

SUSTAINABLE ENTREPRENEURSHIP PROJECT

Growth Models for Emerging Companies

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§1 Introduction

Emerging companies, just like any form of organization, progress through various stages of their so-called “life cycle” in much the same way as individuals do as they grow physically and mentally and acquire experience through their activities and the problems that they must overcome. While each case is different it is useful to see emerging companies as going through several identifiable stages of growth, each of which has its own set of “typical” business characteristics and accompanying management issues and problems. While a single model of growth and development certainly cannot explain or predict everything for the management of a particular firm, it can be useful in providing them with a sense of where the company stands and the challenges that are likely to require their immediate attention and in the foreseeable future. Armed with information about the particular life cycle stage that the company is experiencing, management can anticipate problems and make intelligent choices about acquiring the necessary resources for the business, establishing priorities for work activities, and designing and managing the organizational structure of the firm.

There is no single theory regarding the stages of development of a business that is universally accepted and there is real controversy as to whether or not firms really do need to go through a single, predictable path as they grow and mature. Various factors, notably significant advantages in communications technology and rising standards of living in foreign markets, have pushed young businesses into global markets soon after formation and created challenges for their managers that were traditionally deferred until the firm had gone through an extended period of domestic growth and expansion. Companies are also becoming involved in acquisitions and strategic alliances with outside business partners before they have had an opportunity to fully build and stabilize their own internal business infrastructure. As a result, management may be overwhelmed by the size and scope of the human and physical assets that they need to oversee and the challenges of coordinating activities and strategic goals with new stakeholders who were not part of the original team that conceived and launched the company in the first place.

Reference to growth stages should not imply that all emerging companies will ultimately be successful. In fact, this is almost impossible to expect given the substantial risks and uncertainties associated with launching and growing a firm based on the viability of unproven technologies and other innovations. One study of companies in high technology industries in the United States found that 80% of the new start-up firms exited the market after one year and that among firms that actually survived until the fourth year, the exit rate within the following year remained over 60%. In fact, it was not until the seven or eighth year that firms could anticipate more than a 50% survival rate into the future, which means that it generally takes that long for the company to establish sufficient credibility in the marketplace and build an inventory of resources that can be used for sustainable growth.¹ For those firms that are able to survive long enough to establish a foothold in the target market, there is a strong likelihood that they will eventually be integrated into the operations of another company. For example, a study of

¹ Stuart Slatter, *Gambling on Growth: How to Manage the Small High-Tech Firm*, John Wiley & Sons, Chichester UK (1992).

technology-based firms organized in the 1960s indicated that a third of those firms had been acquired, including by merger, by 1980. In that survey, the mean age of the acquired firms was 6.4 years when the deal was completed.²

§2 Greiner's evolutionary stages of organizational growth

There is a significant amount of literature on stages of growth theory which posits that the development of organizations, including emerging companies, generally follows a predictable path that allows managers to anticipate in advance the challenges that will arise as a firm gets bigger and its activities become more complex. While stage models have rightly come under criticism as being too simplistic they nonetheless provide a good starting point for examining the path that the founders and other members of the senior management team of an emerging company can expect to follow.³ Greiner was one of the first to develop a model of the evolutionary stages of organizational growth and argued that firms can expect to go through five stages of growth, crisis and revolution as the company grows in size and matures. At the earliest stages, the firm begins by growing through "creativity" until it reaches the point where a "crisis of leadership" occurs. In order to move past that crisis and continue growing, the model suggests that the founders of the business must be prepared to delegate their authority and allow others, including professional managers from outside the original founding team, to assume responsibility for directing the operations of the business.⁴

§3 Churchill and Lewis' stages of small business growth

The model created by Churchill and Lewis identifies five stages of growth for small businesses, namely existence, survival, success, take-off and resource maturity. Movement through each of these stages is marked by confronting and resolving a series of practice problems and issues, such as making initial sales, ensuring timely deliveries, harvesting cash to fund rapid growth and managing consolidation as the firm (or specific product lines) mature. The model recognizes that the high growth companies are likely to lurch forward and back through the various stages by virtue of the nature of their business model. For example, the ride from an initial success, such as the development of the initial product, through take-off may be much more rapid than anticipated by the management, particularly if the demand for the product increases faster than forecasted and the meager resources of the firm are stretched to satisfy customer requirements before competitors jump into the market and eat away at the company's initial advantages. High growth business are also more likely to step backward in the stage continuum as they are constantly needing to generate new successes in order to survive and build the critical mass necessary for long-term sustainability.⁵

² F. Bruno and A. Cooper, "Pattern of Development and Acquisitions for Silicon Valley Start-ups," *Technovation*, Vol. 1 (1982).

³ The discussion of various stage models below draws from summaries provided in S. Slatter, *Gambling on Growth: How to Manage the Small High-Tech Firm* (Chichester UK: John Wiley & Sons, 1992), 135-138.

⁴ L.E. Greiner, "Evolution and Revolution as Organizations Grow," *Harvard Business Review* (July – August 1972).

⁵ N.C. Churchill and V.L. Lewis, "The Five Stages of Small Business Growth," *Harvard Business Review* (May-June 1983).

§4 Flamholz's transition from entrepreneurial to professional management

The model developed by Flamholz focuses on the transition that must be made between entrepreneurial and professional management for growing businesses. Four stages are identified, including new ventures, expansion, professionalization and consolidation, with emphasis placed on bridging the gap between stages two and three. There is no specific formula that can be used to determine exactly when the transition will or must occur. For example, if the firm has a single product line and is focused on a small number of product segments, the business may remain fairly simple for an extended period time even though sales volume rises rapidly and significantly. Similarly, the need to bring in outside professional managers will depend, at least in part, on the skills and experiences of the initial CEO and the remaining members of the management team that joined the firm at or soon after inception.⁶

§5 Kazanjian's stages of growth in technology-based new ventures

Kazanjian posited four stages of growth based on a survey of technology-based new ventures and attempted to identify the dominant problems and issues that arise at each stage. During the first stage, "conception and development," the firm is generally occupied with new product development and technology applications. The second stage, referred to as "commercialization," calls for acquisition of resources and the completion of activities relating to production start up. Each of these stages is generally handled through an initial organizational structure that remains small and informal and the firms in the study typically were no larger than 40 employees. Even at this point, however, the firm may begin to create and recognize specific functional units. If the efforts relating to commercialization are successful, the firm will be pushed forward into the next stage of "growth," which will create pressures on management to develop and maintain an organizational structure that is prepared to complete the complex tasks of establishing sales, manufacturing and distribution strategies to generate high volume sales at suitable levels of profitability. The fourth stage, which is referred to as "stability," is defined by profitability, internal controls and the conception and initiation of new projects to push further growth.⁷

§6 Filley's theory of small business and divisional growth

Filley studied the growth patterns of various firms that developed through internal expansion, as opposed to mergers and acquisitions, and identified several growth stages that were related to the internal dynamics of the company as opposed simply to measures of sales activity. The first stage was characterized by the charisma and entrepreneurial energy of the owner/founder and the dominant management style and activities were personal control and exploration and exploitation of innovative opportunities. The

⁶ E.G. Flamholz, *How to Make the Transition from an Entrepreneurial to a Professionally Managed Firm* (San Francisco, CA: Jossey-Bass, 1986).

⁷ R. K. Kazanjian, "Relation of Dominant Problems to Stages of Growth in Technology-Based New Ventures," *Academy of Management Journal*, 31(2) (1988), 257–279.

second stage was a period of dynamic growth during which the firm and its management team focused almost exclusively on external opportunities. Filley noted that little time and effort was devoted to internal efficiency and effectiveness and the company often suffered from serious gaps between the physical and human assets needed for an activity and the resources which were actually on hand. A number of management problems arose during the second stage; however, the reaction was generally one of avoidance rather than taking the time to address and solve them. Several internal and external developments during the second stage, including increasing competition and the expansion of the staff to include new specialized employees with a lower level of organizational commitment, even led to the third stage characterized as one of “rational administration.” At this point, the growth of the business has created pressure on the firm to become more efficient and cost conscious. As a result, steps are generally taken to impose more bureaucratic procedures and processes into the business.⁸

§7 Metamorphic growth stage model

The metamorphic growth stage model follows a path similar to the one posited by the traditional models of the product life cycle and envisions that firms pass through several different stages from launch through maturity. The first stage, referred to as “start up,” is dominated by entrepreneurial activity. The second stage is marked by organizational growth and maturity and the firm is generally focused on acquiring market share and defending its chosen market niche. The third or final stage is marked by decline and forces the firm to either undergo a major strategic transformation or cease to survive.

The metamorphic growth stage models have been subject to criticism on a number of fronts. First, commentators have taken issue with the notion that companies must inevitably grow and pass through all the stages of development, citing examples of firms that have found a size and niche that allows the organization to be stable yet adaptive to changes in the environment. Second, it has been argued that these models fail to give sufficient weight to important internal changes that generally occur during the launch and early growth stages of the company. Finally, the emphasis on sales as the primary indicator of growth in the size of the firm has been criticized for ignoring other important factors, such as complexity of the firm’s product line, number of locations, value added and the rate of technological change.⁹ In fact, it has been suggested that the size of the firm may actually be the result, rather than the determinant, of changes in the company’s internal and external environment as time passes since formation.¹⁰

Those that argue that metamorphic growth stage models do not have general application or utility can also point to evidence that shows that only a limited number of firms

⁸ A. C. Filley, *A Theory of Small Business and Divisional Growth*, Unpublished Doctoral Dissertation at Ohio State University (1963), as described in S. Carroll, “High Technology Companies and the Multiple Management Approach”, which appears in L.R. Gomez-Mejia and M.W. Lawless (eds), *Organizational Issues in High Technology Management* (Greenwich, CT: JAI Press Inc., 1990), 135-136.

⁹ N.C. Churchill and V.L. Lewis, “The Five Stages of Small Business Growth,” *Harvard Business Review* (May-June 1983).

¹⁰ B. Gray and S. Ariss, “Politics and Strategic Change Across Organizational Life Cycles”, *The Academy of Management Review*, 10(4) (1985), 707-723.

actually experience significant growth. For example, researchers have noted that less than one percent of all of the corporations in the United States involved in non-financial activities ever achieved an annual sales volume in excess of \$25 million during the early 1980s.¹¹ In 1987, Birch claimed that less than 650,000 companies in the US qualified as “growth firms,” at a time when the number of small businesses in the country topped 17 million and that 98% of all gross new jobs created by this group could be traced to just the top 15% (97,500 firms).¹² Others have found that most companies enjoy only limited or marginal growth following their initial year of sales activity.¹³ One group, however, that does seem to follow a path suggested by the metamorphic growth stage models is the class of fast growing high technology related businesses (i.e., “emerging companies”). For example, 183 of the companies among the Inc. 500 list for 1987 could be classified as high technology and the average annual sales for companies in this group expanded from \$960,000 to \$12.7 million during the five year period 1982 to 1987. During the same period, the average number of employees exploded from 19 to 106.¹⁴

§8 Emerging company development—concept to maturity

Still another alternative perspective on the development for an emerging company recognizes the following stages: concept stage; formation and organization stage; crisis and survival stage; initial growth stage; expansion stage; and maturity stage. While it seems counterintuitive to think of an emerging company as “mature,” the term is appropriate when referring to a specific product line or business unit within a larger firm that is hopefully continuously growing, expanding and integrating new products, technologies and markets that must themselves go through their own formative growing pains and challenges before they become an integral and permanent part of the company’s business. It is possible and helpful to identify the key business characteristics associated with each of these stages—immediate business objectives, predominant management style, organizational structure, and the state of the company’s product and market activities—as well as the main managerial challenges that come with graduating into a particular stage (e.g., resource management, sales and marketing, and communications and cooperation within the organization). Each of the business characteristics and managerial challenges change across stages and understanding how those changes occur can provide founders and senior managers an understanding of where they and the firm are heading so that they can try and plan accordingly.

§9 Milestones for development stage transition

A related issue to growth stages is determining the appropriate milestones for graduating the firm and its management team to the next set of challenges and strategic and

¹¹ See, e.g., R. Cavanagh and D. Clifford, *The Winning Performance of Mid-Sized High Growth Companies* (Washington, D.C.: American Business Conference, 1982).

¹² D. L. Birch, “The Booming Hidden Market”, *Inc.*, 1987:9, 15.

¹³ P. Reynolds and S. Freeman, *1986 Pennsylvania New Firm Study* (Washington, DC: The Appalachian Regional Commission, 1987).

¹⁴ *The Inc. 500* (1987), *Inc.* 1987:9, 75-130.

organizational decisions. Revenues are not always the best measure of growth for determining when a firm is likely to endure a transitional crisis. In many cases, the number of employees is a key predictor since more people means more complexity for the organization. In general, companies with less than 40 or 50 employees are able to maintain an exciting atmosphere that motivates everyone to perform. As the number of employees exceeds 50, companies begin to encounter more difficult management problems and must begin to wrestle with the challenges of adopting professional management practices and, in most cases, hiring newcomers to take on higher-level managerial and administrative duties. When the size of the company grows to 150 employees or more, the initial intimacy and informality has all but disappeared and it becomes difficult, if not impossible, for the founders to be involved in hiring all new employees and to have the time to get to know each of them. Also, the “hands on” management style that was so effective when the business was launched will have passed on in favor of formal structure and systems and a complex set of internal controls. In short, the culture of the firm has been slowly but surely transformed into that of a larger organization.¹⁵

§10 University of Chicago study of evolution of emerging companies

The various theories discussed above regarding emerging company growth models have been supplemented by a growing volume of empirical research. One such comprehensive study of the evolution of emerging companies was conducted by researchers from the University of Chicago Graduate School of Business and focused on how the characteristics of public companies that were launched with venture capital financing evolved from the date of their early business plan through their initial public offering (“IPO”) and on to mature public status with the release of their third annual report following completion of their IPO.¹⁶ The study compared the firms on a wide array of factors—financial performance, business idea, points of differentiation, non-human capital assets, growth strategy, customers, competitors, alliances, top management, ownership structure and the board of directors—and provides an interest picture of stability and change as the firms evolved. When reviewing the results described below notice should be made of the fact that on average it took six years for the 49 companies included in the study group to move from their earliest business plan to the date that they released their third annual report following completion of an initial public offering.

§11 --Stability of business lines and assets

The researchers found that as emerging companies evolved and matured, they generally stayed within their original business model or core business and continued to sell to similar customers and compete with similar competitors as time went by. When changes

¹⁵ S. Slatter, *Gambling on Growth: How to Manage the Small High-Tech Firm* (Chichester UK: John Wiley & Sons, 1992), 147.

¹⁶ The discussion in these sections is derived from S. Kaplan, B. Sensoy and P. Stromberg. “What are Firms? Evolution from Birth to Public Companies”, University of Chicago Graduate School of Business (2005). Other results from the study provided interesting contributions to identifying the characteristics of emerging companies. For discussion, see “Entrepreneurship: A Library of Resources for Sustainable Entrepreneurs” prepared and distributed by the Sustainable Entrepreneurship Project (www.seproject.org).

did come for these companies it was typically attributable to either broadening or narrowing product or service offerings within the originally selected market segment. Rarely did companies attempt to make a wholesale change in their business model which would involve actions such as shifting sales activities to a completely different set of customers, making significant changes in the types of products or services offered by the company and/or seeking and completing acquisitions of other companies that are engaged in business activities unrelated to the core business of the acquiring company. This finding is consistent with others who have argued that emerging companies receiving venture capital funding appear to be less likely to be under pressure to make material changes in their plans and business models than other promising firms that are launched without venture capitalist involvement.¹⁷

Examples of how a company might broaden or narrow its initial business model can be illustrated by the following observations from the University of Chicago survey group—the decision by a biotechnology firm to narrow its focus from general drug development to concentrating on solutions applicable to a specific disease; and the move by an e-commerce firm to broaden its business to include more services and infrastructure offerings. Outside of the survey group, Microsoft offers a good example of a firm that has remained focused on its initial business model of developing and selling computer software to the same customers while broadening its offering to those customers beyond just operating system software to also include application software.

The researchers uncovered several indicators of the stability of business assets as emerging companies evolved. For example, the stated importance of proprietary intellectual property (e.g., patents) and physical assets to the companies in the survey group increased as time went by in relation to human capital (“expertise”) and as of the third annual report following the IPO only half of the companies still had the same CEO that was in place when the initial business plan was prepared and only one-fourth of the next four top executives were still with the firms at that point. The researchers cited these findings as evidence of the fact that human capital within the firms included in the study was quite unstable. The researchers also argued that the evidence that the business models of the emerging companies in their study were most stable than the composition of the management team tended to show that the product/market method of selecting portfolio companies used by some venture capitalists was to be preferred over emphasizing the perceived strengths and experiences of the original management team. Since firms were “successful,” at least by reference to whether they completed an IPO and three years of operations thereafter, in spite of significant turnover within the management team it appears that venture capitalists are able and willing to bring in replacements and/or additional managers to improve oversight and direction of the core businesses as the firm grows.¹⁸

¹⁷ See e.g., A. Bhidé, *The Origin and the Evolution of New Businesses* (New York, NY: Oxford University Press, 2000), 155.

¹⁸ The opinion of the University of Chicago researchers is not universally endorsed and another group of researchers has claimed that human capital and other non-alienable assets such as knowledge and/or business processes have become more important to firms than the traditional tangible assets that can be easily sold, assigned or pledged to other firms. See R. Rajan and L. Zingales, “The Influence of the Financial Revolution on the Nature of Firms,” *American Economic Review*, 91 (1981), 206-212.

§12 --Significance of technology and physical assets

Proprietary intellectual property rights, such as patents, and physical assets became more important to the emerging companies in the University of Chicago study group as time went by. While 29% of the companies in the study group owned, or had exclusive license rights, to patent at the time of the early business plan, this percentage increased to 49% at the IPO and 62% on the date of the third annual report following the IPO. This finding is consistent with anecdotal evidence and the expressed desire of many emerging companies to differentiate themselves from their competitors by developing and commercializing unique products and technologies which must, by their very nature, be surrounded by strong and enforceable intellectual property boundaries.

§13 --Growth strategy

The emerging companies in the University of Chicago study group maintained a strong focus on internal growth as they evolved. Production of new or upgraded products was the most frequently cited growth strategy from the time that a company was launched through its annual report three years following the IPO. Other popular growth strategies included seeking new customers from increased market penetration or leadership and expanding into new geographic markets. As companies matured they became more comfortable seeking growth through external strategies including strategic alliances and acquisitions. Not surprisingly, strategic alliances were more important in some industries than others and the researchers found that firms in the biotechnology sector were more likely to pursue strategic alliances with large pharmaceutical companies that could provide assistance and support with development, testing and distribution of products and, in some cases, provide a separate source of working capital.

§14 --Customer base

The University of Chicago researchers posited that emerging companies may experience one of the three different scenarios with respect to the evolution of the customer bases from the time of the earliest business plan to the date of the third annual report following their IPO. The first scenario is a broadening of the customer base which might occur when an emerging company begins by focusing on medium-sized businesses and then decides to expand its target market to include both medium-sized businesses and large Fortune 500 companies by the time that the company is ready to complete its IPO. The second scenario, which was the most common among the companies in the study group, was for the firm to simply to continue to work with essentially the same customer base over time and the researchers pointed to this finding as evidence for the broader proposition that emerging companies generally following the same business model as they evolved and matured. Finally, the last scenario, which only appeared in a small percentage of the companies in the study group, was a narrowing of the customer base. The researchers argued that if the majority of the companies did not elect to significantly expand their customer base any significant increase in revenues enjoyed by the company

can be attributed to other growth strategies such as increasing sales to initial customer types by increased market penetration or expanding the product line.

§15 --Competition

Competition was clearly something that emerging companies in the University of Chicago study group expected to confront as they evolved and this was no small concern given that a large percentage of those companies relied on a unique product and/or technology as their primary point of differentiation.¹⁹ A majority of the emerging companies in the study group reported that the type of competition remained stable over time; however, a large minority (40%) noted that competition broadened as time went by and markets developed.

§16 --Strategic alliances and other partnerships

Within the University of Chicago study group there was an increase in the use of strategic alliances from the time of the earliest business plan to the IPO and then usage appeared to flatten out thereafter through the date of the third annual report following the IPO. Specifically, 35% of all of the emerging companies in the study group mentioned strategic alliances in the earliest business plan, 67% of the companies acknowledged their use at the time of their IPO and 69% of the companies remained involved in one or more strategic alliances at the time of the third annual report following the IPO. Industry differences were apparent, however, and the comparable percentages for biotechnology firms, for example, were 18%, 82% and 82%. The findings regarding the number of strategic alliances entered into by those emerging companies with an interest in pursuing that type of strategy are interesting. The median (average) numbers at each the three measuring points used above were 2 (2.2), 3 (3.3) and 4 (5.4). Stability and longevity of strategic alliances was also tracked in the University of Chicago study and with regard to strategic alliances that were in place at the time of the earliest business plan a median (average) 67% (60%) were still active at the time of the IPO; however, these percentages dropped to 20% (39%) on the date of the third annual report following the IPO. Looking at this issue another way, only 42% of the strategic alliances mentioned at the time of the IPO were still in place on the date of the third annual report following the IPO.²⁰

§17 --Management team

Rogers and Larsen found that the primary reason for the failure of high technology companies in Silicon Valley was poor management, as opposed to lack of capital, technical difficulties with products or poor human resources. In turn, the successful firms

¹⁹ 84% of the large percentage of emerging companies in the study group that believed they had a unique product and/or technology acknowledged that they expected to face competition in their target markets at the point of the earliest business plan and all of the companies in the study group, including those that opted for another point of differentiation, noted that competition was going to be a factor in determining their success by the time that they reached the IPO stage.

²⁰ For further discussion of strategic alliances and other partnerships, see “Strategic Alliances” in “Managing Growth and Change: A Library of Resources for Sustainable Entrepreneurs” prepared and distributed by the Sustainable Entrepreneurship Project (www.seproject.org).

were those in which senior management delegated authority and closely monitored all products and systems.²¹ The University of Chicago study group provided interesting information on the composition of the executive teams of the various emerging companies included in the study (i.e., the top five executives that the companies themselves identified at various stages of development).²² In general, the management teams of the companies were incomplete at the time of their earliest business plan. For example, 12% of the companies did not yet have a CEO, only 42% had a chief financial officer (“CFO”) among their top five executives, and only 38% included a chief sales or marketing officer (“CMO”) among their top five executives. On the other hand, the importance to technology was illustrated at that stage by the fact that 77% of the firms had someone serving as the Chief Scientist, Chief Technical Officer, Vice President of Engineering or similar top technology management position (“CTO”).

Given the importance of financial reporting and capital management for publicly traded companies it is not surprising to find that 80% and 85% of the companies listed the CFO as one of their top five executives at the time of the IPO and on the date of the third annual report following the IPO. With respect to the CMO position, its importance remained fairly stable over time with 37% and 41% of the companies listing that position among their top five executives at the time of the IPO and on the date of the third annual report following the IPO. The popularity of the CTO position held at 77% at the time of the IPO; however, it fell dramatically to just 47% on the date of the third annual report following the IPO. Industry variations can be identified since, for example, biotechnology companies were much less likely to have a CMO included among their top five executives than other companies in the study group.

The University of Chicago study group also collected information on the involvement of members of the founding group of the included companies beginning with the date of the earliest business plan and moving forward as the companies grew and outsiders were brought in to join the management team. Of those companies that did have a CEO at the time of the earliest business plan, 77% of them were one of the founders of the company. If a founder was not the CEO of the company, he or she was still quite likely (92%) to be a member of the board of directors of the company. In general, founders were heavily involved in management on the date of the earliest business plan and each of the companies in the study group had a founder as either one of the top five executives or a director at that stage. What is interesting to note, however, is how the involvement of founders declines as the companies grow and mature. While 92% of the companies still had a founder as one of the top five executives or a director at the time of their IPO, the number of companies that had a founder as the CEO went down from 77% to 57%. Several years later, on the date of the third annual report following the IPO, only 72% of the companies had a founder as one of the top five executives or a director and the

²¹ E. Rogers and J. Larsen, *Silicon Valley: Fever-Growth of High Technology Culture* (New York: Basic Books, 1984).

²² For further discussion of the composition and evolution of the executive teams at emerging companies, and the background and responsibilities of members of those teams, see “Governance: A Library of Resources for Sustainable Entrepreneurs” prepared and distributed by the Sustainable Entrepreneurship Project (www.seproject.org).

percentage of companies that had a founder serving as its CEO declined further to 46%. In summary, there appears to be a clear trend of movement by founders from executive and operating positions to directorships and, finally, to no further involvement with the firm on a formal senior level.

When evaluating the experience and professional backgrounds of those persons identified as being among the top five executives of the companies in the University of Chicago study group at the time of their earliest business plan, the following categories emerge: general management (42%); technical or technology management (25%); science or other technical experience (16%); marketing (9%); and finance and accounting (8%). Industry variations can be identified between biotechnology companies, where the top executives are more likely to have technical or scientific backgrounds, and non-biotechnology companies, where the top executives will usually come to their jobs with general management experience and training.

The researchers found interesting evidence of substantial turnover among the persons named as the top five executives of the companies included in the University of Chicago study group. Specifically, only 50% of the persons serving as the CEO of the companies at the time of the earliest business plan remained in that position on the date of the third annual report following the IPO and only 25% of the persons included among the top five executives of the companies at the beginning remained in that group on the date of the third annual report following the IPO. On balance, turnover was more likely to occur after, rather than before, the IPO. With respect to the CEO, the same person was in place at the time of the earliest business plan and at the IPO for 84% of the companies; however, only 59% of the persons occupying the CEO position at the IPO were still serving as the CEO on the date of the third annual report following the IPO. With respect to all of the persons included among the top five executives at the time of the earliest business plan, only 55% were still in place at the time of the IPO. Then, of all of the persons included among the top five executives at the time of the IPO only 36% were still in place on the date of the third annual report following the IPO.

§18 --Ownership percentage of founders and CEO

The University of Chicago study evaluated changes in the ownership percentages of the founders (as a group) and the CEO as companies moved from their earliest business plan through the IPO and then on out to the date of the third annual report following the IPO. The median ownership percentage of the founders at the time of the earliest business plan, at least for those companies for which such information was available, was 28.9%; however, this percentage dropped to 12.4% immediately prior to the IPO²³ and 8.8% after the IPO (taking into account sales of shares in the IPO, if any, and dilution by new shares

²³ Within the study group the median percentage ownership interests of the following groups of owners immediately prior to the IPO was as follows: venture capitalists (52.6%), founders (12.4%), non-founder CEO (4.2%), non-founder managers other than the CEO (2.2%), and others (e.g., non-venture capital investors and non-founder employees) (22.7%). The percentage ownership interests of founders and the management team are smaller in biotechnology firms than in other companies. While business partners, such as strategic alliance partners, owned zero percent (0%) of the median firm they owned 3.8% of the average company.

issued in the IPO). Since it is widely accepted practice to impose restrictions on the ability of founders to sell or transfer any shares until at least six to nine months following the IPO, almost all of the dilution in their ownership interest can be attributed to the need to issue new shares to obtain capital from venture capitalists and recruit new and additional managers from outside the founding group. Consistent with reduced founder involvement in management of the companies after the IPO, the median percentage ownership interest of the founder group continued to fall to 5.3% on the date of the third annual report following the IPO due to both additional share issuances and the decision of the founders to liquidate their shares and cash in on the success of the business. With regard to stock ownership by a founder holding the CEO position, the University of Chicago study found that the average ownership percentage was 9.8% just prior to the IPO and 7.5% immediately following the IPO.

§19 --Size and composition of the board of directors

For companies in the University of Chicago study group, the median number of directors at the time of the earliest business plan was five and the median number increased to seven at the time of the IPO and on the date of the third annual report following the IPO. At each point along the way, the median number of insiders, which included founders and current or past managers of the company, serving as a director was two, and the median number of venture capitalists on the board was two at the time of the earliest business plan, three at the time of the IPO, and one on the date of the third annual report following the IPO. The decrease in the number of venture capital directors after the IPO was consistent with their specific goal of seeking liquidity and profit-taking once the IPO has been completed. In turn, the number of non-venture capital independent directors increased from a median of one at the time of the earliest business plan to two at the time of the IPO and to three on the date of the third annual report following the IPO. The typical background of these independent directors was an industry expert and/or an experienced senior executive of other firms.²⁴

²⁴ For further discussion of the composition and role of the board of directors, see “Governance: A Library of Resources for Sustainable Entrepreneurs” prepared and distributed by the Sustainable Entrepreneurship Project (www.seproject.org).