

Innovate or Die: Is that a Fact?¹

Isaac Getz and Alan G. Robinson

'Innovate or die'. This mantra has been repeated so many times – by the media, governments, business leaders, business professors, consultants and management gurus – that people have come to assume it is actually true. This article explores why business leaders have been so prone to fall for such a naïve message, and shows how it has caused them to overlook the true sources of long-term high performance.

Introduction

In October 2002, as it does every year, the French daily *Le Monde* published the rankings of French corporate R&D budgets and held a special event to celebrate the biggest spenders. This year the winner, at €5.1 billion, was EADS, an aerospace consortium, followed by Aventis at €3.5 billion, and Alcatel at 2.9 billion. The media is not alone in hyping this kind of ranking. Governments do it, too. In 2002, for example, the UK Department of Trade and Industry (DTI) published its twelfth annual R&D Scoreboard. Other governments track the same data in their own countries. Why?

The reason is the cherished dream of corporations and governments – a dream of innovation with its promise of success and riches. As the DTI R&D Scoreboard put it: 'Innovation has been highlighted as the origin of growth in free market economies and R&D is a key investment in innovation since it leads to new products, processes, and services' (p. 3). Although the report immediately backtracks, and comes close to questioning this latter assertion ('It is, of course, only part of the investment in innovation since investments in capital equipment and in the development of new markets, systems and skills are also important' (p. 3)), it then carries on blithely about its business of displaying R&D budget data under the assumption that it holds the key to everything.

'Innovate or die'. This mantra has been repeated so many times – by the media, governments, business leaders, business professors, consultants and management gurus – that people have come to assume it is actually

true. Even if a company is well-managed and has the highest profits and customer satisfaction in the industry, without the ability to generate breakthrough innovations, so the mantra goes, it is not long for this earth.

But is this really so? There are plenty of examples of companies with outstanding engines of innovation that consistently perform poorly. There are equally many of organizations that have been high performers for decades without innovating much at all. How did Lucent Technologies, which owns Bell Laboratories, perhaps the leading generator of inventions in the world, end up in so much trouble? How did Xerox – which invented the laser printer, the Ethernet, and the point-and-click interface – turn in such an appalling performance over the last decade? How did Alcatel, third in the *Le Monde* rankings and consistently in the top few over the last fifteen years, get in such trouble in recent years? Was it the bursting of the dotcom or telecom bubbles? Cisco and Microsoft, on the other hand, did just fine. When we asked one executive from Cisco, which recently became the world largest telecommunication infrastructure supplier – and unlike Lucent, Alcatel or Nortel is hugely profitable – how it manages innovation, his reply was: 'We do not. We just buy it'. And how did Microsoft, a laughing stock in the industry for its lack of innovativeness, become one of the most powerful companies in the world? Until 1991, the company did not even *have* an R&D function.

¹ This paper draws partly on the material published in our book *Vos idées changent tout!* (in French), Editions d'Organisation, Paris, 2003 (German edition to appear in October 2003, Hanser, Munich).

In this article, we discuss how the 'innovate or die' assumption has led companies to make costly mistakes. To begin with, it made many managers think that their companies had to generate inventions *themselves*. It gave them a 'jackpot mentality', a belief that everything would be made right with a handful of 'home-run' innovations – innovations that would change the very terms of competition in their industries. Worst of all, it has led a generation of managers to try to build the ability to innovate before taking care of more important things – such as making sure their processes are customer-focused, and that their organizations are listening to the more mundane everyday ideas of their front-line employees.

The 'innovate or die' mantra has been an easy sell for consultants and management gurus, because it promises great riches, with relatively little effort.

The Bright and the Dark Sides of the Innovation Mantra

In the preface to his book *Leading the Revolution*, Gary Hamel (2000) lays out his imperative: 'We've reached the end of incrementalism, and only those companies that are capable of creating industry revolutions will prosper... Radical innovation is the competitive advantage for the new millennium' (p. xii). In *The Circle of Innovation*, Tom Peters (1999) makes essentially the same point: 'Incrementalism is innovation's worst enemy... If you're spending every... hour making "it" a bit better... then... you are not spending every hour on reinventing it, blowing it up' (p. 27); 'The only sustainable competitive advantage comes from out-innovating the competition' (p. 29). The bottom line is: 'Innovate or die' (p. 308).

Why have business leaders been so prone to fall for such naïve messages? As Dauphinais and Price (1999) put it in their book *Straight from the CEO*: 'Of all the wish-fulfilling dreams a CEO might have, none can be more glittery than the notion of massive transformation by innovation, of getting rich on needs and wants undreamed of by anyone before. This is the innovation jackpot' (p. 235). It is the mantra's bright side, the same thing that attracts people to casinos or lotteries – the prospect of a 'big win' that will solve all their problems and bring them success in a single moment of glory.

There are, however, two problems with managers pinning all their hopes on a glamorous splash. First, it causes them to believe that the wrong things matter, and that the

right things do not. Second, because of exactly the same psychology behind the highly successful ads for state-owned lotteries, management forgets the probabilities involved and believes it has a real chance of hitting the jackpot. Let us look more closely at each of these assertions.

Are Hamel and Peters right? Is the innovation jackpot, in fact, the key to it all, with the alternative being a gory death? The answer is a resounding no. We have already mentioned Cisco and Microsoft, which became their industries' leaders (and continue to grow) without originating much in the way of innovation themselves. Sony is another example. It is known for having generated dozens of innovations. But beginning in 1980, CEO Akio Morita deliberately decreased Sony's ability to generate technological inventions, and built instead an ability to create better products through incremental improvements.² Morita realized that his company's focus on generating radical inventions actually diverted attention, time and resources away from what was truly important for its success – continuously improving and putting top-notch products on the market before the competition and at a reasonable cost.

Many observers still cite Sony as one of the most innovative companies in the world and they are right. After having dramatically reduced its *internal* capacity to innovate, Sony remains as innovative as ever, and still alive and kicking.

Another reason that seeking the innovation jackpot gets companies into trouble is that the probability of hitting it is extremely low. Many companies entertain the belief that hitting an innovation jackpot through in-house, R&D-generated inventions is a realistic possibility. Almost a century ago, Freud explored and explained the human tendency to take our dreams for reality. And the innovation jackpot certainly fits his theory. It is an expensive dream with a very low probability of realization.

A cross-industry study (Stevens and Burley, 1997) estimated that out of every 3,000 initial ideas, only 300 result in experiments and/or patent filings, from which only 125 advance into full-fledged projects, and from these only 1.7 products are launched, with only one finally succeeding in the market (in

² See Clayton Christensen's (1997) *The Innovator's Dilemma: When New Technologies Cause Great Firms to Fail*, Harvard Business School Press, Boston, USA as well as his interview 'Sony celebrates the results of fine tuning', *Financial Times*, 4 May 2001, p. 9.

pharmaceutical industry, the proportion is not 3,000, but 5,000 to 1). The same study also found that only 5 to 10 percent of US patents have *any* market relevance and only 1 percent of them actually bring any profit. With odds like these, companies might well be better off putting their money into the lottery!

To understand why these probabilities are so low for most companies, consider the following example of a company that did hit the jackpot. In August 2001, CyThera, a small start-up, stunned the biotechnology research community with the announcement that it had derived nine colonies of stem cells. This put it second only to Göteborg University in Sweden, which had nineteen, and ahead of every other academic and corporate research lab in the world. The company put itself on the National Institutes of Health list of stem cell lines eligible for use by scientists financed by the US federal funds and others who work on growing cells with therapeutic potential to repair damaged heart, brain, liver, or other organs. This cell-growth technology instantly made the company a leading provider of a service – growing stem cells – that was in great demand in the research centres all over the world.

So what did it take for a company with \$2 million in venture financing and only ten employees to get ahead in a research area in which major academic institutions and, according to one recent estimate, one-tenth of all pharmaceutical corporations worldwide are all actively jockeying for position? It had, of course, a top scientist, Jonathan C.R. Jones, a professor of cell and molecular biology and CyThera's co-founder, who developed the technology to grow certain cells in the laboratory. But its other two co-founders, CEO Michael J. Ross and COO (Chief Operating Officer) Lutz B. Giebel, were long-time biotechnology industry executives and entrepreneurs. Ross spent 13 years at Genetech, after which he was the first CEO of Arris, and then, in 1996, started MetaXen, which was sold to Exelixis in 1999. Giebel worked at Arris, and then co-founded MetaXen with Ross. These two men are the equivalent of Silicon Valley insiders who know their industry well. They are familiar with the various lines of research and inventions, and know how to connect them to market needs, how to sell new product or service prototypes to outside financing bodies, and how to move from prototypes to final products.

What are the chances that an average company, if it was involved in this stem-cell research area, would come out with such an innovative service if it had hired only Professor Jones as the head of research? Witness IBM

Research Laboratories, one of the benchmark corporate labs in the world and employing a number of Nobel-prize level researchers. IBM owns the world's largest patent portfolio but, in terms of its patents' relevance to profits – most often measured by the number of patent citations by other inventors (*cf.* Harhoff et al., 1999) – it falls far short of the array of start-ups acquired by Cisco or even of a relatively small company like Micron Technology in recent years.³ If IBM – 'the gold standard for turning research into corporate profit'⁴ – is beaten by start-ups and smaller companies in generating profit-relevant inventions, the average corporation using the same approach is almost certain to be left behind too.

Depending on its industry, a company may need top-flight researchers (like Professor Jones) and research facilities (like corporate labs). But whatever its industry, in order to come up with inventions that will ultimately be profitable, it needs CyThera-like entrepreneurial dynamics and specialized market knowledge – a unique combination of research and business savvy, which can connect an initial research invention with customers' needs and success factors and then turn it into a market opportunity.

The lottery-like statistics for success at dramatic innovation merely reflect how difficult it is for a company to bring all this together. Witness the latest data from the industry in the USA that spends most heavily on R&D – the pharmaceutical industry, to which CyThera belongs. Several studies based on data from the Food and Drug Administration and other sources explored the relationship between this industry's R&D investment and the number of new drugs put on the market.⁵ One key finding is that between 1991 and 2001 R&D spending rose from \$9.7 billion to \$30.3 billion, while the number of new drugs introduced each year dropped from 30 to 24. The Tufts Center for the Study of Drug Development report also notes that 'blockbusters are rare and largely unpredictable' (p. 3; 'blockbuster' means a drug whose annual sales exceed \$800 million, the average cost of developing a new drug). Even the probability of hitting a

³ 'The TR patent scorecard 2001', *Technology Review*, May 2001, pp. 48–49.

⁴ 'Eureka! Labs with profits', *New York Times*, 9 September 2001, 'Money and Business' section, p. 1.

⁵ 'Cross-functional team focus on marketing is key to project success', *Tufts CSDD Impact Report*, Vol. 2, December 2000; 'New drug approvals in 2001', PhRMA report, January 2002; see also 'Drug research yields a decreasing return', *International Herald Tribune*, 20–21 April 2002, p. 11.

profitable drug (much less an actual jackpot) through in-house R&D is very, very low.

Furthermore, if a company does happen to hit the jackpot – that is, it actually comes up with the next PC or Xerox machine – it will immediately confront a new difficulty: robbers. Other companies that will try to pilfer its jackpot once it is out in the open. Protecting and patenting it is not always feasible in practice and is something many companies that generate inventions are reluctant to do anyway. In particular, small high-tech companies often avoid doing it. For example, Broadcom, a leading designer of chips for communication devices has only *eight* patents, compared to Intel's more than three thousand. As Robert Dobkin, CTO of Linear Technologies, puts it, filing the documents for a public patent is like broadcasting to your competition what you're working on, it is 'giving away everything'.⁶

But even if a company does protect its invention, it still faces another difficulty: extremely able and creative imitators. Think of Microsoft with Windows-type technology invented by Xerox and Apple, of Seiko with the Quartz watch mechanism invented in Switzerland, or of Sony with the video-game-dedicated computer invented by Sega. Chances are high that competitors will figure out a way around what is protected, make the jackpot too expensive to protect, or eat away at it in some other way. For example, in 2001, Intel sued a Silicon-Valley company for infringing five of its patents, but according to analysts the burden of proof was so high that it actually had a very low chance of winning (in the USA, between 1921 and 1973, the courts declared almost two-thirds of the patents they ruled on invalid (Lubar, 1990), and a Yale University survey found that in only five out of 130 industries are patents 'highly effective' for protection, while they were deemed 'moderately effective' in only twenty more (Levin et al., 1987).) Whatever happens, Intel has to spend time and resources protecting its patents, as do many other potential 'jackpot' generators who face negative odds and high costs involved in upholding their patents.

So apart from the dreams in CEOs minds, for all intents and purposes there may not actually be such a thing as an innovation jackpot. Many companies use a 'jackpot' approach, but few have any success with it. Unfortunately, in addition to delivering poor results, the jackpot approach draws attention and resources away from what a company really needs to do to drive progress.

⁶ 'Are patents really a virtue?' *Fortune*, 16 October 2000, p. 136.

The irony is that the alternative to the innovation jackpot may not be the death of the organization, but its salvation, bringing not only progress but, ultimately, excellence. Furthermore, while the particular mechanisms that bring this progress are important for the company's general success and growth, they also improve the quality of its innovation management, and innovation *may* matter in some situations. We believe it is time to shed our unrealistic dreams and focus on what truly matters.

The alternative: progress, excellence, and . . . real innovation

What makes an excellent company – not a flash in the pan, but one that will be enduringly successful? The unvarnished truth is that customer-focused processes and basic continuous improvement play a far more important role than innovation in organizational success. This was a clear finding of one of the most extensive studies of the factors underlying long-term corporate success, *Built to Last*. Authors Collins and Porras (1997) did not find the ability to innovate to be a success factor, but rather what they called 'mechanisms of progress' – systematic approaches, whatever these might be, for continually improving. Take GE, in 2001 the world's biggest and most enduringly successful corporation. It has one of the oldest corporate research labs in the world, but in his recent book *Jack*, Jack Welch (2001) makes not a single mention of an innovation originating there, or for that matter, anywhere else in the company. But Welch wrote a lot about something else: the customer-focused processes around which he organized the company and the systems he built for continuous improvement. He states that a key mechanism that made the 'difference between GE and the rest of the world in the 1990s' was not innovation but the *boundaryless* system that allowed everyone in the company to 'search for and apply the best ideas regardless of their source' (p. 186) and led GE to '*Find a Better Way Every Day*' (p. 189).

We can find the same emphasis on processes in another extensive study on what it actually takes for a company to grow and prosper. In his book *Agenda*, Michael Hammer's (2001) key finding was that the 'must have' platform for success is *good processes*, which very few companies have. Toyota, perhaps the world's most successful car manufacturer – and one we ourselves have studied on three continents – is a good example. The company is hardly known for its innovative products. Its cars are

fresh and up-to-date, of course, but its success really derives from the extraordinary reliability and quality it delivers at reasonable prices. Toyota has one of the best continuous improvement systems of any company we are familiar with.

Innovation is not like water or food. It is not true that if you do not have them, you will not live. Many companies are not innovative but are enduring and prosperous because they take care of what really is water to them – processes – and really is food – improvement mechanisms. However, if most business leaders are familiar with how to get good water, few really know the secret of getting great 'food'. The single most important improvement mechanism is the ability to listen to and act on the ideas of front-line employees.

Most companies rely almost exclusively on top-down improvement approaches such as Reengineering and Six Sigma which, the claims of their proponents aside, do not go very deep. They are, in essence, 'planned' approaches that address mostly issues big enough to have been noticed by management. While top-down approaches are necessary and good, they are inherently limited, because they miss the far-larger set of less visible improvement opportunities that regular employees spot in the course of their daily work. Companies that track the source of improvement ideas, such as the Dana Corporation and Pirelli have come up with an interesting rule of thumb – in practice, 80% of improvement ideas come from employees and only 20% come through planned improvement activities. This astonishing fact would seem to indicate that many companies have poured money and resources into initiatives with relatively low return.

Several years ago, we set out on a three-year study – ultimately involving some 50 European companies plus a few US ones – to learn about how the best companies tap this largely overlooked potential and what they gain from it. Although every company we studied used a different name for what we are about to describe, we call it here a System for Managing Ideas (SMI). Perhaps the most surprising thing we learned however is that in addition to enabling truly deep process improvement, an SMI can also be a pillar of internal innovation, a statement we will elaborate on in the last section of the article.

The System for Managing Ideas

An SMI encourages the expression, processing of, and recognition of ideas from every employee in the company. However it is set

up, a good SMI incorporates three things: (1) simple and rapid processing of ideas, (2) a means to involve middle managers, and (3) appropriate performance measures and recognition.

A good SMI aims to implement the vast majority of employee ideas within a matter of days. This means that the process for authorizing, evaluating and giving the resources to implement an idea has to be very simple. The simplest and fastest approach of all is to enable *author-led idea implementation*. After all, the biggest champion for an idea is the person who first thought of it.

The role of middle managers is to facilitate the process, and demonstrate to employees that the ideas they come up with determine an important part of their value to the company. A company must make sure that middle managers, and particularly front-line supervisors, are actively looking out for employee ideas and responding promptly and supportively when they come in, and make it clear to them that their success at doing this is a key part of how they will be evaluated as managers. Ultimately, managers get involved when they realize that managing ideas in their units well is key to their success.

Finally, a good SMI measures the activity it is trying to promote. At a minimum, good SMI track the number of submitted ideas per employee, the implementation rate and the participation rate (the percentage of employees who submit at least one idea in a given period). These measures have two purposes: to monitor and recognize the creative ideas of employees, and to evaluate each manager's performance in facilitating and encouraging ideas. If a manager is not paying attention to the ideas of her employees, it will soon be reflected in these simple statistics.

How well does a good SMI work? A considerable number of organizations around the world have been able to average more than twenty ideas per employee per year, with implementation rates of over 80 percent. In good systems, participation rates run at least 90 percent, and more than €8,000 in net cost-savings or new revenue are generated per employee per year. No centralized suggestion-box scheme has ever come close to this level of performance. In 2000, Sweden, with the best suggestion schemes in Europe, got 0.53 ideas per employee per year, with a 50 per cent implementation rate, a 20.7 per cent participation rate, and €224 of savings per employee per year.⁷ A good SMI is a very different beast,

⁷ *Suggestion Systems in Sweden 2000*, Swedish Institute for Suggestion Systems, 2001.

which uses an entirely different process than a traditional suggestion scheme.

A good SMI is key to high corporate productivity, quality and growth, and to creating a work environment that is fulfilling to work in. The CEO of Michelin told us that François Michelin once commented to him that over the years he had asked many Michelin retirees what they remember most fondly about working at his company. Almost invariably, he had noticed they told him of some ideas they had come up with that the company had implemented. In other words, their ideas were the way they left their mark on the organization, and felt they had made a difference.

But a good SMI delivers much more than this. Our research found that it also plays a critical role in improving company's ability to innovate.

The SMI – the Foundation of Good Innovation Management

A good SMI promotes a culture in which everybody is encouraged to express and act upon ideas. This culture and all the resulting ideas greatly increase the likelihood of success for innovative projects. For example, a few years ago, Pirelli engineers in charge of launching a multi-million euro and highly-innovative new manufacturing line were stuck for months on a problem. Funnily enough, a number of technicians had already figured out a solution to it, because the company had a good SMI and they were used to identifying and working on improvement ideas. But they kept these particular ideas to themselves because of the company's 'moratorium' on rewarding employee ideas regarding new projects. The engineers discovered this only when one of them noticed some technicians smiling while he and his colleagues were struggling with a problem, realized why and got the company to lift the moratorium. This natural experiment demonstrated how even a few months' moratorium on employee ideas may derail an important innovation. The sad thing is that in most companies such moratoriums are permanently in place, because they have no real mechanisms to listen to employee ideas. Even if an employee is not expert enough to solve a given problem, in companies having good SMIs, he or she can help identify it and bring it to the attention of people who can deal with it. An effective SMI puts more control and predictability into the process of innovation.

An SMI also helps to involve everybody in an innovation and make them stay more closely in touch with customers, suppliers,

partners and competitors whose input is often critical to the company's success. At Weber-Haus, the leading timber house company in Germany, the SMI is used to allow its employees to initiate innovation projects with suppliers. For example, one operator suggested a design for some new equipment, contacted the supplier and worked with him for several weeks. The supplier then manufactured the new equipment and delivered it to WeberHaus. The company thus triggered an innovation and benefited from it at a minimal cost. The SMI turns every employee into a set of antennae for the company, discovering and solving problems critical for its success in innovation.

An SMI also compels persons directly involved in the innovation project to confront problems and facts they might otherwise prefer to ignore. How many times has a project failed because of something a person tried to tell those responsible for a project but could not get them to listen. The space shuttle Challenger's dramatic explosion is a much-studied case where an engineer tried many times to get those in charge to listen to his warnings. And regarding the September 11, 2001 terrorist attack, if the FBI had an SMI, the warnings of its field officers in Minnesota and Arizona on this attack planning might have been captured and acted upon instead of being ignored by the headquarters. In these, as in many other cases, there was a lot of pressure to ignore the warnings and proceed. The SMI makes it much more difficult to do this. Every idea submitted to an SMI is documented and there is a process that is followed to check it out, which is documented too. Instead of ignoring informal comments, managers now have to ignore official suggestions that are part of an entire system to encourage such proposals – and one that is equipped with controls and checks, and is fully transparent.

A good SMI also increases the quantity and the creativity of successful innovation projects. We have already mentioned the initially counter-intuitive statistic at work regarding the percentage of ideas that come from front-line employees. Because most companies are poor at listening to their front-line employees – particularly those on the boundaries of their organizations – they are really tapping only 20 per cent of the potential creativity available to them. Another way of looking at this is that using an SMI to gather ideas for innovation projects as well, will increase their number by at least a factor of five.

But there is more: our studies revealed that the 80 per cent of projects initiated by the front-line employees also tend to be the most creative ones. That means that using the SMI

as a tool to initiate innovation ideas leads not only to the increase in their number by the factor of five, but also to the significant increase in their novelty and creativity.

Conclusion

We believe a company that seriously wants to grow and prosper in the coming decade can not afford to lose the ideas of its front-line employees. Many good companies have fallen prey to 'Innovate or Die' mantra, skipped over the foundations of progress – customer-focused processes and managing their employees' spontaneous ideas – and jumped straight into building the penthouse – the layer of innovation capability. They have paid the price of not taking care of the foundation first. It is always fun in the penthouse, but the fun will not last long if it is built on moving sand.

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Isaac Getz is Professor of Creativity and Innovation Management at the ESCP-EAP European School of Management, Paris 75011, France, getz@escp-eap.net. He was also Visiting Professor at Cornell and Stanford Universities and at the University of Massachusetts. Dr. Getz's current work focuses on creativity, innovation, and idea management, and has led him to over sixty companies in Europe. He is editor of a recent book, *Organizational Creativity*, and co-author (with A. Robinson) of another book, *Our ideas change everything*, appearing in French and German in 2003.

Dr Alan Robinson's last book *Corporate Creativity* (co-authored with Sam Stern) was translated into twelve foreign languages, was a finalist in the Financial Times/Booz Allen & Hamilton Global Best Business Book Awards, and was named "Book of the Year" by the Academy of Human Resource Management. He has advised more than ninety companies in eleven countries, and has served on the Board of Examiners of the U.S. Malcolm Baldrige National Quality Award. He received his Ph.D. from Johns Hopkins University, and a B.A./M.A. from Cambridge University. Isenberg School of Management, University of Massachusetts, Amherst, MA 01003, USA, agr@som.umass.edu