pay more attention to the “horse” than the “jockey.” Kaplan and his colleagues found that as a company grows over time, a firm’s “alienable assets” (e.g., its patents, intellectual property, and even physical assets) become increasingly important. Indeed, the more wealthy a firm is with respect to these assets, the more likely it is that the person(s) responsible for assembling those assets will decide (or have it decided for them) that the firm will best survive without them.

Kaplan and his colleagues noted that the firm’s founder or CEO often stayed with the firm in the same position between the time the business plan was drawn up and the third post-IPO annual report was issued (a period that averaged almost six years in the company sample). But Kaplan and his colleagues also demonstrated that as companies grow, they are more likely to compete based on their innovative products and customer service than on the expertise of their founders or even their top management team. Finally, some interesting results also emerged about founders who left their companies before the third post-IPO annual report (perhaps because of the enormous energy expended on their start-up and/or the financial windfall many experienced after their company’s IPO). Specifically, Kaplan and his colleagues found very few departing founders who went on to be “serial entrepreneurs” interested in replicating or somehow improving on their initial company-building efforts.

All of us work for an organization that was created by someone, or, at most, a small group. So whether six months, six years, or six decades pass before the founder leaves the organization, it was that person, after all, who started the ball rolling. Perhaps this helps explain why the mythology of the “great man” or “great woman” persists in corporate cultures and some popular conceptions of leadership.

However, Kaplan and his colleagues have shown that while the founder’s influence is important, it is not the “glue” that holds companies together and motivates employees to work for a common purpose. This has important implications for managers today as they look at their own organizations, regardless of their stage of development. Taking a longer term performance and culture perspective, firms that hire top executives who focus on managing their technology, customer service, and people will be the most likely to succeed.

And in an era when executives are under fire across the corporate landscape for failed and reckless strategies, excessive compensation plans, and lavish spending habits, the work of Kaplan and his colleagues comes at an opportune moment. They show us that successful leadership means truly managing for the long term—building a business and a team that will ultimately outlast the original founder as well as themselves.


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**Keys to Innovation: The Right Measures and the Right Culture?**

*Research Brief by David C. Wyld, Robert Maurin Professor of Management, Southeastern Louisiana University*

Ours is a metric-driven culture. We assess everything—who’s up and who’s down, who’s ahead and who’s behind, who wins and who loses, and even who’s hot and who’s not. We have transformed politics to the point where daily tracking polls on voter preferences can make the actual election results seem anticlimactic. Likewise, we have transformed sports, where fan interest in fantasy leagues has, in many cases, overtaken interest in the games themselves. In effect, through experimentation, evolution, and yes, the “wisdom of crowds,” we have created new rules for scoring success across sports, politics, and entertainment. This suggests that the ways we measure anything are not, and should not, be static.

But how then should we measure innovation? Traditionally, innovation in firms has been assessed by *input* measures in the process of creating new products. Particularly for technology firms,
the crucial metric has been the number of patents a firm generates (i.e., the more patents a firm has in a year, a decade, or in its history, the more innovative we regard that firm to be). To a lesser extent, scholars have examined how the amounts spent on research and development (R&D) and the size of a firm’s research department affect innovation. Yet what has been missing in the broad, multidisciplinary field of innovation is research examining how productive firms have been at transforming these inputs into innovation outputs: radical new products that can be commercialized and help build a firm’s future.

That is, until now. A new study by Gerard Tellis (University of Southern California), Jaydeep Prabhu (University of Cambridge), and Rajesh Chandy (University of Minnesota and the London Business School) addresses this gap in research on innovation outputs. Their research is groundbreaking on a number of levels. Indeed, Tellis, Prabhu, and Chandy fundamentally question the static manner in which we have measured the crucial area of innovation. They pinpoint that previous studies on innovation significantly underappreciate the role that corporate culture plays in fostering and supporting the radical innovations necessary to compete today. In their study, Tellis and his colleagues provide critical guidance for executives about how to best measure the elusive concept of radical innovation as well as how to foster innovative cultures and companies.

The study Tellis and his colleagues conducted was ambitious—it covered more than 750 publicly held companies across 17 nations and combined both survey and archival data. As a result, they built a comprehensive platform on which to study the nature of innovation today and put their ideas about the role of culture to the test.

In sum, they found that national cultural characteristics (e.g., values, religion, and geography) have far less influence than previously thought on the ability of firms to produce radical innovation. They also found that with barriers to trade falling and the exchange of information rising globally, national characteristics (e.g., governmental policies, economic conditions, and financial systems) are less likely to explain innovation variability across countries today than they did in the past. Rather, Tellis, Prabhu, and Chandy found striking similarities among innovative companies across different national and cultural contexts. In fact, there was more similarity among corporate cultures in firms that routinely produced radical innovations than there was among corporate cultures of firms located in the same nation.

The upshot of all of this is that innovative cultures can thrive anywhere in the world, independent of the norms of national culture—norms that were once thought to automatically stifle or preclude creative thinking. This finding may be due to the fact that Tellis, Prabhu, and Chandy examined a wide array of countries in their study, including emerging Asian economic powers such as China, India, South Korea, Singapore and Taiwan. In contrast, previous innovation research has been conducted mostly in developed countries in North America and Europe, as well as in Japan.

Achieving truly radical innovations has never been more important than it is today for companies to compete in the global economy. Tellis and his colleagues found that radical innovations positively affect a company’s financial performance and its long-term ability to compete effectively. On the other hand, patents—the long-standing metric associated with innovation—did not. Consequently, firms should focus on radical innovation as an output measure of new product commercialization and deemphasize the role of patents. Patents should be regarded as an input measure and a precondition for making such innovations happen. However, innovation cannot occur without real corporate commitment. In that light, Tellis and his colleagues found that the level of a firm’s R&D employment was found to be positively correlated with the production of radical innovations, and ultimately, outstanding market performance. In other words, research and development activities do represent a corporate commitment both to continuing innovation to the market and, perhaps even more important, to building an innovation-focused corporate culture.

Speaking of which, Tellis and his colleagues found that a firm’s attitudes and practices can play a significant role in fostering a creative corporate culture in which truly innovative new products
can be developed. This has significant implications for management in practice, providing guidance on just how executives should go about creating an environment that fosters radical innovation. Specifically, to foster such a culture, tangible support for research and development activities is not enough—management must have the right mindset and put the right practices in place.

For example, that involves having executives who are future-oriented enough to trade off investments in maximizing a firm’s present technology (and the revenues that flow from it) in order to create new generations of technology. It also means that management must create an environment that empowers product champions and encourages experimentation with new, unproven ideas (and provide the time, resources, and incentives needed). Overall, executives should strive to incentivize innovation, rewarding the divisions, groups, and individuals who can create the future of the firm rather than focusing on rewarding those who preside over maintaining the status quo (i.e., who maximize present revenues from current products or technologies). In the end, Tellis and his colleagues have provided invaluable guidance for executives interested in fostering radical innovations to effectively compete in today’s global marketplace.


Wal-Mart and Social Capital: Builder, Destroyer, or Both?

Research Brief by Ran Zhang, Assistant Professor of Accounting, Guanghua School of Management, Peking University, and James A. Largay III, Professor of Accounting, Lehigh University

Founded in 1961, Wal-Mart has grown into the world’s largest corporation. Along the way, Wal-Mart’s rapid growth and aggressive tactics led to criticism about its effect on local communities, particularly small towns with “mom and pop” stores. Several studies have concluded that the entry of Wal-Mart into local communities lowers wages, kills small businesses, and reduces social connectedness. As one study put it, Wal-Mart reduces social capital.

But does this overstate the case? Indeed, might Wal-Mart actually have some positive effects on individual communities, especially with respect to social capital? For instance, Wal-Mart’s presence may increase social capital by building community programs and by reducing the time required to shop, leaving more time for other social capital-producing activities. Moreover, by allowing consumers to spend less on material consumption, Wal-Mart may indirectly “create” more resources to devote elsewhere.

A recent fascinating study by Art Carden (Rhodes College), Charles Courtemanche (University of North Carolina at Greensboro), and Jeremy Meiners (Agrem LLC) attempts to answer these questions. Carden, Courtemanche, and Meiners examined county-level and individual survey data, using several proxies for social capital (e.g., club membership, religious activity, and time with friends). In a nutshell, their results do not support the hypothesis that “Wal-Mart destroys communities” by reducing social capital.

Since the 1990s, big-box stores such as Wal-Mart have changed how Americans shop, changed customer expectations for retail prices, and transformed retailing’s distribution structure. Some have argued that during this process, Wal-Mart has destroyed communities by changing established living patterns in the United States. As shoppers drive to buy goods and services at the Wal-Mart on the outskirts of town, downtown stores close and local coffee shops lose their customer base. Fewer opportunities for dialogue and interaction exist among community members, and local entrepreneurs find it more difficult to sell innovative new products. To avoid these negative effects on their communities, some county leaders do not allow Wal-Mart to enter; Boulder County in Colorado is one such example. Consequently, the question of whether Wal-Mart actually reduces social capital is important for helping community leaders and local businesses make
Incumbency, size, and radical innovation

It's an old story, so familiar that its ending might seem like a no-brainer: Company A is a large firm, already established as the leading maker of a certain product. Company B is a young upstart—smaller, hungrier, and lighter on its feet. Guess which one will produce the next radical product innovation?

Chances are, you guessed wrong. And, if so, you are in good company. The notion that incumbent firms—those that are already established in a given product category—are less likely than new entrants to produce the next radical breakthrough is "the accepted folklore," says Gerard Tellis of the University of Southern California. Yet a recent study by Tellis and Rajesh K. Chandy of the University of Houston found that what they dub the "incumbent's curse" is, in many cases, a myth.

Back in 1997, Chandy attended a conference on "Really New Products" sponsored by the Marketing Science Institute. The "incumbent's curse" was such a common refrain at the meeting, he recalls, that one marketing executive expressed an overriding sense of "hopelessness" about his large, multinational company's ability to make new product breakthroughs.

For such firms, Chandy and Tellis's report, "The Incumbent's Curse? Incumbency, Size, and Radical Product Innovation," should come as good news. In fact, the study has important implications for companies of all sizes, for new entrants as well as incumbents, and for firms based either in the U.S. or abroad.

Chandy and Tellis examined 53 radical product innovations, which they define as new products that incorporate a "substantially different core technology" and provide "substantially higher customer benefits" than their predecessors. Unlike previous studies, which focused on single products and/or utilized convenience samples (usually from the U.S.), the researchers studied a large number of new products in two broad product classes—consumer durables and office products. Their examples came from a variety of countries and span the past 150 years. Among the new products in their sample: the mechanical refrigerator (introduced in 1851), the phonograph (1878), the safety razor with disposable blades (1903), the ballpoint pen (1943), the cellular phone (1983), and digital high density television (1998).

Breaking the curse

Overall, looking at all 53 cases, there's mixed support for the incumbent's curse when the interaction of company size and incumbency is taken into account. Large, incumbent firms were almost twice as likely as small or medium-sized incumbent companies to produce a breakthrough. Among nonincumbent firms, however, size proved to be a disadvantage. Those that were large were nearly four times less likely as small nonincumbents to produce new product innovations.

But when Chandy and Tellis looked at whether the same pattern had held up over time, they made an important discovery: Before World War II, true to popular belief, nonincumbents produced significantly more (73%) innovations than did incumbents (27%). But since World War II, that pattern has reversed. In fact, incumbents have generated 74% of new product innovations, a finding
Companies that create small, autonomous business units within the larger organization may be able to marry the nimbleness of a small firm with the deep pockets of a large one.
According to conventional wisdom, a firm with a product that is well established in the marketplace is likely to rest on its laurels. While younger, hungrier firms experiment with radical innovation, dominant firms are seen as more complacent and less inclined to invest in new technologies.

Rajesh Chandy of the University of Minnesota, Jaideep Prabhu of the University of Cambridge, and Kersi Antia of the University of Western Ontario suspected that the picture was a bit more complicated. In their report, “What Will the Future Bring? Dominance, Technology Expectations, and Radical Innovation,” they scrutinize the characteristics and behavior of dominant firms, exploring why some innovate and others don’t.

**Investments and inertia**

In part, their findings support the common wisdom. Two facets of dominance—investments and market share in the current technology—indeed have the effect of dampening the firm’s propensity to innovate. “Dominant firms have assets and investments in the existing order of things, which cause them to make more investments in existing technology at the expense of new technology,” Prabhu explains. “The other factor is inertia. As firms become dominant, their success in the market causes them to persist in a pattern of doing things a certain way.”

Another facet, however, appears to outweigh either of these influences: the wealth of dominant firms. Antia says, “Their wealth and access to greater resources give them a great advantage in developing new technology.” As a result, the study found, dominant firms overall are more aggressive at innovation than non-dominant firms.

**Managers’ expectations are key**

What, then, distinguishes the dominant firms that engage in radical innovation from those that don’t? Here the researchers turned to the human element: the expectations of managers. “Managers differ quite a bit in their expectations—whether they believe new technology will make existing products more powerful, or make them obsolete. These differing expectations of the same technology have a profound impact on the aggressiveness with which companies pursue innovation,” says Chandy.

Interestingly, the most powerful motivator is fear. Managers who believe that a new technology will enhance their existing products, resulting in increased sales, are actually less likely to invest in new technology than managers who fear that it will make their products obsolete. “Among dominant firms, those that expect obsolescence will be particularly aggressive,” says Chandy. Real-world examples include Intel and Microsoft, both of which are dominant companies that have cultures of “paranoia” about new technologies.

In the study, the authors looked at the field of Internet banking. “Several large banks were convinced that new technology would make bricks and mortar banking obsolete. They were most aggressive in developing Internet banking,” Antia noted.

To assess the role of managerial expectations in shaping firms’ innovative behavior, the authors used experiments, field interviews, and survey and archival data. Through the control provided by laboratory experiments, they were able to establish causality—showing that managers’ expectations really do cause them to make certain investment decisions.

Overall, the researchers note, their study has implications for both dominant and non-dominant firms.

continued on page 4
Managers in dominant firms who want to encourage innovation will be more successful, the study suggests, if they emphasize the possibility that new technology will make existing products obsolete. “A healthy dose of paranoia is a good thing,” says Prabhu. “If you are a product champion in a dominant firm, you are better off arguing that the new technology will lead to obsolescence.”

Non-dominant firms, on the other hand, may be better off not saying too much about obsolescence in their product announcements, in order to avoid “waking up dominant firms from their slumber,” as Antia puts it. Such announcements might help in gaining publicity, but they might also alert dominant firms to the dangers of inaction, and increase the likelihood that they will aggressively invest in innovation themselves.

This study argues for more optimism on the role of dominant firms in innovation. But, says Chandy, “If you look at anti-trust policy discussions, they are often driven by the theory that dominant firms tend not to be innovative.” It will take much more research to dislodge that stereotype for good.

By Betsy Reed

From “What Will the Future Bring? Dominance, Technology Expectations, and Radical Innovation” (MSI Report 02-122)
Embracing cannibalization for radical innovation

Examples of the power of radically new products to make or break companies—even entire industries—are legion. Once-dominant companies like Smith Corona buckled under to new giants such as Hewlett-Packard. The slide-rule industry evaporated with the advent of the electronic calculator. But what separates the winners from the losers? How can managers harness the power of radical innovation?

These are important questions to marketing managers because product strategy lies at the heart of all they do. But in the absence of any systematic findings on the subject, answers have been hard to come by. Since Joseph Schumpeter published his seminal work, Capitalism, Socialism, and Democracy, in 1942, one study after another has focused on the effects of company size on radical innovation. Some researchers have concluded that large companies—with their enormous financial resources, economies of scale in R&D, and ability to spread risk—enjoy an advantage; others have argued that small, nimble companies are better able to take the risks necessary to produce radical product innovations. Meanwhile, managers have been left in the middle with little definitive advice.

But perhaps researchers have been looking for answers in the wrong place. So suggests a new study, “Organizing for Radical Product Innovation” by Rajesh K. Chandy of the University of Houston and Gerard J. Tellis of the University of Southern California.

Attitude—not size—sets innovators apart from others

The researchers found that what distinguished innovative from noninnovative companies had to do more with organizational attitudes and structures—what they call a willingness to cannibalize—than with company size. Says Chandy, “What mattered most was the manner in which managers thought...
about radical innovation and the organizational structures they created to support it."

In their survey of 192 senior managers in the highly competitive and innovative computer hardware, telecommunications, and photonics industries, the researchers identified a willingness to cannibalize—or the extent to which managers are able to destroy the value of past investments in technology-specific physical assets and organizational routines—as the factor most critical to radical innovation. But that is easier said than done.

Consider a company like Kodak, which has invested billions of dollars in manufacturing plants, distribution channels, and internal policies and routines that support celluloid film. As the company makes inroads into electronic-imaging technology, those investments suddenly become obsolete. It takes a strong stomach to sacrifice a stable present in pursuit of an uncertain future, even when more modest sums are at stake. The natural instinct, of course, is to preserve the value of past investments. And the more successful the company, the more wedded it is to those investments. But managers of innovative firms, regardless of size, resist precisely that instinct.

Managers, then, should not worry about the size of their companies, say the researchers. Instead, they should organize their companies in a way that will encourage cannibalization. The researchers found that three organizational features helped innovative companies cannibalize past investments.

First, innovative companies had internal markets. By encouraging competition among autonomous business units, managers created a culture in which new ideas and risk taking were valued and rewarded.

Second, product champions in innovative companies wielded great influence. Chandy notes, “We found product champions in both innovative and noninnovative companies. The difference was that in the less successful companies, those managers were frustrated and demoralized. In the successful ones, they had the power to make their ideas happen.”

Third, successful companies adopted what the researchers call a future market focus. Today’s mantra of staying close to the customer can be dangerous in the context of radical product innovation. “Managers can be too loyal to their current customers,” warns Chandy. “Customers can be fickle. They think nothing of abandoning a product as soon as a radically new one comes along that serves their needs in ways they hadn’t even imagined.” Managers at innovative companies instead focused on future customers and competitors.

Rethinking the basics

In light of these findings, managers will have to reconsider some of their basic assumptions. First, they will have to think differently about core competencies. Instead of developing a technology-specific core competency that may one day become obsolete, such as building better combustion engines, Chandy suggests that managers think in broader terms, such as excelling at innovation.

Today’s focus on synergies among business units also needs to be reviewed. Too much synergy can squelch new ideas that don’t fit the company’s overall strategic goal and, in so doing, discourage the internal competition and product champions that are so critical to radical innovation.

Most important, marketing managers must learn to cast cannibalization in a new light. After all, in most marketing contexts, cannibalization is to be avoided whenever possible. “That makes sense when it comes to incremental innovation,” says Chandy. “But we need to stop seeing cannibalization as necessarily negative. In fact, in the context of radical innovation, we need to embrace it.”

Katherine Zoe Andrews

From “Organizing for Radical Product Innovation” (MSI Report No. 98-102)
Who gains most from radical innovation?

Popular perception holds that radical innovations generally come from entrepreneurial firms. At best, dominant firms are seen as waiting for new ideas to be discovered in smaller firms, and then acquiring them through licenses or buyouts. The firms that gain most from radical innovations, in this perception, are the nimble, smaller ones.

A new study by Alina Sorescu of Texas A&M University, Rajesh Chandy of the University of Minnesota, and Jaideep Prabhu of Cambridge University challenges these notions. In “Who Introduces More Radical Innovations and Who Gains More from Them?” the researchers find that “most truly radical innovations are invented and commercialized by dominant firms,” says Sorescu. In fact, far from threatening the leadership of dominant firms, “radically new products can actually reinforce the market position of dominant firms.”

In addition to the sources of innovation, the researchers examined the factors that contribute to the financial success of the innovation in the marketplace. What role do firm size, resources, and breadth and depth in the product portfolio play in garnering financial rewards from radical innovation? To answer that question, they used historical data from the pharmaceutical industry. Their dataset was well suited to their study: since the Food and Drug Administration has closely monitored the industry since 1939, data were plentiful. Further, the pharmaceutical industry is driven by innovation, and variation among the firms allowed for a wide sample.

Working with a sample of 255 “breakthrough innovations” introduced between 1991 and 2000, the researchers found that more than two-thirds of radical innovations in pharmaceuticals come from “big-pharma” firms. Moreover, more than 70 percent of these innovations were invented in-house—contrary to the popular perception that radical innovations generally come from entrepreneurial firms.

**Strengthening giants**

Not only do dominant firms introduce more innovations, they also gain much more from them. Dominant firms average nearly $500 million gain in stock value during the three days after a product approval by the Food and Drug Administration, as compared to less than $50 million for non-dominant firms. While business lore may view radical innovation as the weapon small firms use to slay the Goliaths in the marketplace, it seems that innovation actually strengthens the giants of the pharmaceutical industry.

The authors also considered the ways in which a radical innovation’s success is determined by the level of support a firm invests in its products—as measured by spending on marketing and on R&D—and the scope of its existing product base. A firm’s product support activities can help a radical innovation succeed, says Chandy, and “a firm with a higher product scope has more potential for leveraging the innovation” to achieve success.

Indeed, large firms in the study that invested in marketing and R&D, and that had more diverse portfolios, reaped more substantial financial rewards from their breakthrough products.

**Advice for small firms**

This, of course, raises the question of how non-dominant firms can respond. “All is not doom and gloom for the small player,” argues Prabhu. To begin, investing in product support and product scope will help small firms increase the financial rewards they hope to gain from new products. “Indeed, if they deploy their relatively meager resources cleverly, they can gain from radical innovation too.”

More significantly, perhaps, their findings suggest that non-dominant firms have tremendous opportunity...
Small firms have tremendous opportunity for licensing their innovations.

for licensing their innovations to larger firms. "A non-dominant firm that licenses its radical new drug to a dominant pharmaceutical firm can hope to bargain for a figure between what it would stand to realize if it commercialized the drug, and what the bigger firm stands to gain." Chances are, that figure will be a substantial bonus for the smaller firm, and still a good deal for the big-pharma firm.

Overall, the findings fly in the face of recent pessimism about the ability of dominant firms to successfully commercialize radically new products. "Much has been made of the curse that incumbents face when it comes to radical innovation," says Chandy. "The prevailing view is that dominant firms, although they may be good at developing new technology, often fail to commercialize it because of their fear of cannibalizing the sales of their existing products.

"In contrast to that view, we find that the role of resources in radical innovation is so overwhelming that dominant firms, despite any other disadvantages they may face, introduce far more radical innovations than less dominant firms do. What's more, they are rewarded more by Wall Street for these innovations than their smaller counterparts are. The additional gains of being dominant are as much as ten times greater for dominant than non-dominant firms for the same type of innovation."

By Betsy Reed

From "Who Introduces More Radical Innovations and Who Gains More from Them?" (MSI Report No. 03-118, forthcoming)
The recent election of Barack Obama raises the question: can a single individual make a difference to how a large group such as a nation thinks and acts in the long term? Or, in the more modest context of business: can a CEO drive the employees of a firm to become more innovative and perform better over time? Corporate culture plays an important role in making firms more innovative, but does the individual at the head of the firm have a role to play in all this?

Common sense would suggest that the people who lead companies have an important role in driving innovation within them. Anecdotal evidence would support such a view too. CEOs like Andy Grove at Intel and Steve Jobs at Apple have been widely acknowledged for promoting innovation in their firms.

Surprisingly, academic literature presents a mixed view on the subject. Some authors suggest that CEOs might actually be bad for innovation. They may be so steeped in the past, or so swamped by their day-to-day activities, that they fail to recognise how the technological or market situation has changed on them. Here too examples are easy to find.

One need only think of Ken Olson, the CEO of Digital Equipment Corporation who, as late as 1977, decreed that “there is no reason anyone would want a computer in their home” and proceeded to forbid his employees from using the words “home computer” or “personal computer” within the firm.

Other authors have argued that CEOs are simply not very relevant in driving innovation. Or else, this effect is only at the project level, via support for individuals and teams working on individual projects. The legendary Andy Grove seems to hint at something like this at Intel: “Over time, more and more of our production resources were directed to the emerging microprocessor business, not as a result of any specific strategic direction by senior management but as a result of daily decisions by middle managers?”

To better understand where the truth lies, I conducted, along with Manjit Yadav and Rajesh Chandy, a study of the US retail banking industry between 1990 and 2004. To measure the CEO’s role, we analysed 876 letters to shareholders from 176 public banks between 1990 and 1995, the years that just preceded the advent of Internet banking. To assess the impact on innovation, we measured the time these banks took to 1) detect the new technological opportunity of the Internet by registering a domain name and 2) develop an initial transactional Internet banking service. We also measured how sophisticated the Internet banking service of these banks was by the end of 2001.

We found that banks with CEOs who focused on the future more were faster at detecting the Internet opportunity, faster at developing an initial Internet banking service, and superior at deploying their initial banking service. This was true even when the target of CEO attention was not innovation per se, and even when the innovation outcomes occurred several years later. We measured CEOs’ focus on the future by exploiting a quirk of the English language: future-oriented sentences are likely to include “will”. The number of such sentences in letters to shareholders indicated attention to the future.

Long ago Gary Hamel and C.K. Prahalad warned: “Senior management devotes less than 3% of its energy to building a corporate perspective of the future.” In our study, only 9.21% of all thoughts (sentences) were future-focused and the percentage of future-focused thoughts among CEOs varied from 0 to 20%. Implication: CEOs can influence innovation in their firms simply by spending more time attending to the future.

Leadership can make all the difference to the innovativeness, success and longevity of a company. CEOs would do well to remember these lessons, as would Obama as he struggles with the many challenges facing him and the US in the weeks and months ahead.

The author is Jawaharlal Nehru professor of Indian business & enterprise at Cambridge University’s Judge Business School
When a company’s systems are complex, they can invite dangerous vulnerabilities. But there are strategies that can help mitigate the risk.

In March 2001, a fire struck a semiconductor plant in New Mexico, leaving Swedish telecom giant Ericsson Inc. short the millions of chips it needed to launch a major expansion. Ericsson had a fire alarm system, running on a global supply chain, failed to notice that the New Mexico plant was a bottleneck. The resulting fire, it was later determined from the market while its rival NokIA Corp. flourished.

Ericsson is not the only company to suffer a catastrophe due, in part, to the complexity of its own systems. In February 2002, the Westinghouse Electric Co. trader in Singapore caused Barings Bank, Britain’s oldest merchant bank (it had financed the Napoleonic wars, the Louisiana Purchase and the Erie Canal), to become insolvent.

Nick Leeson, soon after becoming general manager of Barings Securities, lost money trading futures and options trading. But they are less adept at detecting the internal vulnerabilities that make breakdowns not just unlikely but, in some cases, inevitable. In this raise the question: How do businesses uncover and forestall the fatal flaws lurking within their organizations?

The best bet for uncovering weaknesses that are already embedded in a complex system is to test them with “attacks,” by having hackers try to break into a computer network, for example. But the difficulty lies in designing an attack that really tests the system – as opposed to merely confirming its designer’s assumptions.

What is needed for systems testing is an open mind – or, even better, many open minds. That’s where the concept of open source comes into Open source, as the term is used in developing software for instance, means that something is developed through the collective, in the public arena. A group of people share responsibility for creating, testing and fixing something – anyone at anytime can participate. Wikipedia, the online encyclopedia created by Internet users around the world, is an example of the open-source philosophy at work.

As Eric Raymond, a noted advocate of open-source software, once wrote, “Crowds are smart. All bugs are shallow.” When software developers regulate challenge each other’s code, finding bugs, which leads to fixes, thus more bugs, more fixes and so on. That process of diversity-based testing can involve thousands of developers around the world. Sometimes it’s hard to get diverse perspectives, however. Often implicit group dynamics tend to suppress a wide range of ideas. To avoid such pitfalls, organizations should try to let diversity spill out on its own. While in the aviation industry, for instance, can file anonymous reports with the U.S. Aviation Safety Reporting System about incidents that could pose a threat to safety. The information cannot be used by the Federal Aviation Administration’s enforcement authorities but is available to more than 150,000 aviation professionals and enthusiasts.

On cutting-edge companies are using something called artificial intelligence in markets, in which people worldwide are an example of the services to the number of jivebeats in a box will be more accurate than any one person’s estimate.

This article is adapted from “Understanding and Managing Complexity Risk,” by Eric Raymond, which appeared in the Summer 2007 issue of MIT Sloan Management Review. The complete article is available at http://sloanreview.mit.edu/crmt/.

Measuring the culture of Innovation

Research shows the most important factor driving innovation is company culture.

In February 2011, writing for The New York Times Online, the author explains that flourishes in Silicon Valley, G. Pascal Zachary headlined his article “Measuring the Culture of Innovation, Geotechni- What is needed for systems testing is an open mind – or, even better, many open minds. That’s where the concept of open source comes into Open source, as the term is used in developing software for instance, means that something is developed through the collective, in the public arena. A group of people share responsibility for creating, testing and fixing something – anyone at anytime can participate. Wikipedia, the online encyclopedia created by Internet users around the world, is an example of the open-source philosophy at work.

As Eric Raymond, a noted advocate of open-source software, once wrote, “Crowds are smart. All bugs are shallow.” When software developers regulate challenge each other’s code, finding bugs, which leads to fixes, thus more bugs, more fixes and so on. That process of diversity-based testing can involve thousands of developers around the world. Sometimes it’s hard to get diverse perspectives, however. Often implicit group dynamics tend to suppress a wide range of ideas. To avoid such pitfalls, organizations should try to let diversity spill out on its own. While in the aviation industry, for instance, can file anonymous reports with the U.S. Aviation Safety Reporting System about incidents that could pose a threat to safety. The information cannot be used by the Federal Aviation Administration’s enforcement authorities but is available to more than 150,000 aviation professionals and enthusiasts.

On cutting-edge companies are using something called artificial intelligence in markets, in which people worldwide are an example of the services to the number of jivebeats in a box will be more accurate than any one person’s estimate.

This article is adapted from “Understanding and Managing Complexity Risk,” by Eric Raymond, which appeared in the Summer 2007 issue of MIT Sloan Management Review. The complete article is available at http://sloanreview.mit.edu/crmt/.