

Building Success into a High-Tech Start-Up

FEATURE

by John T. Preston

To succeed, a technology-based entrepreneur needs more than an innovative product. How one organizes a start-up company often proves more important than the product in determining whether the venture succeeds or fails.

The first of two articles

From my experience in helping to create technology companies, the right attitude, people, and actions make a bigger contribution than a novel idea to the success of these endeavors. Never underestimate the role of passion, the importance of management talent, and the significance of teaming with the right investors. Second, bringing innovative ideas to market requires a series of actions, from securing patents to moving a high-quality product to market quickly.

Attitudes

Consider the contrast in behavior between large companies and small companies, which tend to develop innovative technologies differently. My friend James Utterback of the Massachusetts Institute of Technology (MIT) Sloan School of Management spent several years looking at radical innovations that had occurred during the previous 100 years. He found no case in which the market leader pioneered a radical innovation. Often, the market leader was the inventor of the radical innovation but refused to pioneer it, out of fear that it would cannibalize sales of the company's existing products.

Let me cite an example. MIT's Hoo-min Toong helped pioneer the personal computer, and in 1980, he was also advising IBM on designing the architecture for what became the IBM PC AT. One of Hoo-min's students, Mitch Kapor, wrote a software program called VisiPlot/VisiTrend and licensed it to VisiCorp for \$2.5 million. Kapor used the money to write a software program called 1-2-3. Hoo-min knew that 1-2-3 would be important, so he arranged with IBM to fly Kapor to its PC headquarters in Florida three times to try to convince the company to take an exclusive license to 1-2-3. Ultimately IBM refused, saying, "Hardware is a multibillion dollar industry. The market for PC software is only a \$50 million industry. So go off and become successful, and we will talk to you." Three years later, when Kapor had built Lotus Development Corp. to the point where his stock was worth \$250 million, he was no longer interested in licensing this technology exclusively to IBM for \$3.5 million.

IBM missed a fundamental paradigm shift—that the value added was shifting from hardware to software. The

relative value of the intellectual content in software was going up while hardware was becoming a commodity product whose prices were dropping rapidly. IBM did, subsequently, take an exclusive license to 1-2-3 by purchasing Lotus Development Corp. in 1995 for \$3.5 billion, 1,000 times what it could have paid in 1980. Because of its old way of thinking, IBM missed an opportunity to take advantage of a radical innovation that was offered to it.

An earlier example of the shortsightedness of a Goliath corporation is exemplified by the behavior of the president of Western Union in the late 1800s. William Orton rejected an offer to buy Alexander Graham Bell's telephone patent for \$100,000 and described the invention as a "scientific curiosity" that would never have practical use.

Utterback also identified many examples of market leaders trying to sabotage radical innovations. For example, the use of the electric chair for capital punishment was promoted by Thomas Edison to discredit the safety of alternating current, an innovation of George Westinghouse, an Edison competitor.

Management teams

Too many innovators underestimate the need for excellent management. I would rather have a first-rate management team with average technology than have a first-rate technology with a second-rate management team because the strong management team is more likely to succeed. One false impression about entrepreneurship is that it is an individual behavior. What we have found is that entrepreneurial behavior succeeds more often when performed by teams.

Edward Roberts of the Sloan School, and chairman of the MIT Entrepreneurship Center, has spent much of the past 30 years studying the probability of success for start-up companies. He found that success increases dramatically with team size until you get up to four or five entrepreneurs founding the company. Teams of people with complementary skills perform better. For example, if a technologist partners with someone who knows the capital markets and another person who knows how to market technology-based products, the team of three will have a much higher probability of success than the solitary technologist trying to start a company on his or her own. Experience shows that first-rate managers hire a first-rate team but second-rate managers avoid hiring at their level and hire third-raters.

Passionate behavior

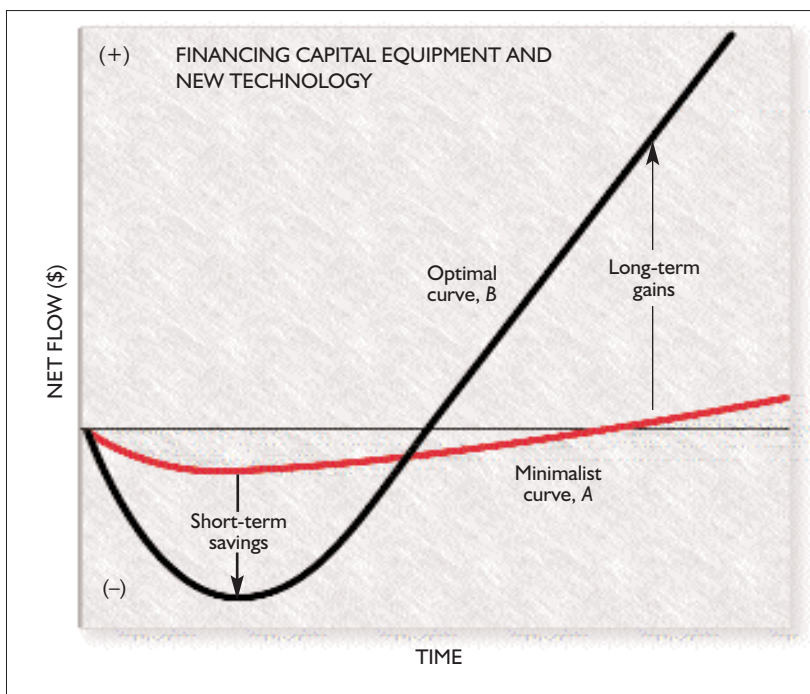
One of the key determinants of success in start-up companies is the passionate behavior of the founders. People who lack passion often use the first barrier they encounter as an excuse for failure. People who have high passion will do whatever it takes to overcome those barriers.

What we can achieve in life depends on a number of things: how hard we work, how smart we work, how much leverage we have on the work we do, and how much courage we have in pursuing our goals. How hard we work is tied to how passionate we are. One key difference between American and Japanese or European companies is that U.S. companies are much more generous in giving stock options to their employees. When you distribute ownership to the employees, the employees behave differently. They no longer behave like employees but like owners. Wide shareholder ownership is one of the best ways to stimulate passionate behavior.

Southwest Airlines provides an example. A decade ago, I flew back to Boston on Southwest, which is now among the nation's more successful airlines. I believe it is no coincidence that it also has a high percentage of employee ownership. During a stopover, the pilot, copilot, and flight attendants came through the cabin to clean up trash and prepare the plane for the next leg of the trip. I started chatting with one of the flight attendants about why they did so, because normally a ground crew comes aboard to clean an airplane (Figure 2). She explained that they did not want to waste the money to hire a cleaning crew when they could do it themselves. She went on to tell me how a friend was retiring after 20 years as a flight attendant and that her friend's stock options in the company were now worth nearly \$500,000.

I have seen this behavior in a number of companies. One way that Mitch Kapur and Jim Manzi built Lotus was to give their employees incentives through stock options. Kapur's administrative assistant, who was the third employee in Lotus, made \$10 million from her Lotus options. What happens to your behavior when you have the chance to make \$10 million? You no longer care whether you work 9-to-5. You willingly work as many hours as it takes to make critical deadlines.

Unfortunately, large companies cannot passionately motivate employees with stock options because, for example, General Motors' employees will not see their stock go up 100-fold from the day an employee arrives to the day that employee retires. However, small high-tech companies can see a 100- or a 1,000-fold increase in the



value of their shares between the time their early employees start and when they retire. One method of motivating employees in large companies is to share credit for successes. However, too many managers take the credit for their subordinates' successes and pass down the blame for management errors. These practices are ultimately self-destructive because they kill passion.

Investors

Many entrepreneurs are indifferent about sources of investment. They focus on how much money they can raise for how many shares, and they do not differentiate between the quality of the sources of that money. But the quality of investors and the pace at which money flows into the company are keys to determining its success. Besides cash, investors can also provide significant leverage (Figure 3).

Let me give an example from a company that wanted to do business in a certain country. During the discussion about how to proceed, one board member, a world-recognized figure, suggested that he call the president of the country to ask how to proceed. That five-minute phone conversation saved the company six months of hard work. This kind of leverage from an investor can prove extremely valuable. I remember talking with the late Robert Swanson about his success in founding Genentech. One factor that helped immensely was the role Mayfield Ventures and Kleiner Perkins, two of his early lead investors, played in opening doors.

Another key determinant of success for start-up companies is their venture capitalists and whether they can provide adequate access to more money downstream. New companies typically need more money than the entrepreneurs think, and they more often fail because they run out of money than because the technology has problems.

Figure 1. Scenario A invests a small amount of money over a long period in hopes of a positive return. The more aggressive Scenario B ignores the short-term savings in favor of long-term gains.



Figure 2. On the very successful Southwest Airlines, which has a high percentage of employee ownership, the pilot, co-pilot, and flight attendants cleaned up the cabin because they did not want to spend money on hiring a cleaning crew.

Companies that have investors with “deep pockets” will succeed more often. For example, Venrock—which invests the Rockefeller family money—is one of the most successful venture capital firms, in part because it has incredibly deep pockets and has the staying power to help ensure the success of companies in which it invests.

Investment timing

Finally, the timing of investments in a start-up is also vital. Figure 1 shows two different investment scenarios, with the net flow of money as a function of time. When the net flow is negative, you are investing money; when the net flow is positive, you are making a return on investment. The A curve shows the strategy of putting a small amount of money into a company over a long period and hoping it goes positive. That curve has two major problems associated with it. First, management often spends too much time raising money in small chunks instead of building the business. Second, it creates a wide window of opportunity for a competitor following the B curve to aggressively enter and capture the market. What surprises me is that most large U.S. companies tend to behave on the A curve regarding radical innovations.

For incremental innovations, however, they adopt the B curve, especially if the time to breakeven is less than two years. The reason is that shareholders judge public companies on a relatively short-term time horizon, typically 6 to 18 months. If a management team that is driven by short-term behavior has a radical innovation that might take five years to hit the payback point, it will cut any investment from the optimum B curve down to the A curve. All of the area between these curves after breakeven is long-term lost opportunity, but because man-

agement is being judged in the short term, it will make more money in the short term using fewer assets.

It is possible to throw too much money at a new start-up, as demonstrated during the dot-com frenzy. Often, when management has too much money, it spends too freely and undermines the company’s cost structure and survival chances. I know one company that, after its initial public offering, bought helicopters for top management and moved into a fancy building. This spending increased the company’s overhead, making it less competitive, and nearly killed it. Today, the helicopters are gone, the company occupies inexpensive offices, and it is again highly competitive.

Ask a typical entrepreneur what he or she would do if handed a check for \$100 million and told to use it to start or build a company, and the answers would likely include: pay themselves what they are really worth (for the first time in their career), build a nice office with wood paneling, and travel first-class on business. I refer to this as the Taj Mahal syndrome. Often, entrepreneurs end up building a fancy tomb for their businesses.

Choosing the right people—managers, workers, and investors—is one important aspect of building a successful start-up. But a new company must also take specific steps to bring its innovative product to market. How well it carries out these activities, which I will discuss in the August/September issue of *The Industrial Physicist*, plays an equally important role the company’s success or failure.

Further reading

Carnegie, D. *How to Win Friends and Influence People*; Pocket Books (reissued paperback edition): New York, 1998; 288 pp.

Roberts, E. B. *Enterprise in High Technology: Lessons from MIT and Beyond*; Oxford University Press: New York, 1991; 385 pp.

Utterback, J. M. *Mastering the Dynamics of Innovation: How Companies Can Seize Opportunities in the Face of Technological Change*; Harvard Business School Press: Boston, 1994; 253 pp.

Branscomb, L. M.; Auerswald, P. E. *Taking Technical Risks: How Innovators, Managers, and Investors Manage Risk in High-Tech Innovations*; MIT Press, Cambridge, Mass., 2001, 220 pp. [W](#)



Figure 3. One factor that helped immensely in the successful founding of Genentech was the role that two early lead investors played in opening doors.

B I O G R A P H Y

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