

# MIT Sloan

## Management Review

**Mohanbir Sawhney, Robert C. Wolcott and Inigo Arroniz**

---

# The 12 Different Ways for Companies to Innovate

# The 12 Different Ways for Companies to Innovate

**F**aced with slow growth, commoditization and global competition, many CEOs view innovation as critical to corporate success. William Ford Jr., chairman and CEO of Ford Motor Co., recently announced that, “[f]rom this point onward, innovation will be the compass by which the company sets its direction” and that Ford “will adopt innovation as its core business strategy going forward.”<sup>1</sup> Echoing those comments, Jeffrey Immelt, chairman and CEO of General Electric Co., has talked about the “Innovation Imperative,” a belief that innovation is central to the success of a company and the only reason to invest in its future.<sup>2</sup> Thus GE is pursuing around 100 “imagination breakthrough” projects to drive growth through innovation. And Steve Ballmer, Microsoft Corp.’s CEO, stated recently that “innovation is the only way that Microsoft can keep customers happy and competitors at bay.”<sup>3</sup>

But what exactly is innovation? Although the subject has risen to the top of the CEO agenda, many companies have a mistakenly narrow view of it. They might see innovation only as synonymous with new product development or traditional research and development. But such myopia can lead to the systematic erosion of competitive advantage, resulting in firms within an industry looking more similar to each other over time.<sup>4</sup> Best practices get copied, encouraged by benchmarking. Consequently, companies within an industry tend to pursue the same customers with similar offerings, using undifferentiated capabilities and processes. And they tend to innovate along the same dimensions. In technology-based industries, for example, most firms focus on product R&D. In the chemical or oil and gas industries, the emphasis is on process innovations. And consumer packaged-goods manufacturers tend to concentrate on branding and distribution. But if all firms in an industry are seeking opportunities in the same places, they tend to come up with the same innovations. Thus, viewing innovation too narrowly blinds companies to opportunities and leaves them vulnerable to competitors with broader perspectives.

In actuality, “business innovation” is far broader in scope than product or technological innovation, as evidenced by some of the most successful

Companies with a restricted view of innovation can miss opportunities. A new framework called the “innovation radar” helps avoid that.

Mohanbir Sawhney,  
Robert C. Wolcott  
and Inigo Arroniz

---

*Mohanbir Sawhney is the McCormick Tribune Professor of Technology and the Director of the Center for Research in Technology & Innovation at Northwestern University's Kellogg School of Management in Evanston, Illinois. Robert C. Wolcott is a fellow and adjunct professor and Inigo Arroniz is a postdoctoral fellow at the Center for Research in Technology & Innovation. They can be reached at mohans@kellogg.northwestern.edu, r-wolcott@kellogg.northwestern.edu and i-arroniz@kellogg.northwestern.edu.*

companies in a wide range of industries. Starbucks Corp., for example, got consumers to pay \$4 for a cup of latte, not because of better-tasting coffee but because the company was able to create a customer experience referred to as “the third place” — a communal meeting space between home and work where people can unwind, chat and connect with each other. Dell Inc. has become the world’s most successful personal computer manufacturer, not through R&D investments but by making PCs easier to use, bringing products to market more quickly and innovating on processes like supply-chain management, manufacturing and direct selling. And Google has become a multibillion-dollar goliath not because it has the best search engine, but because it pioneered “paid search” — the powerful concept that vendors would be willing to pay Google to match consumers with relevant offerings as a byproduct of free searches the consumers conduct.

Conversely, technological innovation in the laboratory does not necessarily translate into customer value. For instance, high-definition television is a radically new innovation from a technological perspective, requiring new recording, transmission and receiving equipment, communication frequencies and programming. But the result — an incremental improvement in picture sharpness — is of limited value to the general consumer. One of the most technologically

advanced computers ever created was the NeXT Cube, developed by Steve Jobs’ company NeXT Computer, Inc. The product featured a host of technological advances, including clickable embedded graphics and audio within e-mail, object-oriented programming, magneto-optical storage and an innovative operating system. But the NeXT Cube was a commercial flop. Few compatible software applications were available, and consumers balked at the prospect of switching to a radically new system.

### Defining Business Innovation

To avoid innovation myopia, we propose anchoring the discussion on the customer outcomes that result from innovation, and we suggest that managers think holistically in terms of all possible dimensions through which their organizations can innovate. Accordingly, we define business innovation as the creation of substantial new value for customers and the firm by creatively changing one or more dimensions of the business system. This definition leads to the following three important characterizations.

**Business Innovation is About New Value, Not New Things.** Innovation is relevant only if it creates value for customers — and therefore for the firm. Thus creating “new things” is neither

## About the Research

We developed the innovation radar based on interviews from managers responsible for innovation-related activities at several large companies across a range of industries. Participants included Boeing, Chamberlain Group, ConocoPhillips, DuPont, eBay, FedEx, Microsoft, Motorola and Sony. We also reviewed the academic literature on innovation to help identify and define the radar’s 12 dimensions. To measure those dimensions, a comprehensive set of questions was compiled, following well-accepted best practices in metrics and questionnaire design.<sup>i</sup> Two distinct sets of measures were created for each dimension (1) reflective measures to obtain an overall metric for the actual level of innovativeness at each dimension and (2) formative measures to gain insight into activities or factors that contribute to the observed level of innovativeness.<sup>ii</sup>

The initial set of 100-plus measures

went through several rounds of peer revision after which the questionnaire was pretested with 16 managers of a business unit within a large conglomerate. The questionnaire was then revised and pretested with 54 managers at a large public company in the energy industry and a midsize private firm in the food industry. The measurement and structural models were estimated using partial least squares, a technique that accounts for measurement error and permits the modeling of different types of metrics created for each of the dimensions. The results from the second pretest helped confirm the validity of our framework: The reflective measures exhibited high levels of internal consistency; the formative measures explained a large portion of the variance for the dimension they were associated with; and all coefficients in the nomological network had the expected signs. To further assess the validity of the

12 dimensions, profiles that resulted from the innovation radar were presented to managers participating in the surveys.

Data collection commenced with a Web-based questionnaire in spring 2005. As of December 2005, we had collected more than 500 data points from 19 firms, including global corporations like Tyco, General Electric, Merck KGaA and Siemens. The data collection is an ongoing effort, and as our database grows we will be able to make prescriptive statements about innovation profiles associated with business success and the contextual factors that can moderate the effects of innovation in specific dimensions.

i. G.A. Churchill, “A Paradigm for Developing Better Measures of Marketing Constructs,” *Journal of Marketing Research* 16 (February 1979): 64-73.

ii. C.B. Jarvis, S.B. MacKenzie and P.M. Podsakoff, “A Critical Review of Construct Indicators and Measurement Model Misspecification in Marketing and Consumer Research,” *Journal of Consumer Research* 30 (September 2003): 199-218.

necessary nor sufficient for business innovation.<sup>5</sup> Customers are the ones who decide the worth of an innovation by voting with their wallets. It makes no difference how innovative a company thinks it is. What matters is whether customers will pay.

**Business Innovation Comes in Many Flavors.** Innovation can take place on any dimension of a business system. The Home Depot Inc., for example, innovated by targeting “do it yourselves,” an underserved customer segment. JetBlue Airways Corp. has succeeded in the U.S. domestic airline market by offering a better customer experience that includes live satellite television, leather seats and fashionably clad flight attendants. And Cisco Systems Inc. has improved its margins through process innovations, such as the company’s ability to close its quarterly financial accounts on the same day that its quarter ends.

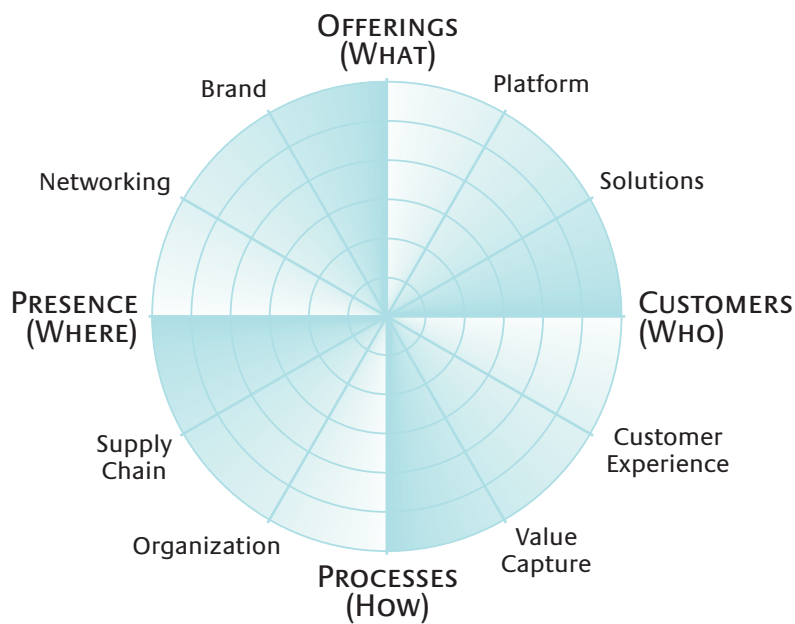
**Business Innovation is Systemic.** Successful business innovation requires the careful consideration of all aspects of a business. A great product with a lousy distribution channel will fail just as spectacularly as a terrific new technology that lacks a valuable end-user application. Thus, when innovating, a company must consider all dimensions of its business system.

### A 360-Degree View

The question then immediately arises: How many possible dimensions of business innovation are there, and how do they relate to each other? For three years, we have examined that issue in depth with a group of leading companies, including Motorola, Chamberlain Group ADT, Sony, MicroSoft and ConocoPhilips. (See “About the Research,” p. 76.) Based on discussions with managers leading innovation efforts at these companies and a comprehensive survey of the academic literature on the topic, we have developed, validated and applied a new framework called the “innovation radar.” This tool presents and relates all of the dimensions through which a firm can look for opportunities to innovate. Much like a map, the innovation radar consists of four key dimensions that serve as business anchors: (1) the offerings a company creates, (2) the customers it serves, (3) the processes it employs and (4) the points of presence it uses to take its offerings to market. Between these four anchors, we embed eight other dimensions of the business system that can serve as avenues of pursuit. Thus, the innovation radar contains a total of 12 key dimensions. (See “The Innovation Radar,” above and “The 12 Dimensions of Business Innovation,” p. 78.)

### The Innovation Radar

The innovation radar displays the 12 dimensions of business innovation, anchored by the offerings a company creates, the customers it serves, the processes it employs and the points of presence it uses to take its offerings to market.



**Offerings** Offerings are a firm’s products and services. Innovation along this dimension requires the creation of new products and services that are valued by customers. Consider the Procter & Gamble Company’s Crest SpinBrush. Introduced in 2001, the product became the world’s best-selling electric toothbrush by 2002. A simple design and the use of disposable AA batteries translated into ease of use, portability and affordability. Moreover, Procter & Gamble’s no-frills approach enabled the SpinBrush to be priced at around \$5, substantially cheaper than competing products.

**Platform** A platform is a set of common components, assembly methods or technologies that serve as building blocks for a portfolio of products or services. Platform innovation involves exploiting the “power of commonality” — using modularity to create a diverse set of derivative offerings more quickly and cheaply than if they were stand-alone items. Innovations along this dimension are frequently overlooked even though their power to create value can be considerable. Platform innovation, for example, has allowed Nissan Motor Co. to resurrect its fortunes in the automotive industry. The company has relied on a common set of components to develop a line of cars and sport utility vehicles with markedly different styles, performance and market positioning. Nissan uses essentially the same small engine block (a

## The 12 Dimensions of Business Innovation

Dimension	Definition	Examples
<b>Offerings</b>	Develop innovative new products or services.	<ul style="list-style-type: none"> <li>• Gillette Mach3Turbo razor</li> <li>• Apple iPod music player and iTunes music service</li> </ul>
<b>Platform</b>	Use common components or building blocks to create derivative offerings.	<ul style="list-style-type: none"> <li>• General Motors OnStar telematics platform</li> <li>• Disney animated movies</li> </ul>
<b>Solutions</b>	Create integrated and customized offerings that solve end-to-end customer problems.	<ul style="list-style-type: none"> <li>• UPS logistics services Supply Chain Solutions</li> <li>• DuPont Building Innovations for construction</li> </ul>
<b>Customers</b>	Discover unmet customer needs or identify underserved customer segments.	<ul style="list-style-type: none"> <li>• Enterprise Rent-A-Car focus on replacement car renters</li> <li>• Green Mountain Energy focus on “green power”</li> </ul>
<b>Customer Experience</b>	Redesign customer interactions across all touch points and all moments of contact.	<ul style="list-style-type: none"> <li>• Washington Mutual Occasio retail banking concept</li> <li>• Cabela’s “store as entertainment experience” concept</li> </ul>
<b>Value Capture</b>	Redefine how company gets paid or create innovative new revenue streams.	<ul style="list-style-type: none"> <li>• Google paid search</li> <li>• Blockbuster revenue-sharing with movie distributors</li> </ul>
<b>Processes</b>	Redesign core operating processes to improve efficiency and effectiveness.	<ul style="list-style-type: none"> <li>• Toyota Production System for operations</li> <li>• General Electric Design for Six Sigma (DFSS)</li> </ul>
<b>Organization</b>	Change form, function or activity scope of the firm.	<ul style="list-style-type: none"> <li>• Cisco partner-centric networked virtual organization</li> <li>• Procter &amp; Gamble front-back hybrid organization for customer focus</li> </ul>
<b>Supply Chain</b>	Think differently about sourcing and fulfillment.	<ul style="list-style-type: none"> <li>• Moen ProjectNet for collaborative design with suppliers</li> <li>• General Motors Celta use of integrated supply and online sales</li> </ul>
<b>Presence</b>	Create new distribution channels or innovative points of presence, including the places where offerings can be bought or used by customers.	<ul style="list-style-type: none"> <li>• Starbucks music CD sales in coffee stores</li> <li>• Diebold RemoteTeller System for banking</li> </ul>
<b>Networking</b>	Create network-centric intelligent and integrated offerings.	<ul style="list-style-type: none"> <li>• Otis Remote Elevator Monitoring service</li> <li>• Department of Defense Network Centric Warfare</li> </ul>
<b>Brand</b>	Leverage a brand into new domains.	<ul style="list-style-type: none"> <li>• Virgin Group “branded venture capital”</li> <li>• Yahoo! as a lifestyle brand</li> </ul>

3.5-liter V6) to power its upscale models of a midsize sedan (Altima), large sedan (Maxima), luxury sedans (Infiniti G and M series), minivan (Quest) and sports coupe (350Z). Clever modifications of the common engine allow the production of anywhere between 245 and 300 horsepower, creating enough distinctiveness between the vehicles while gaining efficiency advantages.

**Solutions** A solution is a customized, integrated combination of products, services and information that solves a customer problem. Solution innovation creates value for customers through the breadth of assortment and the depth of integration of the different elements. An example here is Deere & Co., which has combined an array of products and services (including mobile computers, a Global Positioning System-based tracking system and software) to provide an end-to-end solution to farmers who

need to improve their sowing, tilling and harvesting, as well as manage the business aspects of their operations more effectively.

**Customers** are the individuals or organizations that use or consume a company’s offerings to satisfy certain needs. To innovate along this dimension, the company can discover new customer segments or uncover unmet (and sometimes unarticulated) needs. Virgin Mobile USA was able to successfully enter the U.S. cellular services market late by focusing on consumers under 30 years old — an underserved segment. To attract that demographic, Virgin offered a compelling value proposition: simplified pricing, no contractual commitments, entertainment features, stylish phones and the irreverence of the Virgin brand. Within three years of its 2002 launch, Virgin had attracted several million subscribers in the highly competitive market.

**Customer Experience** This dimension considers everything a customer sees, hears, feels and otherwise experiences while interacting with a company at all moments. To innovate here, the company needs to rethink the interface between the organization and its customers. Consider how the global design firm IDEO, headquartered in Palo Alto, California, has helped health care provider Kaiser Permanente to redesign the customer experience provided to patients.<sup>6</sup> Kaiser has created more comfortable waiting rooms, lobbies with clearer directions and larger exam rooms with space for three or more people and curtains for privacy. Kaiser understands that patients not only need good medical care but also need to have better experiences before, during and after their treatments.

**Value Capture** refers to the mechanism that a company uses to recapture the value it creates. To innovate along this dimension, the company can discover untapped revenue streams, develop novel pricing systems and otherwise expand its ability to capture value from interactions with customers and partners. Edmunds.com, the popular automotive Web site, is a case in point. The company generates revenues from an array of sources, including advertising; licensing of its tools and content to partners like *The New York Times* and America Online; referrals to insurance, warranty and financing partners; and data on customer buying behavior that are collected through its Web site and sold to third parties. These various revenue streams have significantly increased Edmunds' average sales per visitor.

**Processes** are the configurations of business activities used to conduct internal operations. To innovate along this dimension, a company can redesign its processes for greater efficiency, higher quality or faster cycle time. Such changes might involve relocating a process or decoupling its front-end from its back-end. That's the basis of the success of many information technology services firms in India, including companies like Wipro Infotech and Infosys Technologies Ltd. that have created enormous value by perfecting the model of delivering business processes as an outsourced service from a remote location. To accomplish this, each process is decomposed into its constituent elements so that cross-functional teams in multiple countries can perform the work, and the project is coordinated through the use of well-defined protocols. The benefits are flexibility and speed to market, access to a competitive pool of talent (the highly educated and relatively low-cost Indian knowledge worker) and the freedom to redirect resources to core strategic activities.

**Organization** is the way in which a company structures itself, its partnerships and its employee roles and responsibilities. Organizational innovation often involves rethinking the scope of the

firm's activities as well as redefining the roles, responsibilities and incentives of different business units and individuals. Thomson Financial, a New York City-based provider of information and technology applications for the financial services industry, transformed its organization by structuring around customer segments instead of products. In this way, Thomson was able to align its operational capabilities and sales organization with customer needs, enabling the company to create offerings like Thomson ONE, an integrated work-flow solution for specific segments of financial services professionals.

**Supply Chain** A supply chain is the sequence of activities and agents that moves goods, services and information from source to delivery of products and services. To innovate in this dimension, a company can streamline the flow of information through the supply chain, change its structure or enhance the collaboration of its participants. Consider how the apparel retailer Zara in La Coruña, Spain, was able to create a fast and flexible supply chain by making counterintuitive choices in sourcing, design, manufacturing and logistics. Unlike its competitors, Zara does not fully outsource its production. Instead it retains half in-house, allowing it to locate its manufacturing facilities closer to its markets to cut product lead times. Zara

eschews economies of scale by making small lots and launching a plethora of designs, allowing it to refresh its designs almost weekly. The company also ships garments on hangers, a practice that requires more warehouse space but allows new designs to be displayed more quickly. Thanks to such practices, Zara has decreased the design-to-retail cycle to as short as 15 days and is able to sell most merchandise at full price.

**Presence** Points of presence are the channels of distribution that a company employs to take offerings to market and the places where its offerings can be bought or used by customers. Innovation in this dimension involves creating new points of presence or using existing ones in creative ways. That's what Titan Industries Ltd. did when it entered the Indian market with stylish quartz

**Organizational innovation often involves rethinking the scope of the firm's activities as well as redefining people's roles, responsibilities and incentives.**

## Innovation Profiles of Four Leading Latin American Banks

Benchmarking the innovation radars of competitors can reveal the relative strengths and weaknesses of each company.



wristwatches in the 1980s. Initially, Titan was locked out of the market because the traditional watch retailing channels were controlled by a competitor. But the company took a fresh look at the industry and asked itself the following fundamental question: Must watches be sold at watch stores? In answering that, Titan found that target customers also shopped at jewelry, appliance and consumer electronics stores. So the company pioneered the concept of selling watches through free-standing kiosks placed within other retail stores. For service and repair, Titan established a nationwide aftersales network through which customers could get their watches fixed. Such innovations have enabled Titan not only to enter the Indian market but also to become the industry leader.

**Networking** A company and its products and services are connected to customers through a network that can sometimes become part of the firm's competitive advantage. Innovations in this dimension consist of enhancements to the network that increase the value of the company's offerings. Consider how Mexican industrial giant CEMEX was able to redefine its offerings in the ready-to-pour concrete business. Tradition-

ally, CEMEX offered a three-hour delivery window for ready-to-pour concrete with a 48-hour advance ordering requirement. But construction is an unpredictable business. Over half of CEMEX's customers would cancel orders at the last minute, causing logistical problems for the company and financial penalties for customers. To address that, CEMEX installed an integrated network consisting of GPS systems and computers in its fleet of trucks, a satellite communication system that links each plant and a global Internet portal for tracking the status of orders worldwide. This network now allows CEMEX to offer a 20-minute time window for delivering ready-to-pour concrete, and the company also benefits from better fleet utilization and lower operating costs.

**Brand** are the symbols, words or marks through which a company communicates a promise to customers. To innovate in this dimension, the company leverages or extends its brand in creative ways. London-based easyGroup has been a leader in this respect. Founded by Stelios Haji-Ioannou, easyGroup owns the "easy" brand and has licensed it to a range of businesses. The core promises of the brand are good value and simplicity, which have now been extended to more than a dozen industries through various offerings such as easyJet, easyCar, easyInternetcafé, easyMoney, easyCinema, easyHotel and easyWatch.

### Putting the Innovation Radar to Work

The various examples of Nissan, Virgin, Edmunds.com and others help illustrate the many possible avenues of innovation, but companies can reap greater value by thinking of those dimensions as intertwined within a business system. Consider Apple Computer Inc. Its famously successful iPod is more than a nifty product. It is also an elegant solution for customers (simple, integrated buying and consumption of digital music), content owners (secure pay-per-song model for legal music downloads) and its manufacturer (the discovery of new growth markets). With respect to the innovation radar, Apple attacked not only the offerings and platform dimensions but also the supply chain (content owners), presence (portability of a cus-

tomers' *entire* collection of music, photos and videos), networking (connecting with Mac or Windows computers), value capture (iTunes), customer experience (the complete iPod experience) and brand (extending the Apple brand).

In our current research, we are investigating how companies can use the innovation radar to construct a strategic approach to innovation. Specifically, the radar could help a firm determine how its current innovation strategy stacks up against its competitors. Using that information, the company could then identify opportunities and prioritize on which dimensions to focus its efforts. For example, we have worked with a top global bank to benchmark its innovation profile against that of its top three competitors in a major Latin American country. (See "Innovation Profiles of Four Leading Latin American Banks," p. 80.) Such analyses can reveal the strengths and weaknesses of each company as well as any promising opportunities, particularly those overlooked by the industry as a whole.<sup>7</sup>

Traditionally, most firms' innovation strategies are the result of simple inertia ("this is what we've always innovated on") or industry convention ("this is how everyone innovates"). But when a company identifies and pursues neglected innovation dimensions, it can change the basis of competition and leave other firms at a distinct disadvantage because each dimension requires a different set of capabilities that cannot be developed or acquired overnight. And innovating along one dimension often influences choices with respect to other dimensions. Brand innovation, for example, might require concurrent innovations along the dimensions of customer experience, offerings and presence. As such, selecting and acting on dimensions that define a firm's innovation strategy requires a deliberate, portfolio-based approach that must be communicated clearly within the company as well as to external constituents. All of that takes considerable effort and time. So, for instance, when Enterprise Rent-A-Car Co. began placing rental car locations in the neighborhoods where people lived and worked rather than at airports (thus innovating

**When a company is able to identify and pursue neglected innovation dimensions, it can change the basis of competition, leaving other firms at a distinct disadvantage.**

along the dimensions of customers and presence), entrenched competitors Hertz Corp. and Avis Corp. found it difficult to respond.

As we continue to expand our database of radar profiles, we will be able to test a broad set of hypotheses. For example, our research to date supports the notion that successful innovation strategies tend to focus on a few high-impact dimensions, rather than attempting a shotgun approach along many dimensions at once. Ultimately, the innovation radar could guide the way companies manage the increasingly complex business systems through which they add value, enabling innovation beyond products and technologies. In doing so, the framework could become an important tool for corporate executives, entrepreneurs and venture capitalists — anyone seeking growth through innovation.

## REFERENCES

1. "Bill Ford: Innovation Key to Ford's Future; Commitment to Hybrids to Grow," Sept. 21, 2005, <http://media.ford.com>
2. J. Immelt, "The Innovation Imperative" (2004 Robert S. Hatfield Fellow in Economic Education lecture at Cornell University, Ithaca, New York, April 15, 2004).
3. C. Nobel, "Ballmer: Microsoft's Priority Is Innovation," Oct. 19, 2005, [www.eweek.com](http://www.eweek.com)
4. Organization-theory researchers have shown that firms competing in the same markets begin to look increasingly similar through a process referred to as "isomorphism." See, for instance, M.T. Hannan and J. Freeman, "Organizational Ecology" (Cambridge, Mass.: Harvard University Press, 1989).
5. Joseph Schumpeter's seminal work in this area identifies "new combinations" of existing things as fundamental to the definition and accomplishment of innovation. See J. Schumpeter, "The Theory of Economic Development" (Cambridge, Mass.: Harvard University Press, 1934).
6. B. Nussbaum, "The Power of Design," *Business Week*, May 17, 2004, 86.
7. The challenge is figuring out which of the radar dimensions might mean the most to customers and why. Customer value is often not apparent when a company is attempting to innovate in areas traditionally neglected by an industry. There might be few precedents to validate the firm's beliefs and assumptions, and customers are often unable to provide helpful feedback regarding a new direction. However, it is this uncertainty that provides significant opportunity. Researchers have discovered numerous practical insights regarding conquering the inherent risk involved in innovation. See, in particular, R.G. McGrath and I. MacMillan, "The Entrepreneurial Mindset: Strategies for Continuously Creating Opportunity in an Age of Uncertainty" (Boston: Harvard Business School Press, 2000); and S.H. Thomke, "Experimentation Matters: Unlocking the Potential of New Technologies for Innovation" (Boston: Harvard Business School Press, 2003).

Reprint 47314. For ordering information, see page 1.

Copyright © Massachusetts Institute of Technology, 2006. All rights reserved.

# MIT Sloan

Management Review

## **PDFs ■ Reprints ■ Permission to Copy ■ Back Issues**

Electronic copies of MIT Sloan Management Review articles as well as traditional reprints and back issues can be purchased on our Web site: [www.sloanreview.mit.edu](http://www.sloanreview.mit.edu) or you may order through our Business Service Center (9 a.m.-5 p.m. ET) at the phone numbers listed below.

**To reproduce or transmit one or more MIT Sloan Management Review articles by electronic or mechanical means** (including photocopying or archiving in any information storage or retrieval system) **requires written permission**. To request permission, use our Web site ([www.sloanreview.mit.edu](http://www.sloanreview.mit.edu)), call or e-mail:

**Toll-free** in U.S. and Canada: 877-727-7170  
International: 617-253-7170  
e-mail: [smrpermissions@mit.edu](mailto:smrpermissions@mit.edu)

**To request a free copy of our article catalog,**  
please contact:

MIT Sloan Management Review  
77 Massachusetts Ave., E60-100  
Cambridge, MA 02139-4307

**Toll-free** in U.S. and Canada: 877-727-7170  
International: 617-253-7170  
Fax: 617-258-9739  
e-mail: [smr-orders@mit.edu](mailto:smr-orders@mit.edu)

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.