



The high cost of a cheap lesson

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..... Some general business questions require information about idiosyncratic circumstances. For example, how much demand exists in a particular locale for municipally sponsored wireless Internet access? Or, how many users want to pay for a new feature in their digital audio player, such as more storage?

To put it blithely, sometimes a marketing survey or lab experiment will not do. To answer some questions, a firm must actually offer a service or product and observe what different customers will pay for.

Call this a market experiment aimed at learning lessons. Such lessons teach a firm's managers to initiate, to stop, or to refine what they do.

What happens as lessons spread to firms outside the one conducting the experiment? That is not an insignificant question, because most lessons do spread—often in spite of programs to prevent them from being learned by others.

Spreading transforms a market in two related ways. First, a lesson is valuable for private purposes when only one firm uses it. Like any trade secret, it will have some comparative value as long as it remains secret. Related, a lesson loses its unique value as it becomes more common—that is, as it becomes a commodity.

The commodification of a lesson changes its role. It becomes part of an

industry's accumulated knowledge base. The lesson is still valuable in that second role because the entire knowledge base seeds and supports more experiments, done either by those who undertook the earlier experiment or by others.

This issue's column focuses on this phenomenon: Commodifying and accumulating lessons must go hand in hand. While that observation may sound excessively abstract, it is grounded in the experience of many markets. As I will illustrate, it explains much strategic behavior.

Information spreads

With a bit of effort, any technically skilled person can learn the latest information in their industry. That is so whether it concerns the design for a product, such as Apple's iPod, or involves demand for a newly deployed service, such as municipal Wi-Fi in a distant city.

Although industry conferences, consulting reports, and trade magazines have always informed market participants, today these sources are supplemented by Web pages and community or industry forums. Any reasonably sized product market attracts an abundance of product reviewers and bloggers who track gossip about business initiatives and point out design flaws or triumphs.

We happen to live in an era in which many technically skilled people want this

information, and they live in many different places. Fast communication among such people can produce the same developments in many locales across wide geographic spaces, sometimes quickly.

Back in 1994 and '95, for instance, a few pioneering Internet service providers explored the viability of operating a low-cost, dial-up ISP. It is hard to provide a general explanation of why all these firms began this experiment. Many participants at the time sought as much to satisfy their curiosity as to make a profit. Anyway, their experience quickly became known by bulletin board operators everywhere.

The next technical steps were relatively incremental—many firms added a connection to the newly commercialized Internet backbone. Indeed, by 1996, ISPs offered service in every major US city, and many large firms had begun building national networks. A friend and I counted over twelve thousand local phone numbers in the US to call for commercial Internet access in the fall of 1996, and more than sixty-five thousand by fall 1998.

More to the point, the technical lessons were rather trivial for participants to learn, but the business lessons were not. Most vendors knew how to operate a point of presence (a POP in the parlance of the day), but struggled to figure out how to cover costs while meeting customer needs.



Unsurprisingly, many ISPs experimented further. Among the most common experiments were attempts to expand the lines of service offered—for example, offering services such as Web site maintenance or design to local businesses. Once again, this type of expansion became a widely discussed topic in industry trade publications and forums, contributing to its rapid spread throughout the country.

As before, the spread of expanded services says more about what firms wanted to try than it does about what succeeded. The business issues were challenging. Every locale had idiosyncratic features that altered the profitability of such expansions. Moreover, some lessons about new lines of business had a short-lived value.

By the way, this story does not have a happy ending for the pioneers. In recent times, many dial-up ISPs have been losing business to broadband access providers, even though most cable and telephone companies entered Internet access markets comparatively later.

It is no secret how this happened. These late entrants learned the key business lessons from the pioneers. As the costs of developing broadband service declined, investments in it grew, building viable businesses whose expense and regulatory barriers precluded entry to most dial-up firms.

It is a familiar story in high tech. Pioneers learned the lessons. As lessons accumulated, the pioneers—and others—had an opportunity to profit. In this case, the others succeeded.

Determining value

My example raises a question: Do similar processes shape a market with less geographic localization, such as a national product market? The answer is yes. For example, consider digital audio players.

I cannot explain why Apple originally decided to experiment in this market without a long digression about that firm's unusual internal culture, so I will

simply say this: Apple's strategy in 2001 built on an astute set of observations about the experiences of dozens of firms in hardware, software, and content delivery. Although the digital audio player market existed prior to Apple's entry, the iPod and iTunes changed everything.

Recall one evolving facet of this strategy, Apple's choices regarding storage capacity. Every educated observer knew that users valued more storage. However, more storage led to more weight, less reliability in some form factors, and more expense. Designers had to trade off one appealing feature for another.

By 2004, Apple guessed (correctly) that a small hard disk called a Microdrive might help with one family of designs. IBM had developed these components years earlier, then made them more reliable and less expensive, before giving up control of them as part of a divisional sale to Hitachi in 2002. Here is the point: Although the Microdrive was not the only experiment in Apple's rollout at the time, it was an important contributor to the design marketed as the iPod Mini in 2004.

The advantage from this experiment was significant but temporary. The component's uniqueness could not (and did not) last long. Everyone learned the same lessons about how to trade off features at various price points.

To nobody's surprise, Apple experimented with storage again not long thereafter. The company stopped using Hitachi's drive a bit over a year later, transitioning the Mini into the Nano line of products, which use flash drives. Among other reasons, management made this transition because flash drives were smaller and more reliable in use. Importantly, flash also had become cheaper and more widely available to Apple and others.

That was but one of many experiments, of course. Apple had to encourage many complementary component producers, alter the form factor while retaining branding features, and extend

the core format to video—and on and on. It is a long list.

For now, Apple has managed to make a profit despite rapid erosion of its product's uniqueness after each new experiment. Yet, it is anybody's guess whether the iPod will remain profitable. This cycle of experimenting, then commodifying and accumulating lessons, could last a while.

For example, putting music in every mobile telephone seems almost inevitable. Handset designers and carriers have watched Apple's experience and began altering their designs some time ago. So Apple's experiments have seeded the ground for strong competitors, because an enormous number of handsets are sold each year worldwide.

Just as important, Microsoft recently brought out Zune, another maker of portable media players. Once again, I would need a long digression to explain why that firm is bothering with this market, so I will just say it simply: If Microsoft's marketing history is any guide, this will not be the company's last experiment with Zune. More concretely, Zune embodies a few new experiments, such as Wi-Fi supporting Zune-to-Zune communication. Microsoft will try to refine the feature. Others will watch, imitate, and experiment further.

This room will soon contain one more elephant, Apple's iPhone. Based on the opinions of many reviewers who anticipate this (almost tangible) product, Steve Jobs is—take your pick—either a quixotic thrill seeker or a brilliant innovator. More to the point, with the iPhone, Apple will be both experimenter and lesson user.

It is hard to shake a sense of *déjà vu*. There is no guarantee that the pioneer or later experimenters will profit, but I am sure the cycle will continue.

Fuel for innovation

The pool of accumulated knowledge acts as fuel for the capitalist innovative engine. Accumulated lessons are built on the experience of others—both mis-

takes and triumphs. Almost by definition, the knowledge pool contains more lessons than any single firm could have learned on its own.

There are no restrictions on how accumulated lessons get used and by whom. That makes those expensive lessons appear cheap to later borrowers, although no accountant would (or could) record their value in a ledger.

Accumulated knowledge also exhibits a mismatch between cost and benefit.

Those who pay for lessons are not necessarily those who use them most profitably.

That last observation raises another question: What motivates a manager to pay for an experiment in the first place? While economic motives have something to do with it, sometimes it seems as if other inducements matter as much: the itch of curiosity, or the sporting thrill from doing something new.

And why does anyone let a lesson spread? It seems as if lessons spread for reasons far less weighty than the consequences, as when a manager boasts to a friend about inventing a clever enhancement, or about earning customer kudos for solving a common problem in a novel way.

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