
Source: SEC filings	1976	1977	1978	1979
Revenue		\$ 773,977	\$ 7,883,486	\$ 47,933,981
Earnings		\$ 41,575	\$ 793,497	\$ 5,072,812
Cost of Sales		403,282	3,939,959	27,480,412
Research and Development		\$ 75,520	\$ 597,369	\$ 3,601,090
Marketing & Distribution		162,419	1,290,562	4,097,081
General and Administrative		76,178	485,922	2,616,365
Advertising		56,255	573,000	2,011,000
Foreign Operations Revenue		-	-	-
Earnings per common		\$ 0.01	\$ 0.03	\$ 0.12
Cash Dividend		\$ -	\$ -	\$ -
Outstanding shares		16,640,000	31,544,000	43,305,632
Cash and temp cash investment		\$ 12,820	\$ 775,000	\$ 562,800
Accounts Receivable		\$ 382,895	\$ 1,509,515	\$ 9,178,311
Inventory		\$ 173,203	\$ 1,661,548	\$ 10,102,717
Total Assets		\$ 642,750	\$ 4,340,790	\$ 21,170,979
Total Current Liabilities		\$ 454,031	\$ 1,822,869	\$ 11,083,593
Total shareholders' equity		\$ 161,530	\$ 2,245,510	\$ 9,680,350
Cash Generated By Operations		189,566	2,146,057	8,038,000
Annual Growth Rate			919%	508%
Market Cap				
Number of Employees			31	
Chairman				
CEO			Steve Jobs	
CFO or Head of Finance				
Research and Development		10%	8%	8%
Marketing & Distribution		21%	16%	9%
General and Administrative		10%	6%	5%
Advertising		7%	7%	4%
Foreign Operations Revenue		0%	0%	0%

(Apple Computer, Inc., 1980)

Apple Computer	Year 4	Year 5	Year 6
Source: SEC filings	1980	1981	1982
Revenue	\$ 117,901,543	\$ 334,783,000	\$ 583,061,000
Earnings	\$ 11,697,983	\$ 39,420,000	\$ 61,306,000
Cost of Sales	67,328,954	170,124,000	288,001,000
Research and Development	\$ 7,282,339	\$ 20,956,000	\$ 37,979,000
Marketing & Distribution	12,109,498	55,369,000	119,945,000
General and Administrative	6,819,352	22,191,000	34,927,000
Advertising	4,469,000	18,808,000	45,600,000
Foreign Operations Revenue	-	\$ 90,642,000	\$ 142,166,000
Earnings per common	\$ 0.24	\$ 0.70	\$ 1.06
Cash Dividend	\$ -	\$ -	\$ -
Outstanding shares	52,398,928	55,397,387	57,528,550
Cash and temp cash investment	\$ 362,819	\$ 72,834,000	\$ 153,056,000
Accounts Receivable	\$ 17,441,066	\$ 42,330,000	\$ 71,478,000
Inventory	\$ 34,191,620	\$ 103,873,000	\$ 75,368,000
Total Assets	\$ 65,350,341	\$ 254,838,000	\$ 357,787,000
Total Current Liabilities	\$ 37,780,125	\$ 70,280,000	\$ 85,756,000
Total shareholders' equity	\$ 25,948,540	\$ 177,387,000	\$ 257,092,000
Cash Generated By Operations	19,143,000	166,087,000	105,058,000
Annual Growth Rate	146%	184%	74%
Market Cap	\$ 890,781,776	\$ 1,598,151,537	\$ 1,235,656,215
Number of Employees	1015	2456	3391
Chairman	A.C. Markkula, Jr	Steve Jobs	Steve Jobs
CEO	Michael M. Scott	A.C. Markkula, Jr	A.C. Markkula, Jr
CFO or Head of Finance		Joseph A. Grasiano	Joseph A. Grasiano
Research and Development	6%	6%	7%
Marketing & Distribution	10%	17%	21%
General and Administrative	6%	7%	6%
Advertising	4%	6%	8%
Foreign Operations Revenue	0%	27%	24%

(Apple Computer, Inc., 1980)

(Apple Computer, Inc., 1981)

(Apple Computer, Inc., 1982)

(Apple Computer, Inc., 1983)

(Apple Computer, Inc., 1984)

(Apple Computer, Inc., 1985)

Apple Computer	Year 7	Year 8	Year 9
Source: SEC filings	1983	1984	1985
Revenue	\$982,769,000	\$ 1,515,876,000	\$ 1,918,280,000
Earnings	\$ 76,714,000	\$ 64,055,000	\$ 61,223,000
Cost of Sales	505,765,000	878,586,000	1,117,864,000
Research and Development	\$ 60,040,000	\$ 71,136,000	\$ 73,000,000
Marketing & Distribution	229,961,000	392,866,000	478,079,000
General and Administrative	57,364,000	81,840,000	110,077,000
Advertising	77,755,000	179,739,000	187,457,000
Foreign Operations Revenue	\$218,353,000	\$ 327,987,000	\$ 427,884,000
Earnings per common	\$ 1.28	\$ 1.05	\$ 0.99
Cash Dividend	\$ -	\$ -	\$ -
Outstanding shares	59,378,283	60,607,946	62,115,390
Cash and temp cash investment	\$143,284,000	\$ 114,888,000	\$ 337,013,000
Accounts Receivable	\$136,420,000	\$ 258,238,000	\$ 220,157,000
Inventory	\$142,457,000	\$ 264,238,000	\$ 166,951,000
Total Assets	\$556,579,000	\$ 788,786,000	\$ 936,177,000
Total Current Liabilities	\$128,786,000	\$ 255,184,000	\$ 295,425,000
Total shareholders' equity	\$377,901,000	\$ 464,565,000	\$ 530,487,000
Cash Generated By Operations	178,946,000	145,713,000	160,688,000
Annual Growth Rate	69%	54%	27%
Market Cap	\$913,362,398	\$ 1,108,973,000	\$ 1,031,656,000
Number of Employees	4645	5382	4300
Chairman	Steve Jobs	Steve Jobs	
CEO	John Sculley	John Sculley	John Sculley
CFO or Head of Finance	Joseph A. Grasioano	Joseph A. Grasioano	David J. Barram
Research and Development	6%	5%	4%
Marketing & Distribution	23%	26%	25%
General and Administrative	6%	5%	6%
Advertising	8%	12%	10%
Foreign Operations Revenue	22%	22%	22%

(Apple Computer, Inc., 1983)

(Apple Computer, Inc., 1984)

(Apple Computer, Inc., 1985)

Apple Computer	Year 10	Year 11	Year 12
Source: SEC filings	1986	1987	1988
Revenue	\$ 1,901,898,000	\$ 2,661,068,000	\$ 4,071,373,000
Earnings	\$ 153,963,000	\$ 217,496,000	\$ 400,258,000
Cost of Sales	891,112,000	1,296,220,000	1,990,879,000
Research and Development	\$ 128,000,000	\$ 191,554,000	\$ 272,512,000
Marketing & Distribution	476,685,000	655,219,000	952,577,000
General and Administrative	132,812,000	146,637,000	235,067,000
Advertising	157,833,000	222,398,000	328,011,000
Foreign Operations Revenue	\$ 490,086,000	\$ 720,699,000	\$ 1,305,045,000
Earnings per common	\$ 2.39	\$ 1.65	\$ 3.08
Cash Dividend	\$ -	\$ 0.12	\$ 0.32
Outstanding shares	62,682,636	124,385,360	123,011,724
Cash and temp cash investment	\$ 576,215,000	\$ 565,094,000	\$ 545,717,000
Accounts Receivable	\$ 263,126,000	\$ 405,637,000	\$ 638,816,000
Inventory	\$ 108,680,000	\$ 225,753,000	\$ 461,470,000
Total Assets	\$ 1,160,128,000	\$ 1,477,931,000	\$ 2,082,086,000
Total Current Liabilities	\$ 328,535,000	\$ 478,678,000	\$ 827,093,000
Total shareholders' equity	\$ 1,160,128,000	\$ 836,488,000	\$ 1,003,425,000
Cash Generated By Operations	315,210,000	188,104,000	294,440,000
Annual Growth Rate	-1%	40%	53%
Market Cap	\$ 2,282,741,840	\$ 3,776,598,903	\$ 4,505,969,452
Number of Employees	5,600	7200	10800
Chairman	John Sculley	John Sculley	John Sculley
CEO	John Sculley	John Sculley	John Sculley
CFO or Head of Finance	David J. Barram	David J. Barram	David J. Barram
Research and Development	7%	7%	7%
Marketing & Distribution	25%	25%	23%
General and Administrative	7%	6%	6%
Advertising	8%	8%	8%
Foreign Operations Revenue	26%	27%	32%

(Apple Computer, Inc., 1986)

(Apple Computer, Inc., 1987)

(Apple Computer, Inc., 1988)

Apple Computer	Year 13
Source: SEC filings	1989
Revenue	\$5,284,013,000
Earnings	\$ 454,033,000
Cost of Sales	2,694,823,000
Research and Development	\$ 420,083,000
Marketing & Distribution	1,207,464,000
General and Administrative	327,330,000
Advertising	387,906,000
Foreign Operations Revenue	\$1,882,551,000
Earnings per common	\$ 3.53
Cash Dividend	\$ 0.40
Outstanding shares	125,692,670
Cash and temp cash investment	\$ 808,950,000
Accounts Receivable	\$ 792,824,000
Inventory	\$ 475,377,000
Total Assets	\$2,743,899,000
Total Current Liabilities	\$ 895,243,000
Total shareholders' equity	\$1,485,899,000
Cash Generated By Operations	507,347,000
Annual Growth Rate	30%
Market Cap	\$5,453,791,095
Number of Employees	12000
Chairman	John Sculley
CEO	John Sculley
CFO or Head of Finance	Joseph A. Graziano
Research and Development	8%
Marketing & Distribution	23%
General and Administrative	6%
Advertising	7%
Foreign Operations Revenue	36%

(Apple Computer, Inc., 1989)

Appendix B: Microsoft Financial Data

Microsoft	Year 0	Year 1	Year 2
SEC filing source	1975	1976	1977
Revenue	\$ 16,005	\$ 22,496	\$ 381,715
Earnings			
Cost of Sales			
Research and Development			
Marketing & Distribution			
General and Administrative			
Advertising			
Foreign Operations			
Revenue			
Earnings per common			
Cash Dividend			
Outstanding shares			
Cash and temp cash investment			
Accounts Receivable			
Inventory			
Total Assets			
Total Current Liabilities			
Total shareholders' equity			
Cash Generated By Operations			
Annual Growth Rate		41%	1597%
Market Cap			
Number of Employees		6	9
Chairman			
CEO			
CFO or Head of Finance			
Research and Development		0%	0%
Marketing & Distribution		0%	0%
General and Administrative		0%	0%
Advertising		0%	0%
Foreign Operations			
Revenue		0%	0%

(Microsoft, 2009)

Microsoft	Year 3	Year 4	Year 5
SEC filing source	1978	1979	1980
Revenue	\$ 1,355,655	\$ 2,390,145	\$ 8,000,000
Earnings			
Cost of Sales			
Research and Development			
Marketing & Distribution			
General and Administrative			
Advertising			
Foreign Operations			
Revenue			
Earnings per common			
Cash Dividend			
Outstanding shares			
Cash and temp cash investment			
Accounts Receivable			
Inventory			
Total Assets			
Total Current Liabilities			
Total shareholders' equity			
Cash Generated By Operations			
Annual Growth Rate	255%	76%	235%
Market Cap			
Number of Employees	13	28	40
Chairman			
CEO			
CFO or Head of Finance			
Research and Development	0%	0%	0%
Marketing & Distribution	0%	0%	0%
General and Administrative	0%	0%	0%
Advertising	0%	0%	0%
Foreign Operations			
Revenue	0%	0%	0%

(Microsoft, 2009)

Microsoft	Year 6	Year 7	Year 8
SEC filing source	1981	1982	1983
Revenue	\$ 17,331,000	\$ 24,486,000	\$ 50,065,000
Earnings		\$ 5,595,000	\$ 11,064,000
Cost of Sales		\$ 8,647,000	\$ 15,773,000
Research and Development		\$ 3,597,000	\$ 7,021,000
Marketing & Distribution		4,009,000	11,916,000
General and Administrative		3,037,000	4,688,000
Advertising			
Foreign Operations			
Revenue			
Earnings per common		\$ 0.17	\$ 0.29
Cash Dividend			
Outstanding shares			
Cash and temp cash investment			
Accounts Receivable			
Inventory			
Total Assets			
Total Current Liabilities			
Total shareholders' equity		\$ 8,299,000	\$ 14,639,000
Cash Generated By Operations		5,305,000	9,952,000
Annual Growth Rate	117%	41%	104%
Market Cap			
Number of Employees	129	220	
Chairman			
CEO			
CFO or Head of Finance			
Research and Development	0%	15%	14%
Marketing & Distribution	0%	16%	24%
General and Administrative	0%	12%	9%
Advertising	0%	0%	0%
Foreign Operations Revenue	0%	0%	0%

(Microsoft, 2009)

(Microsoft Corporation, 1986)

Microsoft	Year 9	Year 10	Year 11
SEC filing source	1984	1985	1986
Revenue	\$ 97,479,000	\$ 140,417,000	\$ 197,514,000
Earnings	\$ 28,030,000	\$ 42,843,000	\$ 39,254,000
Cost of Sales	\$ 22,900,000	\$ 30,447,000	\$ 40,862,000
Research and Development	\$ 10,665,000	\$ 17,108,000	\$ 20,523,000
Marketing & Distribution	26,027,000	42,512,000	57,668,000
General and Administrative	8,784,000	9,443,000	17,555,000
Advertising	10,243,000	14,303,000	14,447,000
Foreign Operations			
Revenue	\$ 7,005,000	\$ 16,640,000	\$ 36,227,000
Earnings per common	\$ 0.69	\$ 1.04	\$ 1.56
Cash Dividend			
Outstanding shares			25,783,013
Cash and temp cash investment	\$ 3,282,000	\$ 18,948,000	\$ 102,676,000
Accounts Receivable	\$ 23,566,000	\$ 25,273,000	\$ 34,499,000
Inventory	\$ 9,770,000	\$ 5,919,000	\$ 8,008,000
Total Assets	\$ 47,637,000	\$ 65,064,000	\$ 170,739,000
Total Current Liabilities		\$ 10,624,000	\$ 29,528,000
Total shareholders' equity	\$ 30,712,000	\$ 54,440,000	\$ 139,332,000
Cash Generated By Operations	21,450,000	41,442,000	118,452,000
Annual Growth Rate	95%	44%	41%
Market Cap			\$ 356,929,000
Number of Employees	860	998	1153
Chairman		Bill Gates	Bill Gates
CEO		Bill Gates	Bill Gates
CFO or Head of Finance		Francis J Gaudette	Francis J Gaudette
Research and Development	11%	12%	10%
Marketing & Distribution	27%	30%	29%
General and Administrative	9%	7%	9%
Advertising	11%	10%	7%
Foreign Operations Revenue	7%	12%	18%

(Microsoft Corporation, 1986)

Microsoft	Year 12	Year 13	Year 14
SEC filing source	1987	1988	1989
Revenue	\$ 345,890,000	\$ 590,827,000	\$ 803,530,000
Earnings	\$ 71,878,000	\$ 123,908,000	\$ 170,538,000
Cost of Sales	\$ 73,854,000	\$ 148,000,000	\$ 204,185,000
Research and Development	\$ 38,076,000	\$ 69,776,000	\$ 110,220,000
Marketing & Distribution	85,070,000	161,614,000	218,997,000
General and Administrative	22,003,000	23,990,000	27,898,000
Advertising	9,394,000	18,439,000	22,459,000
Foreign Operations			
Revenue	\$ 93,267,000	\$ 191,699,000	\$ 284,474,000
Earnings per common	\$ 1.30	\$ 2.22	\$ 3.03
Cash Dividend			
Outstanding shares	52,956,274	53,864,333	54,804,000
Cash and temp cash investment	\$ 132,484,000	\$ 183,225,000	\$ 300,791,000
Accounts Receivable	\$ 55,131,000	\$ 93,602,000	\$ 111,180,000
Inventory	\$ 16,555,000	\$ 53,542,000	\$ 37,755,000
Total Assets	\$ 287,754,000	\$ 493,019,000	\$ 720,598,000
Total Current Liabilities	\$ 46,644,000	\$ 117,521,000	\$ 158,818,000
Total shareholders' equity	\$ 239,105,000	\$ 375,498,000	\$ 561,780,000
Cash Generated By Operations	166,358,000	227,827,000	310,131,000
Annual Growth Rate	75%	71%	36%
Market Cap	\$ 1,658,206,000	\$ 1,465,232,000	\$ 1,727,378,000
Number of Employees	1816	2793	4037
Chairman	Bill Gates	Bill Gates	Bill Gates
CEO	Bill Gates	Bill Gates	Bill Gates
CFO or Head of Finance	Francis J Gaudette	Francis J Gaudette	Francis J Gaudette
Research and Development	11%	12%	14%
Marketing & Distribution	25%	27%	27%
General and Administrative	6%	4%	3%
Advertising	3%	3%	3%
Foreign Operations Revenue	27%	32%	35%

(Microsoft, Inc., 1987)

(Microsoft, Inc., 1988)

(Microsoft, Inc., 1989)

Microsoft	Year 15	Year 16	Year 17
SEC filing source	1990	1991	1992
Revenue	\$ 1,183,446,000	\$ 1,843,432,000	\$ 2,758,725,000
Earnings	\$ 279,186,000	\$ 462,743,000	\$ 708,060,000
Cost of Sales	\$ 252,668,000	\$ 362,589,000	\$ 466,424,000
Research and Development	\$ 180,615,000	\$ 235,386,000	\$ 352,153,000
Marketing & Distribution	317,593,000	\$ 533,619,000	\$ 854,537,000
General and Administrative	39,332,000	\$ 61,996,000	\$ 89,632,000
Advertising	34,782,000	52,756,000	\$ 86,886,000
Foreign Operations			
Revenue	\$ 465,816,000	\$ 869,073,000	\$ 1,266,095,000
Earnings per common	\$ 2.34	\$ 2.47	
Cash Dividend			
Outstanding shares	113,556,000	175,675,000	274,536,455
Cash and temp cash investment	\$ 449,238,000	\$ 686,314,000	\$ 1,344,901,000
Accounts Receivable	\$ 180,998,000	\$ 243,304,000	\$ 270,215,000
Inventory	\$ 55,565,000	\$ 47,106,000	\$ 85,873,000
Total Assets	\$ 1,105,349,000	\$ 1,644,184,000	\$ 2,639,903,000
Total Current Liabilities	\$ 186,786,000	\$ 293,353,000	\$ 446,945,000
Total shareholders' equity	\$ 918,563,000	\$ 1,350,831,000	\$ 2,192,958,000
Cash Generated By Operations	533,104,000	\$ 735,150,000	\$ 1,322,759,000
Annual Growth Rate	47%	56%	50%
Market Cap	\$ 2,828,061,000	\$ 6,821,000,000	\$ 11,164,853,233
Number of Employees	5635	8226	11542
Chairman	Bill Gates	Bill Gates	Bill Gates
CEO	Bill Gates	Bill Gates	Bill Gates
CFO or Head of Finance	Francis J Gaudette	Francis J Gaudette	Francis J Gaudette
Research and Development	15%	13%	13%
Marketing & Distribution	27%	29%	31%
General and Administrative	3%	3%	3%
Advertising	3%	3%	3%
Foreign Operations Revenue	39%	47%	46%

(Microsoft, Inc., 1990)

(Microsoft, Inc., 1991)

(Microsoft, Inc., 1992)

Appendix C: Oracle Financial Data

Oracle	Year 0	Year 1	Year 2
SEC filing source	1977	1978	1979
Revenue	\$ -	\$ 200,000	\$ 450,000
Earnings			
Cost of Sales			
Research and Development			
Marketing & Distribution			
General and Administrative			
Advertising			
Foreign Operations Revenue			
Earnings per common			
Cash Dividend			
Outstanding shares			
Cash and temp cash investment			
Accounts Receivable			
Inventory			
Total Assets			
Total Current Liabilities			
Total shareholders' equity			
Cash Generated By Operations			
Annual Growth Rate			125%
Market Cap			
Number of Employees			
Chairman			
CEO			
CFO or Head of Finance			
Research and Development		0%	0%
Marketing & Distribution		0%	0%
General and Administrative		0%	0%
Advertising		0%	0%
Foreign Operations Revenue		0%	0%

Oracle	Year 3	Year 4	Year 5
SEC filing source	1980	1981	1982
Revenue	\$ 600,000	\$ 1,218,000	\$ 2,473,000
Earnings		\$ 43,000	\$ 273,000
Cost of Sales		-	-
Research and Development		\$ 527,000	\$ 858,000
Marketing & Distribution		\$ 411,000	\$ 958,000
General and Administrative		\$ 185,000	\$ 310,000
Advertising			
Foreign Operations Revenue			
Earnings per common		\$ -	\$ 0.02
Cash Dividend			
Outstanding shares			10,745,744
Cash and temp cash investment			
Accounts Receivable			
Inventory			
Total Assets		\$ 1,045,000	\$ 1,328,000
Total Current Liabilities			
Total shareholders' equity		\$ 180,000	\$ 638,000
Cash Generated By Operations		\$ 35,000	\$ 230,000
Annual Growth Rate	33%	103%	103%
Market Cap			
Number of Employees	8	12	35
Chairman			
CEO			
CFO or Head of Finance			
Research and Development	0%	43%	35%
Marketing & Distribution	0%	34%	39%
General and Administrative	0%	15%	13%
Advertising	0%	0%	0%
Foreign Operations Revenue	0%	0%	0%

(Oracle Systems Corporation, 1986)

Oracle	Year 6	Year 7	Year 8
SEC filing source	1983	1984	1985
Revenue	\$ 5,037,000	\$ 12,715,000	\$ 23,159,000
Earnings	\$ 658,000	\$ 1,389,000	\$ 1,551,000
Cost of Sales	-	\$ -	\$ -
Research and Development	\$ 1,287,000	\$ 2,009,000	\$ 3,886,000
Marketing & Distribution	\$ 1,944,000	\$ 6,431,000	\$ 14,542,000
General and Administrative	\$ 790,000	\$ 1,673,000	\$ 1,989,000
Advertising	\$ 124,000	\$ 228,000	\$ 330,000
Foreign Operations Revenue	\$ 1,201,000	\$ 4,306,000	\$ 7,539,000
Earnings per common	\$ 0.06	\$ 0.11	\$ 0.12
Cash Dividend			
Outstanding shares	10,678,594	10,851,970	10,889,295
Cash and temp cash investment		\$ 115,000	\$ 599,000
Accounts Receivable		\$ 3,948,000	\$ 9,032,000
Inventory			
Total Assets	\$ 2,615,000	\$ 7,085,000	\$ 15,463,000
Total Current Liabilities		\$ 4,054,000	\$ 6,383,000
Total shareholders' equity	\$ 1,226,000	\$ 2,694,000	\$ 7,367,000
Cash Generated By Operations	\$ 655,000	\$ 180,000	\$ 3,579,000
Annual Growth Rate	104%	152%	82%
Market Cap			
Number of Employees			
Chairman			
CEO			
CFO or Head of Finance			
Research and Development	26%	16%	17%
Marketing & Distribution	39%	51%	63%
General and Administrative	16%	13%	9%
Advertising	2%	2%	1%
Foreign Operations Revenue	24%	34%	33%

(Oracle Systems Corporation, 1986)

Oracle	Year 9	Year 10	Year 11
SEC filing source	1986	1987	1988
Revenue	\$ 55,383,000	\$ 131,271,000	\$ 282,113,000
Earnings	\$ 5,896,000	\$ 15,623,000	\$ 42,886,000
Cost of Sales	\$ 5,644,000	\$ 18,661	\$ 51,241,000
Research and Development	\$ 6,978,000	\$ 7,876,000	\$ 25,708,000
Marketing & Distribution	\$ 33,315,000	\$ 86,385,000	\$ 124,168,000
General and Administrative	\$ 4,248,000	\$ 8,603,000	\$ 17,121,000
Advertising	\$ 1,337,000	\$ 4,851,000	\$ 10,218,000
Foreign Operations Revenue	\$ 19,361,000	\$ 61,420,000	\$ 133,968,000
Earnings per common	\$ 0.43	\$ 0.50	\$ 0.65
Cash Dividend			
Outstanding shares	13,188,968	28,986,843	60,876,791
Cash and temp cash investment	\$ 12,524,000	\$ 37,557,000	\$ 48,610,000
Accounts Receivable	\$ 27,508,000	\$ 65,205,000	\$ 129,999,000
Inventory			
Total Assets	\$ 57,428,000	\$ 143,792,000	\$ 249,568,000
Total Current Liabilities	\$ 22,293,000	\$ 48,425,000	\$ 102,183,000
Total shareholders' equity	\$ 28,651,000	\$ 82,656,000	\$ 134,643,000
Cash Generated By Operations	\$ 19,178,000	\$ 60,713,000	\$ 89,644,000
Annual Growth Rate	139%	137%	115%
Market Cap	\$ 133,260,439	\$ 375,694,386	\$ 690,601,094
Number of Employees	556	1,072	2207
Chairman	Donald L Lucas	Donald L Lucas	Donald L Lucas
CEO	Lawrence Ellison	Lawrence Ellison	Lawrence Ellison
CFO or Head of Finance	Robert J Oster	Jeffery L Walker	Jeffery L Walker
Research and Development	13%	6%	9%
Marketing & Distribution	60%	66%	44%
General and Administrative	8%	7%	6%
Advertising	2%	4%	4%
Foreign Operations Revenue	35%	47%	47%

(Oracle Systems Corporation, 1986)

(Oracle Systems Corporation, 1987)

(Oracle Systems Corporation, 1988)

Oracle	Year 12	Year 13	Year 14
SEC filing source	1989	1990	1991
Revenue	\$ 583,673,000	\$ 970,844,000	\$ 1,027,949,000
Earnings	\$ 81,766,000	\$ 117,410,000	\$ (12,401,000)
Cost of Sales	\$ 100,987,000	\$ 160,426,000	\$ 266,430,000
Research and Development	\$ 52,570,000	\$ 88,291,000	\$ 82,730,000
Marketing & Distribution	\$ 272,812,000	\$ 465,074,000	\$ 551,507,000
General and Administrative	\$ 34,344,000	\$ 67,258,000	\$ 100,503,000
Advertising	\$ 14,086,000	\$ 19,838,000	\$ 23,133,000
Foreign Operations Revenue	\$ 281,959,000	\$ 478,730,000	\$ 601,672,000
Earnings per common	\$ 0.61	\$ 0.86	\$ (0.09)
Cash Dividend			
Outstanding shares	127,281,232	131,483,710	136,509,648
Cash and temp cash investment	\$ 44,893,000	\$ 44,848,000	\$ 101,481,000
Accounts Receivable	\$ 261,989,000	\$ 468,071,000	\$ 385,985,000
Inventory			
Total Assets	\$ 460,209,000	\$ 787,247,000	\$ 857,640,000
Total Current Liabilities	\$ 178,333,000	\$ 283,572,000	\$ 479,375,000
Total shareholders' equity	\$ 230,554,000	\$ 387,585,000	\$ 344,685,000
Cash Generated By Operations	\$ 158,600,000	\$ 234,913,000	\$ 106,822,000
Annual Growth Rate	107%	66%	6%
Market Cap	\$ 1,175,440,244	\$ 1,406,166,227	\$ 831,479,755
Number of Employees	4148	6811	7466
Chairman	Donald L Lucas	Lawrence Ellison	Lawrence Ellison
CEO	Lawrence Ellison	Lawrence Ellison	Lawrence Ellison
CFO or Head of Finance	Jeffery L Walker	Jeffery L Walker	Jeffery O. Henley
Research and Development	9%	9%	8%
Marketing & Distribution	47%	48%	54%
General and Administrative	6%	7%	10%
Advertising	2%	2%	2%
Foreign Operations Revenue	48%	49%	59%

(Oracle Systems Corporation, 1989)

(Oracle Systems Corporation, 1990)

(Oracle Systems Corporation, 1991)

Oracle	Year 15	Year 16	Year 17
SEC filing source	1992	1993	1994
Revenue	\$ 1,178,496,000	\$ 1,502,768,000	\$ 2,001,147,000
Earnings	\$ 61,510,000	\$ 98,256,000	\$ 283,720,000
Cost of Sales	\$ 281,562,000	\$ 346,633,000	\$ 499,213,000
Research and Development	\$ 110,641,000	\$ 146,420,000	\$ 197,086,000
Marketing & Distribution	\$ 566,431,000	\$ 646,027,000	\$ 749,796,000
General and Administrative	\$ 106,199,000	\$ 122,709,000	\$ 135,099,000
Advertising	\$ 22,306,000	\$ 18,226,000	\$ 27,227,000
Foreign Operations Revenue	\$ 729,030,000	\$ 927,915,000	\$ 1,186,227,000
Earnings per common	\$ 0.43	\$ 0.97	\$ 0.34
Cash Dividend			
Outstanding shares	139,943,401	143,877,749	286,439,008
Cash and temp cash investment	\$ 153,283,000	\$ 284,560,000	\$ 404,810,000
Accounts Receivable	\$ 360,946,000	\$ 359,360,000	\$ 455,884,000
Inventory			
Total Assets	\$ 955,572,000	\$ 1,184,020,000	\$ 1,594,984,000
Total Current Liabilities	\$ 405,998,000	\$ 551,343,000	\$ 682,101,000
Total shareholders' equity	\$ 435,034,000	\$ 528,039,000	\$ 740,553,000
Cash Generated By Operations	\$ 234,724,000	\$ 290,964,000	\$ 393,511,000
Annual Growth Rate	15%	28%	33%
Market Cap	\$ 1,478,433,317	\$ 5,042,086,655	\$ 8,274,092,550
Number of Employees	8160	9247	12058
Chairman	Lawrence Ellison	James A Abrahamson	James A Abrahamson
CEO	Lawrence Ellison	Lawrence Ellison	Lawrence Ellison
CFO or Head of Finance	Jeffery O. Henley	Jeffery O. Henley	Jeffery O. Henley
Research and Development	9%	10%	10%
Marketing & Distribution	48%	43%	37%
General and Administrative	9%	8%	7%
Advertising	2%	1%	1%
Foreign Operations Revenue	62%	62%	59%

(Oracle Systems Corporation, 1992)

(Oracle Systems Corporation, 1993)

(Oracle Systems Corporation, 1994)

Oracle	Year 18
SEC filing source	1995
Revenue	\$ 2,966,878,000
Earnings	\$ 441,518,000
Cost of Sales	779,012,000
Research and Development	\$ 260,597,000
Marketing & Distribution	\$ 1,103,345,000
General and Administrative	\$ 174,203,000
Advertising	
Foreign Operations Revenue	\$ 1,714,146,000
Earnings per common	\$ 1.00
Cash Dividend	
Outstanding shares	433,357,088
Cash and temp cash investment	\$ 480,158,000
Accounts Receivable	\$ 764,734,000
Inventory	
Total Assets	\$ 2,424,517,000
Total Current Liabilities	\$ 1,055,149,000
Total shareholders' equity	\$ 1,211,358,000
Cash Generated By Operations	\$ 562,045,000
Annual Growth Rate	48%
Market Cap	\$ 12,910,928,692
Number of Employees	16882
Chairman	Lawrence Ellison
CEO	Lawrence Ellison
CFO or Head of Finance	Jeffery O. Henley
Research and Development	9%
Marketing & Distribution	37%
General and Administrative	6%
Advertising	0%
Foreign Operations Revenue	58%

(Oracle Systems Corporation, 1995)

Appendix D: Google Financial Data

Google	Year 0	Year 1	Year 2
SEC filing source	1998	1999	2000
Revenue		\$ 220,000	\$ 19,108,000
Earnings		\$ (6,076,000)	\$ (14,690,000)
Cost of Sales		908,000	6081000
Research and Development		2,930,000	10,516,000
Marketing & Distribution		\$ 1,677,000	\$ 10,385,000
General and Administrative		\$ 1,221,000	\$ 4,357,000
Advertising			
Foreign Operations Revneue			
Earnings per common		\$ (0.14)	\$ (0.22)
Cash Dividend			
Outstanding shares		42,445,000	67,032,000
Cash and temp cash investment		\$ 20,038,000	\$ 19,101,000
Accounts Receivable			
Inventory			
Total Assets		\$ 25,808,000	\$ 46,872,000
Total Current Liabilites			
Total shareholders' equity		\$ 20,009,000	\$ 27,234,000
Cash Generated By Operations			
Annual Growth Rate			8585%
Market Cap			
Number of Employees			
Chairman			
CEO			
President CO-			
Research and Development		1332%	55%
Marketing & Distribution		762%	54%
General and Administrative		555%	23%
Advertising		0%	0%
Foreign Operations Revneue		0%	0%

Inc., 2004)

(Google,

Google	Year 3	Year 4	Year 5
SEC filing source	2001	2002	2003
Revenue	\$ 86,426,000	\$ 439,508,000	\$ 1,465,934,000
Earnings	\$ 6,985,000	\$ 99,656,000	\$ 105,648,000
Cost of Sales	14,228,000	\$ 131,510,000	\$ 625,854,000
Research and Development	16,500,000	31,748,000	91,228,000
Marketing & Distribution	\$ 20,076,000	\$ 43,849,000	\$ 120,328,000
General and Administrative	\$ 12,275,000	\$ 24,300,000	\$ 56,699,000
Advertising	\$ 5,300,000	\$ 7,000,000	\$ 20,900,000
Foreign Operations Revneue	\$ 12,444,000	\$ 164,161,000	\$ 758,071,000
Earnings per common	\$ 0.07	\$ 0.86	\$ 0.77
Cash Dividend			
Outstanding shares	94,523,000	115,242,000	137,697,000
Cash and temp cash investment	\$ 33,589,000	\$ 146,331,000	\$ 334,718,000
Accounts Receivable		\$ 61,994,000	\$ 154,690,000
Inventory			
Total Assets	\$ 84,457,000	\$ 286,892,000	\$ 871,458,000
Total Current Liabilites		\$ 89,508,000	\$ 235,452,000
Total shareholders' equity	\$ 50,152,000	\$ 173,983,000	\$ 588,770,000
Cash Generated By Operations	\$ 31,089,000	\$ 155,265,000	\$ 395,446,000
Annual Growth Rate	352%	409%	234%
Market Cap			
Number of Employees			
Chairman			
CEO			
President CO-			
Research and Development	19%	7%	6%
Marketing & Distribution	23%	10%	8%
General and Administrative	14%	6%	4%
Advertising	6%	2%	1%
Foreign Operations Revneue	14%	37%	52%

(Google, Inc., 2004)

Google	Year 6	Year 7
SEC filing source	2004	2005
Revenue	\$ 3,189,223,000	\$ 6,138,650,000
Earnings	\$ 399,119,000	\$ 1,465,397,000
Cost of Sales	\$ 1,457,653,000	\$ 2,577,088,000
Research and Development	225,632,000	599,510,000
Marketing & Distribution	\$ 246,300,000	\$ 468,152,000
General and Administrative	\$ 139,700,000	\$ 386,532,000
Advertising	\$ 37,700,000	\$ 104,300,000
Foreign Operations Revneue	\$ 2,150,814,000	\$ 2,381,764,000
Earnings per common	\$ 2.07	\$ 5.31
Cash Dividend		
Outstanding shares	114,754,458	177,033,940
Cash and temp cash investment	\$ 2,132,297,000	\$ 3,877,174,000
Accounts Receivable	\$ 311,836,000	\$ 687,976,000
Inventory		
Total Assets	\$ 3,313,351,000	\$ 10,271,813,000
Total Current Liabilites	\$ 340,368,000	\$ 745,384,000
Total shareholders' equity	\$ 2,929,056,000	\$ 9,418,957,000
Cash Generated By Operations	\$ 977,044,000	\$ 2,459,422,000
Annual Growth Rate	118%	92%
Market Cap	\$ 27,286,463,824	\$ 53,030,610,961
Number of Employees	1907	3,021
Chairman	Eric Schmidt	Eric Schmidt
CEO	Eric Schmidt	Eric Schmidt
President CO-	Sergey Brin	Sergey Brin
Research and Development	7%	10%
Marketing & Distribution	8%	8%
General and Administrative	4%	6%
Advertising	1%	2%
Foreign Operations Revneue	67%	39%

(Google, Inc., 2004)

(Google, Inc., 2005)

Google	Year 8	Year 9
SEC filing source	2006	2007
Revenue	\$ 10,604,917,000	\$ 16,593,986,000
Earnings	\$ 3,077,446,000	\$ 4,203,720,000
Cost of Sales	\$ 4,225,027,000	\$ 6,649,085,000
Research and Development	1,228,589,000	2,119,985,000
Marketing & Distribution	\$ 849,518,000	\$ 1,461,266,000
General and Administrative	\$ 751,787,000	\$ 1,279,250,000
Advertising	\$ 188,400,000	\$ 236,700,000
Foreign Operations Revneue	\$ 4,574,777,000	\$ 7,895,965,000
Earnings per common	\$ 10.21	\$ 13.53
Cash Dividend		
Outstanding shares	230,097,376	236,750,181
Cash and temp cash investment	\$ 3,544,671,000	\$ 6,081,593,000
Accounts Receivable	\$ 1,322,340,000	\$ 2,162,521,000
Inventory		
Total Assets	\$ 18,473,351,000	\$ 25,335,806,000
Total Current Liabilites	\$ 1,304,587,000	\$ 2,035,602,000
Total shareholders' equity	\$ 17,039,840,000	\$ 22,689,679,000
Cash Generated By Operations	\$ 3,580,508,000	\$ 5,775,410,000
Annual Growth Rate	73%	56%
Market Cap	\$ 98,268,092,107	\$ 104,596,093,551
Number of Employees	10674	16805
Chairman	Eric Schmidt	Eric Schmidt
CEO	Eric Schmidt	Eric Schmidt
President CO-	Sergey Brin	Sergey Brin
Research and Development	12%	13%
Marketing & Distribution	8%	9%
General and Administrative	7%	8%
Advertising	2%	1%
Foreign Operations Revneue	43%	48%

(Google, Inc., 2006)

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