

Managing Innovation and New Industrial Product Development

The long-term competitive position of most organizations is tied to their ability to innovate—to provide existing and new customers with a continuing stream of new products and services. Innovation is a high-risk and potentially rewarding process. After reading this chapter, you will understand:

1. the strategic processes, both formal and informal, through which product innovations take shape.
2. the characteristics of innovation winners in high-technology markets.
3. the factors that drive a firm's new product performance.
4. the determinants of new product success and timeliness.

With his American swagger and his hair bleached white, Tony Fadell stood out at button-down Philips Electronics, where he led an in-house operation designing . . . consumer electronics devices. It was there that he came up with the idea of marrying a Napster-like music store with a hard drive-based MP3 player. He shopped the concept around the Valley before Apple's Jon Rubenstein snapped it up and put Fadell in charge of the engineering team that built the first iPod.¹

Once prototypes were developed, CEO Steve Jobs worked closely with the team and was instrumental in molding the shape, feel, and design of the device.² "Ambitious and charismatic (and no longer a bleached blond), Tony now runs the hardware division that makes two of Apple's three product lines: the iPod and the iPhone."³

Many firms derive much of their sales and profits from recently introduced products. Indeed, best-practice firms generate about 48 percent of sales and 45 percent of profits from products commercialized in the past five years.⁴ But the risks of product innovation are high; significant investments are involved and the likelihood of failure is high. With shortening product life cycles and accelerating technological change, speed and agility are central to success in the innovation battle.

This chapter examines product innovation in the business marketing environment. The first section provides a perspective on the firm's management of innovation. Second, product innovation is positioned within a firm's overall technological strategy. Third, key dimensions of the new-product-development process are examined. Attention centers on the forces that drive successful new product performance in the firm. The final section of the chapter explores the determinants of new product success and timeliness.

The Management of Innovation

Management practices in successful industrial firms reflect the realities of the innovation process itself. James Quinn asserts that "innovation tends to be individually motivated, opportunistic, customer responsive, tumultuous, nonlinear, and interactive in its development. Managers can plan overall directions and goals, but surprises are likely to abound."⁵ Clearly, some new-product-development efforts are the outgrowth of deliberate strategies (intended strategies that become realized), whereas others result from emergent strategies (realized strategies that, at least initially, were never intended).⁶ Bearing little resemblance to a rational, analytical process, many strategic decisions involving new products are rather messy, disorderly, and disjointed processes around which competing organizational factions contend. In studying

¹After Steve Jobs: Apple's Next CEO—Tony Fadell (2), June 26, 2008, accessed at http://money.cnn.com/galleries/2008/fortune/0806/gallery.apple_jobs_successors.fortune/2.html on July 16, 2008.

²Leander Kahney, "Inside Look at Birth of iPod," July 21, 2004, accessed at <http://www.wired.com/gadgets/mac/news/2004/07/64286> on June 3, 2008.

³After Steve Jobs: Apple's Next CEO."

⁴John Hauser, Gerald J. Tellis, and Abbie Griffin, "Research on Innovation: A Review and Agenda for *Marketing Science*," *Marketing Science* 25 (November–December 2006): p. 707.

⁵James B. Quinn, "Managing Innovation: Controlled Chaos," *Harvard Business Review* 63 (May–June 1985): p. 83.

⁶Henry Mintzberg and James A. Walton, "Of Strategies, Deliberate and Emergent," *Strategic Management Journal* 6 (July–August 1985): pp. 257–272.

successful innovative companies such as Sony, AT&T, and Hewlett-Packard, Quinn characterized the innovation process as controlled chaos:

Many of the best concepts and solutions come from projects partly hidden or “bootlegged” by the organization. Most successful managers try to build some slack or buffers into their plans to hedge their bets. . . . They permit chaos and replications in early investigations, but insist on much more formal planning and controls as expensive development and scale-up proceed. But even at these later stages, these managers have learned to maintain flexibility and to avoid the tyranny of paper plans.⁷

Some new products result from a planned, deliberate process, but others follow a more circuitous and chaotic route.⁸ Why? Research suggests that strategic activity within a large organization falls into two broad categories: induced and autonomous strategic behavior.⁹

Induced Strategic Behavior

Induced strategic behavior is consistent with the firm’s traditional concept of strategy. It takes place in relationship to its familiar external environment (for example, its customary markets). By manipulating various administrative mechanisms, top management can influence the perceived interests of managers at the organization’s middle and operational levels and keep strategic behavior in line with the current strategy course. For example, existing reward and measurement systems may direct managers’ attention to some market opportunities and not to others. Examples of induced strategic behavior or deliberate strategies might emerge around product-development efforts for existing markets.

Autonomous Strategic Behavior

During any period, most strategic activity in large, complex firms is likely to fit into the induced behavior category. However, large, resource-rich firms are likely to possess a pool of entrepreneurial potential at operational levels, which expresses itself in autonomous strategic initiatives. The 3M Company encourages its technical employees to devote 15 percent of their work time to developing their own ideas. Through the personal efforts of individual employees, new products are born. For example,

- Gary Fadell is the engineering genius behind the iPod.
- Art Fry championed Post-it notes at 3M.
- P. D. Estridge promoted the personal computer at IBM.
- Stephanie L. Kwolek advanced the bulletproof material Kevlar at DuPont.
- Michimosa Fujino championed the HondaJet (see Figure 9.1) that may shake up the small-jet business with the same value proposition—high fuel efficiency and sleek design—that the first-generation Honda Civic used to rattle U.S. auto manufacturers 30 years ago.¹⁰

⁷Quinn, “Managing Innovation,” p. 82.

⁸This section is based on Michael D. Hutt, Peter H. Reingen, and John R. Ronchetto Jr., “Tracing Emergent Processes in Marketing Strategy Formation,” *Journal of Marketing* 52 (January 1988): pp. 4–19.

⁹Robert A. Burgelman, “A Process Model of Internal Corporate Venturing in the Diversified Major Firm,” *Administrative Science Quarterly* 28 (April 1983): pp. 223–244.

¹⁰This discussion is based on Norihiko Shirouzu, “Mr. Fujino’s Bumpy Flight Lands Honda in the Jet Age,” *The Wall Street Journal*, June 18, 2007, pp. B1 and B3.

Text not available due to copyright restrictions

“Civic of the Sky” Senior executives at Honda and industry analysts alike believe that the HondaJet can quickly gain 10 percent of the small-jet market and turn a profit in three to four years. Compared to the popular Cessna Citation CJ1+ that seats four to six passengers, the HondaJet is priced at \$3.65 million, \$880,000 below the Cessna, uses about 22 percent less fuel, has 20 percent more passenger cabin space, and boasts the fit and finish of a luxury car.

Now in his mid-forties, Mr. Fujino has tirelessly promoted his idea for two decades. He succeeded in keeping the project alive by nurturing ties to senior executives and by tying his risk-taking to Honda’s broader efforts to rekindle a spirit of innovation. Although formal reviews of the jet project have been intense and even “ugly” at times, he persevered because, behind the scenes, some senior executives enthusiastically supported his efforts. A crucial turning point for the project came at a critical board meeting where Mr. Fujino was presenting the idea. After an awkward start and what he describes as a “cold glaze” from some board members, “he was able to drive home the jet’s potential when he analogized it to Honda’s breakthrough car, calling the jet a ‘Civic of the sky.’”¹¹

Autonomous strategic behavior is conceptually equivalent to entrepreneurial activity and introduces new categories of opportunity into the firm’s planning process. Managers at the product-market level conceive of market opportunities that depart from the current strategy course, then engage in product-championing activities to mobilize resources and create momentum for further development of the product. Emphasizing political rather than administrative channels, product champions question the firm’s current concept of strategy and, states Robert Burgelman, “provide top management with the opportunity to rationalize, retroactively, successful autonomous strategic behavior.”¹² Through these political mechanisms, successful autonomous strategic initiatives, or emergent strategies, can become integrated into the firm’s concept of strategy.

Clayton M. Christensen and Michael E. Raynor observe:

Emergent strategies result from managers’ responses to problems or opportunities that were unforeseen in the analysis and planning stages of the deliberate strategy making process. When the efficacy of that strategy . . . is recognized, it is possible to formalize it, improve it, and exploit it, thus transforming an emergent strategy into a deliberate one.¹³

Product Championing and the Informal Network

Table 9.1 highlights several characteristics that may distinguish induced from autonomous strategic behavior. Autonomous strategic initiatives involve a set of actors and evoke strategic dialogue different from that found in induced initiatives. An individual manager, the product champion, assumes a central role in sensing an opportunity and in mobilizing an informal network to explore the idea’s technical feasibility and market potential. A **product champion** is an organization member who creates, defines, or adopts an idea for an innovation and is willing to assume significant risk (for example, position or prestige) to successfully implement the innovation.¹⁴

¹¹Ibid., p. B3.

¹²Robert A. Burgelman, “Corporate Entrepreneurship and Strategic Management: Insights from a Process Study,” *Management Science* 29 (December 1983): p. 1352.

¹³Clayton M. Christensen and Michael E. Raynor, *The Innovator’s Solution: Creating and Sustaining Successful Growth* (Boston: Harvard Business School Press, 2003), pp. 215–216.

¹⁴Modesto A. Maidique, “Entrepreneurs, Champions, and Technological Innovations,” *Sloan Management Review* 21 (Spring 1980): pp. 59–70; see also Jane M. Howell, “Champions of Technological Innovation,” *Administrative Science Quarterly* 35 (June 1990): pp. 317–341.

TABLE 9.1 | **INDUCED VERSUS AUTONOMOUS STRATEGIC BEHAVIOR: SELECTED CHARACTERISTICS OF THE MARKETING STRATEGY FORMULATION PROCESS**

	Induced	Autonomous
<i>Activation of the strategic decision process</i>	An individual manager defines a market need that converges on the organization's concept of strategy.	An individual manager defines a market need that diverges from the organization's concept of strategy.
<i>Nature of the screening process</i>	A formal screening of technical and market merit is made using established administrative procedures.	An informal network assesses technical and market merit.
<i>Type of innovation</i>	Incremental (e.g., new product development for existing markets uses existing organizational resources).	Major (e.g., new product development projects require new combinations of organizational resources).
<i>Nature of communication</i>	Consistent with organizational work flow.	Departs from organizational work flow in early phase of decision process.
<i>Major actors</i>	Prescribed by the regular channel of hierarchical decision making.	An informal network emerges based on mobilization efforts of the product champion.
<i>Decision roles</i>	Roles and responsibilities for participants in the strategy formulation process are well defined.	Roles and responsibilities of participants are poorly defined in the initial phases but become more formalized as the strategy formulation process evolves.
<i>Implications for strategy</i>	Strategic alternatives are considered and commitment to a particular strategic course evolves.	Commitment to a particular strategic course emerges in the early phases through the sponsorship efforts of the product champion.

SOURCE: Adapted from Michael D. Hutt, Peter H. Reingen, and John R. Ronchetto Jr., "Tracing Emergent Processes in Marketing, Strategy Formation," *Journal of Marketing* 52 (January 1988): pp. 4–19. See also Clayton M. Christensen and Michael E. Raynor, *The Innovator's Solution: Creating and Sustaining Successful Growth* (Boston: Harvard Business School Press, 2003), pp. 213–231.

Senior managers at 3M do not commit to a project unless a champion emerges and do not abandon the effort unless the champion "gets tired." Emphasizing a rich culture of innovation embraced by all employees, senior executives at 3M also encourage product-championing behavior and calculated risk-taking. Moreover, they tolerate what 3M employees call "well-intentioned" failures.¹⁵

Compared with induced strategic behavior, autonomous or entrepreneurial initiatives are more likely to involve a communication process that departs from the regular work flow and the hierarchical decision-making channels. The decision roles and responsibilities of managers in this informal network are poorly defined in the early phases of the strategy-formulation process but become more formalized as the process evolves. Note in Table 9.1 that autonomous strategic behavior entails a creeping commitment toward a particular strategy course. By contrast, induced strategic initiatives are more likely to involve administrative mechanisms that encourage a more formal and comprehensive assessment of strategic alternatives at various levels in the firm's planning hierarchy.

¹⁵George S. Day, "Managing the Market Learning Process," *Journal of Business & Industrial Marketing* 17 (4, 2002): p. 246.

Conditions Supporting Corporate Entrepreneurship¹⁶

Entrepreneurial initiatives cannot be precisely planned but they can be nurtured and encouraged. First, the availability of appropriate rewards can enhance a manager's willingness to assume the risks associated with entrepreneurial activity. Second, as 3M illustrates, senior management can assume an instrumental role in fostering innovation by promoting entrepreneurial initiatives and encouraging calculated risk-taking. Third, resource availability, including some slack time, is needed to provide entrepreneurs with some degrees of freedom to explore new possibilities. 3M encourages scientists to devote up to 15 percent of their time to particular projects that they find personally interesting. Fourth, an organizational structure supporting corporate entrepreneurship provides the administrative mechanisms that bring more voices to the innovation process across the firm and allow ideas to be evaluated, selected, and implemented.¹⁷

What Motivates Entrepreneurs? Recent research identifies two additional dimensions that motivate corporate entrepreneurs: (1) intrinsic motivation (the drive originating within oneself) and (2) work design (for example, the availability of challenging projects; opportunities to interact directly with customers and other entrepreneurs). Matthew R. Marvel and his research colleagues describe what technical corporate entrepreneurs desire in their job:

They want their innovative efforts to be connected to customer problems that need to be solved—and important customer problems at that. To understand these problems, they need contact with customers. To get breakthrough ideas on how to solve these problems, they also need contact with other world-class technologists.¹⁸

Managing Technology

Kodak, Lockheed, IBM, and the management teams of other corporations failed to recognize the major technological opportunity that xerographic copying presented. These firms were among the many that turned down the chance to participate with the small and unknown Haloid Company in refining and commercializing this technology. In the end, Haloid pursued it alone and transformed this one technological opportunity into the Xerox Corporation. Among the “tales of high tech,” this remains a classic.¹⁹ Technological change, Michael Porter asserts, is “a great equalizer, eroding the competitive advantage of even well-entrenched firms and propelling others to the forefront. Many of today's great firms grew out of technological changes that they were able to exploit.”²⁰ Clearly, the long-run competitive position of most business-to-business firms depends on their ability to manage, increase, and exploit their technology base. This section explores the nature of development projects, the disruptive

¹⁶This section is based on Matthew R. Marvel, Abbie Griffin, John Hebda, and Bruce Vojak, “Examining the Technical Corporate Entrepreneurs' Motivation: Voices from the Field,” *Entrepreneurship Theory and Practice*, 31 (September 2007): pp. 753–768.

¹⁷Gary Hamel, “The Why, What, and How of Management Innovation,” *Harvard Business Review* 84 (February 2006): pp. 72–84.

¹⁸Marvel, Griffin, Hebda, and Vojak, “Examining the Technical Corporate Entrepreneurs' Motivation,” p. 764.

¹⁹For a related discussion of Xerox's technology blunders, see Andrew Hargadon, *How Breakthroughs Happen: The Surprising Truth about How Companies Innovate* (Boston: Harvard Business School Press, 2003), pp. 168–182.

²⁰Michael E. Porter, “Technology and Competitive Advantage,” *Journal of Business Strategy* 6 (Winter 1985): p. 60; and Tamara J. Erickson, John F. Magee, Philip A. Roussel, and Komol N. Saad, “Managing Technology as Business Strategy,” *Sloan Management Review* 31 (Spring 1990): pp. 73–83.

innovation model, and the defining attributes of successful innovators in fast-changing high-technology markets.

Classifying Development Projects

A first step in exploring the technology portfolio of a firm is to understand the different forms that development projects can take. Some development projects center on improving the manufacturing *process*, some on improving *products*, and others on both process and product improvements. All of these represent commercial development projects. By contrast, research and development is the precursor to commercial development. A firm's portfolio can include four types of development projects.²¹

1. **Derivative projects** center on incremental product enhancements (for example, a new feature), incremental process improvements (for example, a lower-cost manufacturing process), or incremental changes on both dimensions.

Illustration: A feature-enhanced or cost-reduced Canon color copier.

2. **Platform projects** create the design and components shared by a set of products. These projects often involve a number of changes in both the product and the manufacturing process.

Illustrations: A common motor in all Black & Decker hand tools; multiple applications of Intel's microprocessor.

3. **Breakthrough projects** establish new core products and new core processes that differ fundamentally from previous generations.

Illustrations: Computer disks and fiber-optic cable created new product categories.

4. **Research and development** is the creation of knowledge concerning new materials and technologies that eventually leads to commercial development.²²

Illustration: Cisco Systems' development of communications technology that underlies its networking systems used by diverse customers like retailers, banks, and hotel chains.

A Product-Family Focus

A particular technology may provide the foundation or platform for several products. For example, Honda applies its multivalve cylinder technology to power-generation equipment, cars, business jets, motorcycles, and lawn mowers.²³ Products that share a common platform but have different specific features and enhancements required for different sets of consumers constitute a **product family**.²⁴ Each generation of

²¹This discussion is based on Steven C. Wheelwright and Kim B. Clark, "Creating Product Plans to Focus Product Development," *Harvard Business Review* 70 (March–April 1992): pp. 70–82.

²²*Ibid.*, p. 74.

²³T. Michael Nevens, Gregory L. Summe, and Bro Uttal, "Commercializing Technology: What the Best Companies Do," *Harvard Business Review* 60 (May–June 1990): pp. 154–163; see also C. K. Prahalad, "Weak Signals versus Strong Paradigms," *Journal of Marketing Research* 32 (August 1995): pp. iii–vi.

²⁴Marc H. Meyer and James M. Utterback, "The Product Family and the Dynamics of Core Capability," *Sloan Management Review* 34 (Spring 1993): pp. 29–47; see also Dwight L. Gertz and João P. A. Baptista, *Grow to Be Great: Breaking the Downsizing Cycle* (New York: The Free Press, 1995), pp. 92–103.

a product family has a platform that provides the foundation for specific products targeted to different or complementary markets. By expanding on technical skills, market knowledge, and manufacturing competencies, entirely new product families may be formed, thereby creating new business opportunities.

Strategists argue that a firm should move away from planning that centers on single products and focus instead on families of products that can grow from a common platform. Consider the Sony Walkman—one of the most successful products of all time. Based on how different customer segments used the product, Sony developed four basic platforms for the Walkman: playback only, playback and record, playback and tuner, and sports. Then, by applying standard design elements such as color and styling, Sony added an assortment of features and distinctive technical attributes to the basic platforms with relative ease.²⁵

The move toward a product-family perspective requires close interfunctional working relationships, a long-term view of technology strategy, and a multiple-year commitment of resources. Although this approach offers significant competitive leverage, Steven Wheelwright and Kim Clark note that companies often fail to invest adequately in platforms: “The reasons vary, but the most common is that management lacks an awareness of the strategic value of platforms and fails to create well-thought-out platform projects.”²⁶

*The Disruptive Innovation Model*²⁷

Special insights into innovation management come from examining the rate at which products are improving and customers can use those improvements. For example, when personal computers were first introduced in the early 1980s, typists often had to pause for the Intel 286 chip to catch up. But today, only the most demanding customers can fully use the speed and performance of personal computers. For many products, from Excel spreadsheets to application-enriched handsets and information appliances, few customers absorb the performance features that innovating companies include as they introduce new and improved products.

Overshooting Figure 9.2 shows, first, a rate of improvement in a given product or technology that customers can use, represented by the dotted line, sloping slightly upward across the chart. Second, for a given product, innovating firms offer a trajectory of improvement as they develop new and improved versions over time. The pace of technological progress usually outstrips the ability of many, if not most, customers to keep up with it (see the steeply sloping solid lines in Figure 9.2). Therefore, as companies strive to make better products they can sell at higher profit margins to the most demanding customers, they overshoot and provide much more performance than mainstream customers are able to use.

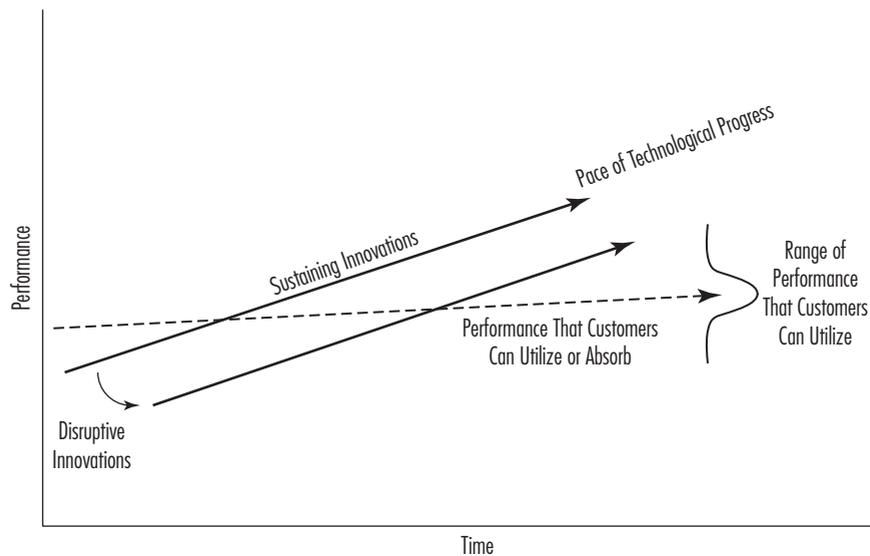
Sustaining versus Disruptive Innovation Third, from Figure 9.2, a distinction is made between a sustaining innovation and a disruptive innovation. According to Clayton M. Christensen and Michael E. Raynor, “A sustaining innovation targets

²⁵Kathleen M. Eisenhardt and Shona L. Brown, “Time Pacing: Competing in Markets That Won’t Stand Still,” *Harvard Business Review*, 76 (March–April 1998): p. 67.

²⁶Wheelwright and Clark, “Creating Project Plans,” p. 74.

²⁷This section is based on Christensen and Raynor, *The Innovator’s Solution*, pp. 31–65. See also, Ashish Sood and Gerard J. Tellis, “Technological Evolution and Radical Innovation,” *Journal of Marketing* 69 (July 2005): pp. 152–168.

FIGURE 9.2 | THE DISRUPTIVE INNOVATION MODEL



SOURCE: Reprinted by permission of *Harvard Business Review*. From “Descriptive Innovation Model” in *The Innovator’s Solution* by Clayton Christensen, p. 30. Copyright © 2003 by the Harvard Business School Publishing Corporation; all rights reserved.

demanding, high-end customers with better performance than what was previously available (for example, incremental product improvements or breakthrough products).²⁸ A disruptive innovation represents a product or service that is not as good as currently available alternatives. “But disruptive technologies offer other benefits—typically, they are simpler, more convenient, and less expensive products that appeal to new or less-demanding customers.”²⁹

Disruptive Strategy Examples Once a disruptive product or service gains a foothold, the improvement cycle begins and eventually it intersects with the needs of more demanding customers. For example, Xerox held a commanding position in the high-speed photocopier business until Canon’s simple tabletop copier disrupted that strategy in the early 1980s. Likewise, Southwest Airlines disrupted established airlines; Amazon.com disrupted traditional bookstores; Staples disrupted small stationery stores and distributors of office supplies; and Google disrupted directories of all sorts, including Yellow Pages.

Types of Disruptive Strategies Disruptive strategies can take two forms: low-end disruptions and new-market disruptions. Table 9.2 describes the characteristics of these strategies and contrasts them with a strategy geared to sustaining innovations. Note, for example, the targeted customers for low-end disruption are *overserved customers*, whereas new-market disruptions target *nonconsumption*—customers who historically lacked the resources to buy and use the product.

²⁸Christensen and Raynor, *The Innovator’s Solution*, p. 34.

²⁹*Ibid.*, p. 34.

TABLE 9.2 | THREE APPROACHES TO CREATING NEW-GROWTH BUSINESSES

Dimensions	Sustaining Innovations	Low-End Disruptions	New-Market Disruptions
Targeted performance of the product or service	Performance improvement in attributes most valued by the industry's most demanding customers. These improvements may be incremental or breakthrough in character.	Performance that is good enough along the traditional metrics of performance at the low end of the mainstream market.	Lower performance in "traditional" attributes, but <i>improved performance in new attributes—typically simplicity and convenience.</i>
Targeted customers or market application	The <i>most attractive</i> (i.e., <i>profitable</i>) customers in the mainstream markets who are willing to pay for improved performance.	Overserved customers in the low end of the mainstream market.	Targets <i>nonconsumption</i> : customers who historically lacked the money or skill to buy and use the product.
Effect on the required business model (processes and cost structure)	Improves or maintains profit margins by exploiting the <i>existing processes and cost structure</i> and making better use of current competitive advantages.	Uses a new <i>operating or financial approach or both</i> —a different combination of lower gross profit margins and higher asset utilization that can earn attractive returns at the discount prices required to win business at the low end of the market.	Business model must make money at lower price per unit sold and at unit production volumes that initially will be small. Gross margin dollars per unit sold will be significantly lower.

SOURCE: Reprinted by permission of the *Harvard Business Review*. From "Three Approaches to Creating New Growth Business" in *The Innovator's Solution* by Clayton Christensen, p. 51. Copyright © 2003 by the Harvard Business School Publishing Corporation; all rights reserved.

Low-End Strategy Tests For a low-end disruptive strategy to succeed, two requirements must be met:

1. There should be customers at the low end of the market who are eager to purchase a "good-enough" product if they could acquire it at a lower price.
2. The company must be able to create a business model that can yield attractive profits at the discount prices that are needed to attract customers at the low end of the market.

Example: Southwest Airlines drew customers away from the major carriers.

New-Market Strategy Tests For new market disruptions, at least one and generally both of these requirements must be met:

1. A large population can be defined who have historically lacked the money, equipment, or skill to acquire this product or service for themselves.
2. Present customers need to go to an inconvenient location to use the product or service.

Examples: Canon desktop photocopiers were a new-market disruption in the 1980s because they enabled employees to make their own copies rather than

taking their originals to the corporate high-speed copying center to get help from technical specialists. Also, Research in Motion Limited's BlackBerry is a new-market disruption relative to notebook computers.

A Final Litmus Test Once an innovation passes the tests that apply to low-end or new-market disruptions, a final critical test remains: The innovation must be disruptive to all the significant competitive firms in the industry. If one or more of the significant industry players is pursuing the strategy, the odds will be stacked against the new entrant.

*Illustration: A New-Market Disruption*³⁰

One principle for developing disruptive ideas is to “do what competitors want.” For instance, Salesforce.com has pursued a strategy that leaders in the customer relationship (CRM) software market—namely SAP and Oracle—found unappealing. Before Salesforce.com entered the market, both of these formidable rivals sold relatively expensive solutions that required customization and installation to ensure proper integration with the customer's other software packages. Customers also were charged an ongoing fee for maintenance of the installed software.

Adopting a Different Approach Salesforce.com provides customers with access to programs that reside on centralized host computers. Users access these databases through the Web for a modest monthly fee. While customers often find these hosted solutions to be occasionally slower and somewhat more difficult to readily integrate with other applications, they are flexible, easy to use, and quite economical—all defining characteristics of a disruptive innovation.

Scott D. Anthony and his colleagues observe that “Salesforce.com used several tactics that made its competitors unwilling or uninterested in immediately responding:

- It started with nonconsumption (that is, selling to small customers purchasing their first CRM software).
- It targeted a customer its competitors considered undesirable (that is, small and medium-sized businesses that were the least profitable for rivals).
- It used a different distribution channel (that is, on the Web).
- It created a business model that did not depend on a revenue stream of vital importance to incumbents.”³¹ (By centering on installation and customization fees, SAP and Oracle did not find the fees related to a hosted model to be appealing.)

Innovation Winners in High-Technology Markets

In rapidly changing industries with short product life cycles and quickly shifting competitive landscapes, a firm must continually innovate to keep its offerings aligned with the market. A firm's ability to cope with change in a high-velocity industry is a key

³⁰Scott D. Anthony, Mark W. Johnson, Joseph V. Sinfeld, and Elizabeth J. Altman, *The Innovator's Guide to Growth: Putting Disruptive Innovation to Work* (Boston: Harvard Business Press, 2008), pp. 125–126.

³¹*Ibid.*, p. 126.

to competitive success. Shona Brown and Kathleen Eisenhardt provide an intriguing comparison of successful versus less successful product innovation in the computer industry.³² Successful innovators were firms that were on schedule, on time to the market, and on target in addressing customer needs. The study found that firms with a successful record of product innovation use different organizational structures and processes than their competitors. In particular, four distinguishing characteristics marked the innovation approach of successful firms.

1. Limited Structure Creating successful products to meet changing customer needs requires flexibility, but successful product innovators combine this flexibility with a few rules that are never broken. First, strict priorities for new products are established and tied directly to resource allocation. This allows managers to direct attention to the most promising opportunities, avoiding the temptation to pursue too many attractive opportunities. Second, managers set deadlines for a few key milestones and always meet them. Third, responsibility for a limited number of major outcomes is set. For example, at one firm, engineering managers were responsible for product schedules while marketing managers were responsible for market definition and product profitability. Although successful firms emphasized structure for a few areas (for example, priorities or deadlines), less successful innovators imposed more control—lockstep, checkpoint procedures for every facet of new product development—or virtually no structure at all. Successful firms strike a balance by using a structure that is neither so rigid as to stiffly control the process nor so chaotic that the process falls apart.

2. Real-Time Communication and Improvisation Successful product innovators in the computer industry emphasize real-time communication within new-product-development teams *and* across product teams. Much of the communication occurs in formal meetings, but there is also extensive informal communication throughout the organization. Clear priorities and responsibilities, coupled with extensive communications, allow product developers to improvise. “In the context of jazz improvisation, this means creating music while adjusting to the changing musical interpretations of others. In the context of product innovation, it means creating a product while simultaneously adapting to changing markets and technologies.”³³

More formally, then, **improvisation** involves the design and execution of actions that approach convergence with each other in time.³⁴ The shorter the elapsed time between the design and implementation of an activity, the more that activity is improvisational. Successful firms expect constant change, and new product teams have the freedom to act. One manager noted: “We fiddle right up to the end” of the new-product-development process. Real-time communications among members of the product development team, coupled with limited structure, provide the foundation for such improvisation.

³²This section is based on Shona L. Brown and Kathleen M. Eisenhardt, “The Art of Continuous Change: Linking Complexity Theory and Time-Paced Evolution in Relentlessly Shifting Organizations,” *Administrative Science Quarterly* 42 (March 1997): pp. 1–34.

³³*Ibid.*, p. 15.

³⁴Christine Moorman and Anne S. Miner, “The Convergence of Planning and Execution: Improvisation in New Product Development,” *Journal of Marketing* 62 (July 1998): p. 3.

INSIDE BUSINESS MARKETING

Patching: The New Corporate Strategy in Dynamic Markets

Kathleen M. Eisenhardt and Shona L. Brown contend that traditional corporate planning and resource allocation approaches are not effective in volatile markets. As new technologies, novel products and services, and emerging markets create tempting opportunities, “the clear-cut partitioning of businesses into neat, equidistant rectangles on an organizational chart becomes out of date.”

The new corporate-level strategic processes center on managing change and continually realigning the organization to capture market opportunities faster than the competition. Central to this newly defined approach is **patching**—the strategic process corporate executives use routinely to realign or remap businesses to changing market opportunities. Patching can take the form of adding,

dividing, transferring, exiting, or combining pieces of businesses. Hewlett-Packard used patching to launch the printer business, create businesses in related products like scanners and faxes, and develop a second printer business built around inkjet technology. Patching is less critical in stable markets but a crucial skill when markets are turbulent. Here a small, agile unit of the firm can be mobilized quickly to capture fresh market opportunities.

SOURCES: Kathleen M. Eisenhardt and Shona L. Brown, “Patching: Restitching Business Portfolios in Dynamic Markets,” *Harvard Business Review* 77 (May–June 1999): pp. 72–82; see also, Mark B. Houston, Beth A. Walker, Michael D. Hutt, and Peter H. Reingen, “Cross-Unit Competition for a Market Charter: The Enduring Influence of Structure,” *Journal of Marketing* 65 (April 2001): pp. 19–34.

3. Experimentation: Probing into the Future Some firms make a large bet on one version of the future, whereas others fail to update future plans in light of changing competition. Creators of successful product portfolios did not invest in any one version of the future but, instead, used a variety of low-cost probes to create options. Examples of low-cost probes include developing experimental products for new markets, entering into a strategic alliance with leading-edge customers to better understand future needs, or conducting regular planning sessions dedicated to the future. In turbulent industries, strategists cannot accurately predict which of many possible versions of the future will arrive. Probes create more possible responses for managers when the future does arrive while lowering the probability of being surprised by unanticipated futures.

4. Time Pacing Successful product innovators carefully managed the transition between current and future projects, whereas less successful innovators let each project unfold according to its own schedule. Successful innovators, like Intel, practice time pacing—a strategy for competing in fast-changing markets by creating new products at predictable time intervals.³⁵ Organization members carefully choreograph and understand transition processes. For example, marketing managers might begin work on the definition of the next product while engineering is completing work on the current product and moving it to manufacturing. Time pacing motivates managers to anticipate change and can have a strong psychological impact across the organization. “Time pacing creates a relentless sense of urgency around meeting deadlines and concentrates individual and team energy around common goals.”³⁶

³⁵Eisenhardt and Brown, “Time Pacing,” pp. 59–69.

³⁶*Ibid.*, p. 60.

The New-Product-Development Process

To sustain their competitive advantage, leading-edge firms such as Canon, Microsoft, and Hewlett-Packard make new product development a top management priority. They directly involve managers and employees from across the organization to speed actions and decisions. Because new product ventures can represent a significant risk as well as an important opportunity, new product development requires systematic thought. The high expectations for new products are often not fulfilled. Worse, many new industrial products fail. Although the definitions of failure are somewhat elusive, research suggests that 40 percent of industrial products fail to meet objectives.³⁷ Although there may be some debate over the number of failures, there is no debate that a new product rejected by the market constitutes a substantial waste to the firm and to society.

This section explores (1) the forces that drive a firm's new product performance, (2) the sources of new product ideas, (3) cross-functional barriers to successful innovation, and (4) team-based processes used in new product development. A promising method for bringing the "voice of the consumer" directly into the development process is also explored.

What Drives a Firm's New Product Performance?

A benchmarking study sought to uncover the critical success factors that drive a firm's new product performance.³⁸ It identified three factors (Figure 9.3): (1) the quality of a firm's new-product-development process, (2) the resource commitments made to new product development, and (3) the new product strategy.

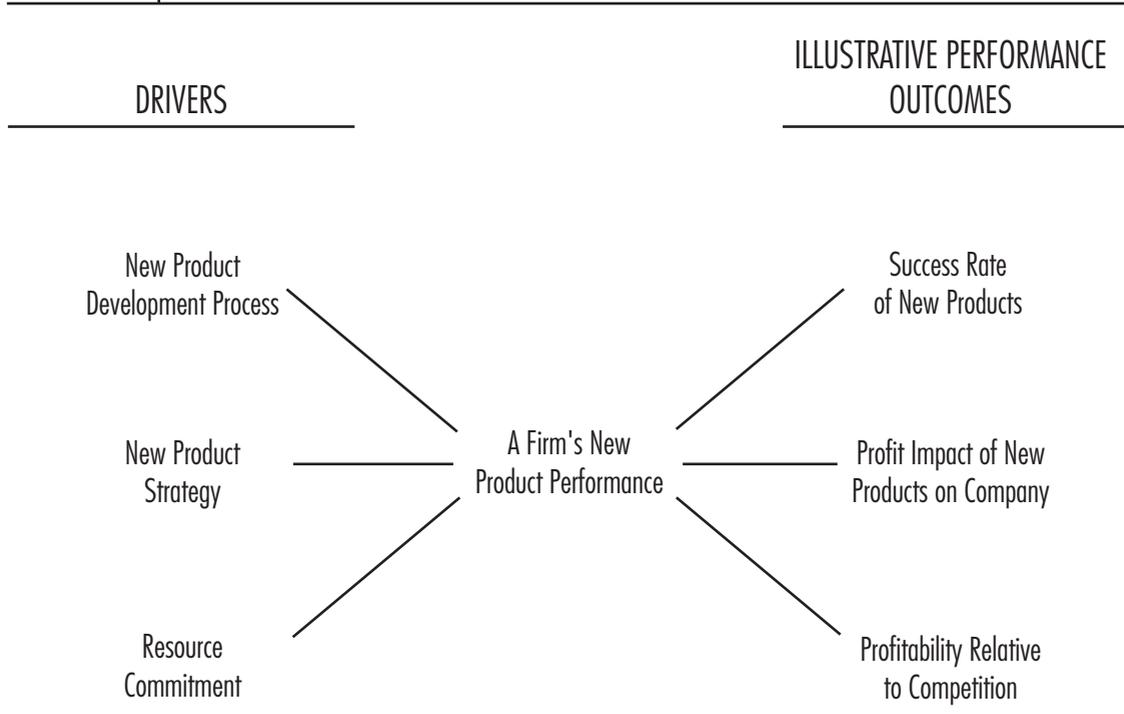
Process Successful companies use a high-quality new-product-development process—they give careful attention to executing the activities and decision points that new products follow from the idea stage to launch and beyond. The benchmarking study identified the following characteristics among high-performing firms:

- The firms emphasized upfront market and technical assessments before projects moved into the development phase.
- The process featured complete descriptions of the product concept, product benefits, positioning, and target markets before development work was initiated.
- Tough project go/kill decision points were included in the process, and the kill option was actually used.
- The new product process was flexible—certain stages could be skipped in line with the nature and risk of a particular project.

³⁷Robert G. Cooper, Scott J. Edgett, and Elko J. Kleinschmidt, "Benchmarking Best NPD Practices-I," *Research Technology Management* 47 (January–February 2004): pp. 31–43; see also Robert G. Cooper and Scott J. Edgett, "Maximizing Productivity in Product Innovation," *Research Technology Management* 51 (March–April 2008): pp. 47–58.

³⁸Robert G. Cooper and Elko J. Kleinschmidt, "Benchmarking Firms' New Product Performance and Practices," *Engineering Management Review* 23 (Fall 1995): pp. 112–120; see also Robert G. Cooper, Scott J. Edgett, and Elko J. Kleinschmidt, "Benchmarking Best NPD Practices-II," *Research Technology Management* 47 (May–June 2004): pp. 50–59.

FIGURE 9.3 | THE MAJOR DRIVERS OF A FIRM'S NEW PRODUCT PERFORMANCE



SOURCE: Adapted from Robert G. Cooper and Elko J. Kleinschmidt, "Benchmarking Firms' New Product Performance and Practices," *Engineering Management Review* 23 (Fall 1995): pp. 112–120.

Detailed upfront homework on the product concept, the likely market response, and the product's technical feasibility, along with a thorough business and financial assessment, are important dimensions of the process successful product creators follow.

Resource Commitments Adequate resources were invested in new product development in top-performing firms. Three ingredients were important here:

1. Top management committed the resources necessary to meet the firm's objectives for the total product effort.
2. R&D budgets were adequate and aligned with the stated new product objectives.
3. The necessary personnel were assigned and were relieved from other duties so that they could give full attention to new product development.

Research suggests that rather than being imposed by top management, the creative potential of new-product-development teams "is likely to be more fully realized when they are given the flexibility—within a broad strategic directive—to determine their own project controls and especially to pursue their own processes and procedures."³⁹

³⁹Joseph M. Bonner, Robert W. Ruekert, and Orville C. Walker Jr., "Upper Management Control of New Product Development Projects and Project Performance," *Journal of Product Innovation Management* 19 (May 2002): p. 243.

New Product Strategy A clear and visible new product strategy was another driver of a firm's new product performance (see Figure 9.3). Successful firms like 3M set aggressive new product performance goals (for example, x percent of company sales and profit from new products) as a basic corporate goal and communicate it to all employees. In turn, Robert Cooper and Elko Kleinschmidt report that successful firms centered development efforts on clearly defined arenas—particular product, market, and technology domains—to direct the new product program:

The new product strategy specifies “the arenas where we’ll play the game,” or perhaps more important, where we won’t play . . . what’s in bounds and out of bounds. Without arenas defined, the search for new product ideas or opportunities is unfocused. . . .⁴⁰

*Anticipating Competitive Reactions*⁴¹

Two-thirds of new product introductions trigger reactions by competitors. Consequently, business marketers can improve the odds of new-product-launch success by implementing a strong **competitor orientation** before and during the launch. Here the new product strategist develops detailed scenarios that provide a guide for countering different competitive responses. Competitors are strongly motivated to react when (1) the new product represents a major threat to their market and (2) the market is experiencing a high rate of growth. Competitors are also more inclined to react when extensive marketing communications by the innovating firm enhance the visibility of the new product introduction.

Alternatively, if the new product introduction does not pose a direct challenge to the competitor's market, a reaction is less likely. Recent research suggests that radically new products or products that target niche markets are less likely to spawn competitive responses.

Sources of New Product Ideas

The business marketer should be alert to new product ideas and their sources, both inside and outside the company. Internally, new product ideas may flow from salespersons who are close to customer needs, from R&D specialists who are close to new technological developments, and from top management who know the company's strengths and weaknesses. Externally, ideas may come from channel members, such as distributors or customers, or from an assessment of competitive moves.

Eric von Hippel challenges the traditional view that marketers typically introduce new products to a passive market.⁴² His research suggests that the customers in the

⁴⁰Cooper and Kleinschmidt, “Benchmarking,” p. 117; see also Jean-Marie Choffray and Gary L. Lilien, “Assessing Response to Industrial Marketing Strategy,” *Journal of Marketing* 42 (April 1978): pp. 20–31; and Eunsang Yoon and Gary L. Lilien, “New Industrial Product Performance: The Effects of Market Characteristics and Strategy,” *Journal of Product Innovation Management* 3 (September 1985): pp. 134–144.

⁴¹Marion Debruyne, Rudy Moenart, Abbie Griffin, Susan Hart, Erik Jan Hultink, and Henry Robben, “The Impact of New Product Launch Strategies on Competitive Reaction in Industrial Markets,” *Journal of Product Innovation Management* 19 (March 2002): pp. 159–170; see also Beth A. Walker, Dimitri Kapelians, and Michael D. Hutt, “Competitive Cognition,” *MIT Sloan Management Review* 46 (Summer 2005): pp. 10–12.

⁴²Eric von Hippel, “Get New Products from Customers,” *Harvard Business Review* 60 (March–April 1982): pp. 117–122; see also Eric von Hippel, *The Sources of Innovation* (New York: Oxford University Press, 1988); Gerard A. Athaide and Rodney L. Stump, “A Taxonomy of Relationship Approaches during Technology Development in Technology-Based, Industrial Markets,” *Journal of Product Innovation Management* 16 (September 1999): pp. 469–482.

B2B TOP PERFORMERS

IDEO: The Hits Just Keep on Coming!

IDEO helps organizations innovate through design. Leading firms like Apple, Research In Motion, Sony, 3M, and others have used product design to define their brands, creating meaningful points of difference over competitors.

Among their greatest hits, IDEO is responsible for designing

- the Microsoft mouse;
- the Swiffer Sweeper for Procter & Gamble;
- mobile sound components for Altec Lansing;
- the coasting bicycle design strategy for Shimano;
- improved patient-provider services for Mayo Clinic;
- “Keep the Change” account service for Bank of America.

FastCompany.com identifies IDEO as one of the world’s most innovative companies.

SOURCE: <http://www.ideo.com/portfolio/list.asp?p=0&c=&k=40&s=&so=4>

business market often develop the idea for a new product and even select the supplier to make that product. The customer is responding to the perceived *capability* of the business marketer rather than to a specific physical product. This points up the need for involving customers in new product development and promoting corporate capability to consumers (idea generators).

Lead Users Because many industrial product markets for high-technology and, in particular, capital equipment consist of a small number of high-volume buying firms, special attention must be given to the needs of **lead users**. These include a small number of highly influential buying organizations that are consistent early adopters of new technologies.⁴³ Lead users face needs that are general in the marketplace, but they confront these needs months or years before most of that marketplace encounters them. In addition, they are positioned to benefit significantly by obtaining a solution that satisfies those needs. For example, if an automobile manufacturer wanted to design an innovative braking system, marketing managers might secure insights from auto racing teams, who have a strong need for better brakes. In turn, they might look to a related field like aerospace, where antilock braking systems were first developed so that military aircraft could land on short runways.⁴⁴

The Lead User Method Lead user projects are conducted by a cross-functional team that includes four to six managers from marketing and technical departments; one member serves as project leader. Team members typically spend 12 to 15 hours per week on the projects, which are usually completed in four to six weeks. Lead user projects proceed through five phases (Figure 9.4). 3M has now successfully used the lead user method in eight different divisions, and support among project teams and divisional managers is strong. For example, the Medical-Surgical Markets Group at

⁴³von Hippel, “Get New Products,” pp. 120–121.

⁴⁴Eric von Hippel, Stefan Thomke, and Mary Sonnack, “Creating Breakthroughs at 3M,” *Harvard Business Review* 77 (September–October 1999): pp. 47–57.

FIGURE 9.4 | THE LEAD USER METHOD

Phase	Central Focus	Description
Phase 1	Laying the Foundation ↓	The team identifies target markets and secures support from internal stakeholders for the type and level of innovations desired.
Phase 2	Determining the Trends ↓	The team talks to experts in the field who have a broad view of emerging technologies and pioneering applications in the particular area.
Phase 3	Identifying Lead Users ↓	The team begins a networking process to identify lead users at the leading edge of the target market and to gather information that might contribute to breakthrough products.
Phase 4	Developing & Assessing Preliminary Product Ideas ↓	The team begins to shape product ideas and to assess market potential and fit with company interests.
Phase 5	Developing the Breakthroughs	To design final concepts, the team hosts a workshop bringing together lead users with other in-house managers. After further refinement, the team presents its recommendations to senior management.

SOURCE: Adapted with modifications from Eric von Hippel, Stefan Thomke, and Mary Sonnack, "Creating Breakthroughs at 3M," *Harvard Business Review* 77 (September–October 1999), p. 52.

3M used the lead user method to unearth new product ideas and to identify a revolutionary approach to infection control.⁴⁵ 3M reports that sales in year 5 for funded lead user project ideas were more than eight times greater than those generated by traditional approaches to idea generation.⁴⁶ Other firms adopting a lead user focus include Nortel Networks, Verizon, Nestle, Pitney Bowes, and Philips.

Customer Visits A popular approach among business marketers for gaining new product insights is customer visits.⁴⁷ Here a cross-functional team visits a customer organization to secure a first-hand account of customer needs. Based on a carefully crafted interview guide, in-depth interviews are conducted with key buying influentials to uncover user problems, needs, and desires. For instance, company representatives at Intuit visit customers where they live and work to observe how they use its products such as QuickBooks. After watching many small-business customers struggle with QuickBooks Pro, the firm saw a need and created the solution: QuickBooks Simple Start.⁴⁸

Web-Based Methods for Improving Customer Inputs to Design Recognizing the ability of customers to innovate, many firms have developed tools that invite

⁴⁵Ibid., p. 56.

⁴⁶"User Innovation: Changing Innovation Focus," *Strategic Direction* 23 (8, 2007): pp. 35–36.

⁴⁷Robert Cooper and Scott Edgett, "Ideation for Product Innovation: What Are the Best Methods?" Product Development Institute, Inc., 2008, accessed at <http://www.stage-gate.com> on July 10, 2008.

⁴⁸Christopher Meyer and Andre Schwager, "Understanding Customer Experience," *Harvard Business Review* 85 (February 2007): p. 8.

customers to design their own products. With these innovative toolkits, customers are given an array of features that can be configured, as desired, to create their own customized products. These toolkits often incorporate engineering and cost modules. To illustrate, if a customer wishes to change the length of a truck bed, the design tool automatically computes the additional cost and the associated changes that will be required in both the transmission and the engine. For aesthetic compatibility, the design tool might even modify the shape of the cab. Other examples: In its materials business, General Electric provides Web-based tools that customers use for designing better plastics products. Likewise, many software companies encourage users to add custom-designed modules to their standard products and then commercializes the best of those components.⁴⁹

Determinants of New Product Performance and Timeliness

What factors are most important in determining the success or failure of the new product? Why are some firms faster than others in moving projects through the development process? Let's review the available evidence.

The Determinants of Success

Both strategic factors and a firm's proficiency in carrying out the new-product-development process determine new product success.⁵⁰

Strategic Factors Research suggests that four strategic factors appear to be crucial to new product success. The level of product advantage is the most important. **Product advantage** refers to customer perceptions of product superiority with respect to quality, cost–performance ratio, or function relative to competitors. Successful products offer clear benefits, such as reduced customer costs, and are of higher quality (for example, more durable) than competitors' products. A study of more than 100 new product projects in the chemical industry illustrates the point. Here, Robert Cooper and Elko Kleinschmidt assert, "The winners are new products that offer high relative product quality, have superior price/performance characteristics, provide good value for the money to the customer, are superior to competing products in meeting customer needs, [and] have unique attributes and highly visible benefits that are easily seen by the customer."⁵¹

Marketing synergy and technical synergy are also pivotal in new product outcomes. **Marketing synergy** is the fit between the needs of the project and the firm's

⁴⁹Stephen Thomke and Eric von Hippel, "Customers as Innovators: A New Way to Create Value," *Harvard Business Review* 80 (April 2002): pp. 74–81.

⁵⁰Mitzi M. Montoya-Weiss and Roger Calantone, "Determinants of New Product Performance: A Review and Meta-Analysis," *Journal of Product Innovation Management* 11 (November 1994): pp. 397–417; see also Robert G. Cooper, Scott J. Edgett, and Elko J. Kleinschmidt, "Benchmarking Best NPD Practices—III," *Research Technology Management* 47 (November–December 2004): pp. 43–55.

⁵¹Robert G. Cooper and Elko J. Kleinschmidt, "Major New Products: What Distinguishes the Winners in the Chemical Industry?" *Journal of Product Innovation Management* 10 (March 1993): p. 108; see also Tiger Li and Roger J. Calantone, "The Impact of Market Knowledge Competence on New Product Advantage: Conceptualization and Empirical Examination," *Journal of Marketing* 62 (October 1998): pp. 13–29.

resources and skills in marketing (for example, personal selling or market research). By contrast, **technical synergy** concerns the fit between the needs of the project and the firm's R&D resources and competencies. New products that match the skills of the firm are likely to succeed.

In addition to the preceding three factors, an **international orientation** also contributes to the success of product innovation.⁵² New products designed and developed to meet foreign requirements and targeted at world or nearest-neighbor export markets outperform domestic products on almost every measure, including success rate, profitability, and domestic and foreign market shares. Underlying this success is a strong international focus in market research, product testing with customers, trial selling, and launch efforts.

Development Process Factors New product success is also associated with particular characteristics of the development process. **Predevelopment proficiency** provides the foundation for a successful product. Predevelopment involves several important tasks such as initial screening, preliminary market and technical assessment, detailed market research study, and preliminary business/financial analysis. Firms that are skilled in completing these upfront tasks are likely to experience new product success.

Market knowledge and **marketing proficiency** are also pivotal in new product outcomes. As might be expected, business marketers with a solid understanding of market needs are likely to succeed. Robert Cooper describes the market planning for a successful product he examined: "Market information was very complete: there was a solid understanding of the customer's needs, wants, and preferences; of the customer's buying behavior and price sensitivity; of the size and trends of the market; and of the competitive situation. Finally, the market launch was well planned, well targeted, proficiently executed, and backed by appropriate resources."⁵³

Technical knowledge and **technical proficiency** are other important dimensions of the new-product-development process. When technical developers have a strong base of knowledge about the technical aspects of a potential new product, and when they can proficiently pass through the stages of the new-product-development process (for example, product development, prototype testing, pilot production, and production start-up), these products succeed.

Fast-Paced Product Development

Rapid product development offers a number of competitive advantages. To illustrate, speed enables a firm to respond to rapidly changing markets and technologies. Moreover, fast product development is usually more efficient because lengthy development processes tend to waste resources on peripheral activities and changes.⁵⁴ Of course, although an overemphasis on speed may create other pitfalls, it is becoming an important strategic weapon, particularly in high-technology markets.

⁵²Elko J. Kleinschmidt and Robert G. Cooper, "The Performance Impact of an International Orientation on Product Innovation," *European Journal of Marketing* 22 (9, 1988): pp. 56–71.

⁵³Robert G. Cooper, *Winning at New Products: Accelerating the Process from Idea to Launch* (Reading, Mass: Addison-Wesley, 1993), p. 27; see also Robert G. Cooper, "Perspective: The Stage-Gate® Idea to Launch Process—Update, What's New, and NextGen Systems," *Journal of Product Innovation Management* 25 (May 2008): pp. 213–232.

⁵⁴See, for example, Robert G. Cooper and Elko J. Kleinschmidt, "Determinants of Timeliness in Product Development," *Journal of Product Innovation Management* 11 (November 1994): pp. 381–417.

Matching the Process to the Development Task How can a firm accelerate product development? A major study of the global computer industry provides some important benchmarks.⁵⁵ Researchers examined 72 product development projects of leading U.S., European, and Asian computer firms. The findings suggest that multiple approaches are used to increase speed in product development. Speed comes from properly matching the approach to the product development task at hand.

Compressed Strategy for Predictable Projects For well-known markets and technologies, a **compression strategy** speeds development. This strategy views product development as a predictable series of steps that can be compressed. Speed comes from carefully planning these steps and shortening the time it takes to complete each one. This research indicates that the compressed strategy increased the speed of product development for products that had predictable designs and that were targeted for stable and mature markets. Mainframe computers fit into this category—they rely on proprietary hardware, have more predictable designs from project to project, and compete in a mature market.

Experiential Strategy for Unpredictable Projects For uncertain markets and technologies, an **experiential strategy** accelerates product development. The underlying assumption of this strategy, explain Kathleen Eisenhardt and Behnam Tabrizi, is that “product development is a highly uncertain path through foggy and shifting markets and technologies. The key to fast product development is, then, rapidly building intuition and flexible options in order to learn quickly about and shift with uncertain environments.”⁵⁶

Under these conditions, speed comes from multiple design iterations, extensive testing, frequent milestones, and a powerful leader who can keep the product team focused. Here real-time interactions, experimentation, and flexibility are essential. The research found that the experiential strategy increased the speed of product development for unpredictable projects such as personal computers—a market characterized by rapidly evolving technology and unpredictable patterns of competition.

Summary

Product innovation is a high-risk and potentially rewarding process. Sustained growth depends on innovative products that respond to existing or emerging consumer needs. Effective managers of innovation channel and control its main directions but have learned to stay flexible and expect surprises. Within the firm, marketing managers pursue strategic activity that falls into two broad categories: induced and autonomous strategic behavior.

New-product-development efforts for existing businesses or market-development projects for the firm’s present products are the outgrowth of induced strategic initiatives. In contrast, autonomous strategic efforts take shape outside the firm’s current concept of strategy, depart from the current course, and center on new categories of business opportunity; middle managers initiate the project, champion its development, and, if successful, see the project integrated into the firm’s concept of strategy.

⁵⁵Kathleen M. Eisenhardt and Behnam N. Tabrizi, “Accelerating Adaptive Processes: Product Innovation in the Global Computer Industry,” *Administrative Science Quarterly* 40 (March 1995): pp. 84–110.

⁵⁶*Ibid.*, p. 91.

Corporate entrepreneurs thrive in a culture where senior managers promote and reward innovative behavior, encourage risk-taking, and provide the administrative mechanisms to screen, develop, and implement new product ideas.

The long-run competitive position of most business marketing firms depends on their ability to manage and increase their technological base. Core competencies provide the basis for products and product families. Each generation of a product family has a platform that serves as the foundation for specific products targeted at different or complementary market applications. Because companies keep working to make better products, they can sell at higher profit margins to the most demanding customers, and they often overshoot the needs of mainstream customers. A sustaining innovation provides demanding high-end customers with improved performance, whereas disruptive innovations target new or less-demanding customers with an easy-to-use, less-expensive alternative that is “good enough.” Disruptive strategies take two forms: low-end and new-market disruptions.

Firms that are successful innovators in turbulent markets combine limited structures (for example, priorities, deadlines) with extensive communication and the freedom to improvise on current projects. These successful product creators also explore the future by experimenting with a variety of low-cost probes and build a relentless sense of urgency in the organization by creating new products at predictable time intervals (i.e., time pacing).

Effective new product development requires a thorough knowledge of customer needs and a clear grasp of the technological possibilities. Lead user analysis and customer visits often uncover valuable new product opportunities. Top-performing firms execute the new-product-development process proficiently, provide adequate resources to support new product objectives, and develop clear new product strategy. Both strategic factors and the firm’s proficiency in executing the new-product-development process are critical to the success of industrial products. Fast-paced product development can provide an important source of competitive advantage. Speed comes from adapting the process to the new-product-development task at hand.

Discussion Questions

1. Research by James Quinn suggests that few major innovations result from highly structured planning systems. What does this imply for the business marketer?
2. Compare and contrast induced and autonomous strategic behavior. Describe the role of the product champion in the new-product-development process.
3. The breakthrough products for many companies did not emerge from the formal new-product-development process. Instead, they were championed by a few resourceful employees. What steps can organizations take to motivate and support corporate entrepreneurship?
4. Compare and contrast a low-end versus a new-market disruptive strategy.
5. In many markets, a new entrant might consider a strategy that provides potential customers with a product or technology that is “good enough”

- rather than “superior” to existing options. Describe the key tests that a disruptive strategy must pass in order to stack the odds for success in its favor.
6. In fast-changing high-tech industries, some firms have a better record in developing new products than others. Describe the critical factors that drive the new product performance of firms.
 7. Rather than planning for and investing in just one version of the future, some firms use low-cost probes to experiment with many possible futures. Evaluate the wisdom of this approach.
 8. Describe how Marriott might employ lead user analysis to better align its properties and services with the needs of the executive traveler.
 9. New industrial products that succeed provide clear-cut advantages to customers. Define product advantage and provide an example of a recent new product introduction that fits this definition.
 10. Evaluate this statement: “To increase the speed of the new-product-development process, a firm might follow one strategy for unpredictable projects and an entirely different one for more predictable ones.”

Internet Exercise

1. Years ago, Corning sold dishes and glassware in the consumer market. Today, the firm might be characterized as a high-tech material science company that competes successfully in an array of business markets. Go to <http://www.corning.com> and identify its major product lines.

Steelcase Inc. Extends Reach to Growing Health-Care Market

Steelcase, a leading office furniture manufacturer, launched a new health-care-focused subsidiary called Nurture. James P. Hackett, president and CEO of Steelcase, had assigned a team to study the health care market, and here is what they concluded:

We should move into the health-care market by launching a new health care brand. It would expand our current effort “on carpet”—work areas in hospitals that are like the office spaces (nurses’ stations, for instance)—but we would also expand “off carpet”—to entirely different areas of the hospital (patients’ rooms, examining rooms, café lounges). . . . The brand would draw on technology and products we already had, as well as new products we would manufacture and new customizing services we would provide.⁵⁷

The team got the go-ahead from senior management to launch the new business unit and the Nurture brand.

Given that the cost of hospital care is expected to exceed \$1.2 trillion by 2016, Steelcase executives saw the health-care market as a golden opportunity.⁵⁸ They were also encouraged to learn that the highest sales volume for the company’s Criterion chair—a classic desk seat with adjustable back tension, lumbar-curve support, and wrist rests—was going to health-care customers—hospitals, clinics, and doctors’ offices.

John Carlson, vice president of product development and marketing at Nurture, believes that the unit can enjoy a competitive advantage by offering cohesive suites of examination tables, patient beds, nurses’ stations, and the like. However, there are some formidable competitors that have deep knowledge of health-care customers, like Hill-Rom, a unit of Hillenbrand Industries. A leading manufacturer of hospital beds, Hill-Rom also offers a limited collection of furniture selections but has been squarely centered on the health-care market for decades and has forged close and enduring relationships with physicians, nurses, and administrators at health-care facilities, large and small.

Discussion Question

1. To develop patient-friendly furnishings or suites of products that boost staff productivity, describe specific steps that marketing strategists at Nurture might take to learn more about the workings of a hospital environment and the needs of different constituents—patients, visitors, nurses, and physicians.

⁵⁷James P. Hackett, “Preparing for the Perfect Launch,” *Harvard Business Review* 85 (April 2007): p. 49.

⁵⁸Reena Jana, “Steelcase’s Medical Breakthrough,” March 22, 2007, accessed at <http://www.businessweek.com> on July 14, 2008.