



Explaining booms, busts, and errors

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..... How will I explain dot-bombs to my kids? A dozen years from now my children might be old enough to understand complex human behavior. Yet I anticipate that they won't look back on today's events with awe. Rather, they will view them as history, with the disdain that comes with twenty-twenty hindsight.

Why did so many Internet-related firms lose so much money? To be sure, the irrational exuberance of the various participants is part of any explanation. However, that alone seems an unsatisfying answer. Many analysts thought companies and their investors were behaving reasonably. Tens of thousands of people thought that dot-coms were creating economic value.

As the stories of economic loss roll in, three systematic errors common to many of the players emerge. Participants made errors in misforecasting adoption behavior, by underestimating operational requirements, and having overoptimistic expectations of success. Although all these errors arose from exuberance, only the last looks irrational. Understanding these errors will help us comprehend the origins of business booms and busts, a fact of life in technology markets.

Adoption behavior

There was considerable merit behind the initial optimism surrounding Internet commercialization. The US government began formally privatizing the Internet in 1992, finishing by 1995. The Netscape IPO was in August 1995. By the end of

1998 nearly one-third of US households had an Internet connection.

By any measure, the Internet-connected world grew at a remarkable rate. This phenomenon received attention, and rightly so. It was easy to forecast that 50 percent of US households would connect by 2001, a prediction that did, in fact, come true. In other words, the initial reports were mostly accurate.

But accurate beginnings bore the seeds of major errors. Indeed, the one main error is now transparent: Many business plans assumed households using one part of the Internet would also use most other parts just as intensively.

Unfortunately, e-mail and surfing did not necessarily beget online shopping. Why not? The full story is quite complex and too long for one column. Let me provide a brief synopsis; the curious reader can find more detail in an article by John Defigueiredo, who first explained this concept to me ("Finding Sustainable Profitability in Electronic Commerce," *The Sloan Management Review*, vol. 41, no. 4, 2001, pp. 41-52).

Shopping requires considerable judgment by the shopper. It can be a very information-intensive activity, requiring touching, smelling, and observing. It may even require that the user experience the good in a simulated environment prior to purchase—such as test-driving a motor vehicle.

As it turned out, the easiest categories to build online businesses were in the

most routinized goods, in which the user required the least amount of information. Books and CDs do their best business when the user knows precisely what they want.

In contrast, the most difficult purchases to put online are those involving idiosyncratic purchases, such as used cars, housing, and many types of furniture. It is not impossible to purchase these products online; it is just more difficult. Quite a few technically adept souls do, but most people don't bother.

Do not misinterpret my last statement. Although it is difficult to sell a used car online, it's not impossible for the Web to help these types of transactions occur more smoothly. Even if only a small fraction of a company's total sales are online, it may still be a profitable endeavor. At the same time, most sales will still occur offline.

Trials with the easier online purchases are growing, though not spectacularly. Trials with the more difficult online purchases are growing too, just at a snail's pace. Someday the less technical population will use this stuff, but not tomorrow or the day after. The right scale is years from now.

More to the point, slow adoption is the rule—rather than the exception—when it comes to large masses of consumers. The fast diffusion of e-mail and Web browsing was unusual for the speed with which the mainstream adopted it. The slower growth rates we see now are

almost normal. The error was in assuming that fast adoption of the first technologies implied fast adoption of all Web-based activities. It did not.

Operational requirements

The second error relates to the first one. Netscape's experience as a browser vendor initially went quite well. Indeed, Amazon began selling books online early in the history of household Web use, and its experience is well known. Online offerings of CDs, toys, plane tickets, greeting cards, cheese, and tons of other stuff followed rather quickly.

As I recall, mainstream financial analysts endorsed this trend. Mary Meeker at Morgan Stanley, among others, began writing reports about this phenomenon. Though this whole group of analysts has been taken down a peg by recent events, I dare anyone to go back and read their earliest reports. These early reports were accurate.

So what error occurred? In short, too many analysts went too far in their support—further than the initial positive experience warranted. They confused successfully launching a business with successfully operating one. There were two versions of this error, one at new firms and one at established firms.

New firms began sprouting up everywhere. The act of pitching a plan and growing a new business became an art form (and it still is). To be sure, exuberance played a role. Some venture capitalists should have been skeptical, raised questions, and put a stop to all the good money following bad ideas. Yet for every venture capitalist who said "no" there were three others who said "yes," and on it went.

The story at established firms was different. Virtually every major retailer in the US established a new e-commerce division, treating these experiments as if their organizational lives depended on it. Again, exuberance played a role. More consultants should have spoken up and raised skeptical questions in the minds of old-economy retailing executives who rushed to develop the new channel. Again, for every calm voice, three others pushed for

urgency, and on it went.

All those trials encountered every possible mistake, and every possible match and mismatch between business goals and operations. Some online businesses turned out to be easy to operate, but most were difficult. Fulfilling orders, for example, requires execution.

This is a complex story that is too much for one column. After years and years of operating retail outlets or catalog businesses, established companies had developed operations that were complex and refined. Handling daily complaints, for example, requires trained and motivated staff. Shipping goods and controlling quality requires careful processes.

Most neophytes could not replicate that type of operation, no matter how good their Web page looked. Maintaining and refreshing a broad product line across a wide scope of goods, as Wal-Mart does, is extraordinarily difficult and not easy to recreate from scratch.

As it turned out, the already established catalog firms—such as L.L. Bean or Victoria's Secret—were comparatively successful in making the transition to electronic formats. So too were small niche businesses with simple back-office operations.

In contrast, many of the pure plays, such as eToys, and the big click-and-mortar experiments, such as Webvan, quickly drowned, running up costs in excess of revenues. Although a few of the entrants did OK, most were in over their heads. Some of these failures arose from the first error—misunderstanding adoption speed. But much of the failure had to do with the second error—misunderstanding the business' operational requirements.

Expectations

Vibrant businesses must experiment during uncertain times. To not do so risks strategic atrophy and eventual economic decline. So it is inevitable that extraordinary opportunity leads to extraordinary experiments by a wide variety of businesses and entrepreneurs. This experimentation, in turn, leads to a wide range of outcomes.

After the fact, failure alone does not invalidate an experiment's merit. Companies and entrepreneurs had to carry out these experiments to learn what works and what does not. Though it is not necessarily pleasant to live through failure, it is almost always interesting to watch, at least at a distance.

Perhaps this seems overly philosophical, but it helps explain part of the dot-bomb boom and bust. That is, the Internet's diffusion initiated an extraordinary set of economic opportunities, something people see only a few times in a lifetime. In such circumstances, everyone should have expected a massive set of experiments, which in turn should have resulted in a wide distribution of mistakes and insights.

In other words, we should have expected many failures from the outset. We should also have understood that they were not necessarily symptomatic of irrational exuberance, or stupidity, or even excessive courage. Economists note with empirical regularity that some fraction of new firms fail—always. However, this is not the same as saying that at least one new firm—or possibly even many—will succeed or even survive. And that's where many analysts and investors made their worst miscalculations.

Said another way, a cultural belief—reaching religious fervor in some quarters—maintains that some entrepreneurs can work their way through any new opportunity. It is as if there is a law against an excess of bad business decisions.

During the dot-com boom you could hear analysts make this error repeatedly. It typically occurred like this: The analyst would examine an online retailing segment crowded with many entrants, then grade each of them. Finally, the analyst would make a declaration about one or two, designating these as "best of breed" or "most likely to survive a shakeout." The analyst would then recommend investing in the best of the lot.

The analyst could have misunderstood which was best, but that sort of error is almost expected—after all, caveat emp-

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tor to the investors acting on analysts' recommendations. Rather, the true error comes from the analysts' implied assumption that the best will survive at all, an issue separate from whether their grading was correct or not.

It is always quite possible that all the entrepreneurs would face similar adoption problems and operating complexities, and that all would experience the same results, each generating costs in excess of revenues. No preordained reason makes it inevitable that at least one worthwhile decision will arise out of multiple failures. Analytical completeness and proper caution require considering the possibility of a very gloomy outcome.

For a few years such completeness and caution were missing. It is in this sense that the irrational exuberance of the times interfered with clear thinking, making the boom and bust worse than it needed to be. In other words, some failure was inevitable, but when naive optimism springs eternal, it is more likely that more

Failure arises.

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