

# Competing on Innovation: How Exemplary Innovators Leverage Their External Environment to Harness Innovation and Create Value

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## Abstract

The author begins the article with the presentation of sources and factors that contribute to firm innovation. Second, he uses the contingency theory of firm innovation as the intellectual underpinning for the analysis in this paper. Third, the author discusses how exemplary innovators find their creative ideas. Fourth, he analyzes the role of strategic networks in fostering external innovation. Fifth, he outlines how exemplary innovators match their strategies with their innovation ecosystem and leverage open-market innovation as critical sources of competitive advantage. Sixth, the author examines the relationship between exemplary innovators and their customers in harnessing innovation, and in dealing with partnership challenges to accelerate innovation. He concludes the paper by outlining strategies for would-be innovators wishing to adopt the concepts of ecosystem and open-market innovation in order to create value for themselves and for their external partners.

**Keywords:** Firm, Innovation, Ecosystem, Open-market, Strategy, Networks

## 1. Introduction

### *1.1 Definition and Role of Innovation in Firm Performance*

Following prior research, the author defines innovation as used in this paper, as a process that begins with an invention, proceeds with the development of the invention, and results in the introduction of a new product, process or service to the marketplace (Edwards and Gordon, 1984). Innovation begins when a firm chooses an invention for development, with the ultimate goal of introducing it to the market (Kuznets, 1962). This definition is also consistent with Schumpeter's description: "The making of the invention and the carrying out of the corresponding innovation are, economically and sociologically, two entirely different things" (1939, p. 85).

The role of innovation in creating firm value has long been recognized. Firms undertake investment in research and development in hopes of developing innovative products and services that lead to increase performance. Prior research has found a positive correlation between innovation and firm value (Griliches, 1981; Pakes, 1985). For example, Griliches (1981) reported that investment in innovation can yield returns of 200 percent over the long run. Similarly, much has been written on factors that contribute to the innovative success to firm (see Brown and Eisenhardt, 1995; Damapour, 1991; Fiol, 1996). Some of these factors are aspects of an organization's structure and culture, project team composition, within-firm and within-team knowledge flows, and top management and project leadership skill, commitment, and attitudes toward change (Griliches, 1990). More specifically, technological innovations often follow a "trajectory"—a related stream of technological development (Dosi, 1982; Winter, 1984). Continuous exploration and continuous exploitation are both necessary for a firm to progress along a technological trajectory (Puranan, Singh and Zollo, 2006).

### *1.2 Sources of Firm Innovation*

There are, of course, innovations that spring from a flash of genius. Most innovations, however, especially the successful ones, result from a conscious, purposeful search for innovation opportunities, which are found only in a few situations. Four such areas of opportunity exist within a company or industry: unexpected occurrences, incongruities, process needs, and industry and market changes. The additional sources of opportunity exist outside a company in its social and intellectual environment: demographic changes, changes in perception, and new knowledge. True, these sources overlap. Different as they may be in the nature of their risk, difficulty, and complexity, the potential for innovation may well lie in more than one area at a time. Together, they account for the great majority of all innovation opportunities (Drucker, 2002).

## **2. Theoretical Background**

The author uses the contingency theory as the intellectual underpinning of the analysis of firm external innovative behavior in this paper. Contingency theory has a long tradition of discussing how different dimensions of the external environment interact with organizational attributes such as the degree of competition in an environment (Pfeffer and Leblebici, 1973), the availability of financial resources (Pfeffer and Salancik, 1978), manufacturing intensity (Thompson, 1967), and market size (Lawrence and Lorsch, 1967). All of the above dimensions are especially relevant to a firm's external innovation.

## **3. Exemplary Innovators and their Creative Ideas**

Studies indicate that exemplary innovators (from now on EIs) usually have a pretty clear idea of the kind of competitive edge they're seeking. They have thought long and hard about what's practical in their particular business. And just as hard about what is not (Pearson, 2002). For example, by drawing new product ideas out of current products—and tapping existing skills and technologies—reduces the chance that a firm will come up with ideas that are impractical to produce or market. And using systematic patterns, rather than the preconceptions of customers or marketers, to generate ideas liberates a firm's innovation process from the straitjacket of existing concepts and assumptions (Goldenberg, Horowitz, Levav, and Mazursky, 2003). However, the process of generating and finding innovative ideas is not an easy task in most firms.

How then do EIs find good, concrete ideas? Brainstorming is one approach. Good ideas most often flow from the process of taking a hard look at their customers, their competitors, and their business all at once. So in looking for ways to innovate, EIs concentrate on (a) what is already working in the marketplace that they can improve on as well as expand (b) how they can segment their markets differently and gain a competitive advantage in the process, and (c) how their business system compares with their competitors'. Looking hard at what's already working in the marketplace is the tactic likely to produce the quickest result. Normally, outside ideas are useful simply because their competitors are already doing the market research for them. That is, their rivals are proving what customers want in the marketplace, where it counts. Research shows that good ideas come from all over—conventional competitors, regionals, small companies, even international competitors. For example, most of PepsiCo's major strategic successes are ideas borrowed from the marketplace—often from small regional or local competitors. More specifically, Doritos, Tostitos, and Sabritos were products developed by three small chippers on the West Coast of the United States (Pearson, 2002).

Another strategy employed by EIs is to look at how to create segments or markets for their products. It sounds simple, but it takes a lot of creativity and skill to segment a market beyond simple demographics, ferret out what individual groups of consumers really want, and actually create distinctive product performance features. For instance, at Taco Bell, the biggest Mexican fast-food chain in the United States, the management found that working women were avoiding its outlets like the plague. Women felt Taco Bell's food was too heavy, too spicy. So the company developed a taco salad served in a light flour tortilla and seasoned very mildly. The addition of that salad increased per-store sales more than 20%, with 70% of the sales coming from women—mostly new customers. It also added about \$100 million to Taco Bell's sales in its first year (Pearson, 2002). In addition to devising approaches to explore creative and innovative ideas, EIs also develop strategic networks to support their external innovation initiatives. The author looks at this process in the section below.

## **4. EIs Strategic Networks and External Innovation**

EIs believe in the power of networking. This is because successful innovation requires the ability to harvest ideas and expertise from a wide array of sources. For EIs, that means bringing in insights and know-how not just from outside parties but from other businesses. They understand that the need for external perspectives seems almost self-evident: If they stay locked inside their own four walls, how will they be able to uncover and exploit opportunities outside their existing businesses or beyond their current technical or operational capabilities? Yet perhaps even more self-evident to EIs is the need to lock in their innovation initiatives to protect them from competitors. They do this by establishing a network of strategic intermediaries. This is because intermediaries facilitate the exchange of information about innovation among companies while keeping their secrets. The intermediaries can be trusted to maintain confidentiality because if they ever violated the terms of an arrangement no company would hire them again.

That said, no company is, of course, hermetically sealed. Outside perspectives and competencies flow into and out of organizations through many routes: partnerships with universities, alliances and acquisitions, external venture investments, recruiting and hiring, customers and suppliers, and the relationships and curiosity of individual employees. These sources of external influence are valuable and important. It could be argued, in fact, that they have played pivotal roles in all instances of corporate innovation (Wolpert, 2002). Similarly, to the extent that

innovation is necessary for the population to thrive, inter-organizational structures that support diffusion processes are crucial. Diffusion reveals a network's suitability for innovation transfer. The speed with which an innovation diffuses affects the level of payback to early adopters because faster diffusion extends the benefits more quickly to others. Network impacts on diffusion speed are equally relevant for early movers who want to deter diffusion and for decision makers who would rather speed innovation through the field (Gibbons, 2004).

Moreover, as an organizational population develops, networks of relations form among its members. Adaptive change can diffuse through these networks (Kraatz, 1998). However, structural disparities may determine whether an innovation sweeps through the field or languishes in obscurity. Studies suggest that networks of cooperating and competing actors do not emerge all at once because of the actions of one or even a few key individuals (Hargrave and Van De Ven, 2006). And that important knowledge boundaries as well as social or identity boundaries inhibit the diffusion of innovations (Ferlie, Fitzgerald, Wood, and Hawkins, 2005). This can also affect a firm's strategic alignment with its ecosystem. In the section that follows, the author analyzes how EIs match their strategy with their ecosystems.

## **5. Matching Strategy with Innovation Ecosystem**

Innovation ecosystem is defined as the collaborative arrangements through which firms combine their individual offerings into a coherent, customer-facing solution. Enabled by information technologies that have drastically reduced the costs of coordination, innovation ecosystems have become a core element in the growth strategy of firms in a wide range of industries. While leading exemplars tend to come from high-tech setting (e.g., Intel, Nokia, SAP, and Cisco), ecosystem strategies are being deployed in industries as varied as commercial printing, financial services, basic materials, and logistics provisions (Rigby and Zook, 2002).

Study confirms that mapping their innovation ecosystem is one best way EIs determine whether they have set realistic performance expectations for their innovation strategy. They deploy the following steps to reveal where delays in getting the innovation to market might interfere with their success: (1) Identify all the intermediaries that must adopt their innovation before it reaches the end consumer. (2) identify all the complements (other innovations needed for EIs innovation) required for EIs and each of their intermediaries to move the offer forward to the end consumer. (3) Estimate the delays caused by their interdependence with their complementors (those adding to EIs innovation with their own innovations). (4) Estimate the delays caused by the adoption process and by the time it takes each intermediary to integrate EIs solution into its decisions, design cycle, products, and so forth (processing time). (5) Estimate the delays caused by the intermediaries' interdependence with their own complementors and the integration hurdles these intermediaries face in terms of adoption and processing delays. (6) On the basis of those estimates, EIs arrive at a time-to-market for their innovation. (7) After EIs have identified these delays (the interdependence and integration risks), they reassess their initial performance expectations and innovation strategy. If the expectations EIs set at the beginning of the process now seem unrealistic in light of the risks, then they consider their options for closing the expectation gap (for example, change their expectations, markets, partners, or strategy) (Adner, 2006).

### *5.1 Strategy in Ecosystems*

It should be noted, however, that crafting strategy in an ecosystem as mentioned above requires EIs to consider traditional questions in somewhat nontraditional ways. For example: (1) Where to compete. When ecosystem risks are high, markets are uncertain regardless of a firm's confidence in its own innovation. In prioritizing market opportunities, it becomes increasingly important to assess both the project and the system. A complete assessment may show that an opportunity with low internal risks and high external risks is inferior to one with the opposite risk profile. (2) When to compete. Development costs often rise exponentially when schedules are compressed. Such costs are justified when being first to market offers significant advantage. In an ecosystem, however, being ready with a component ahead of one's direct rivals may not confer any advantage if those complementors are not ready when one is. Correct expectations of innovation interdependence and value chain integration may lead EIs to slow their development cycle and, in doing so, both conserve their resources and benefit from opportunities to update their strategies over a longer time period. (3) How to compete. Operating in an ecosystem takes the issue of boundaries (determining which activities to undertake within the firm, which to undertake with partners, and which to take to the open market) to a new level of complexity. Therefore, beyond assessing incentives and capabilities, EIs also address the question of ecosystems leadership. This is because EIs face a choice between taking an active or a passive role in guiding ecosystem development. EIs understand if they lead an ecosystem, they will have a chance to tailor its development to their own strengths. However, EIs are also aware that attempting to take the leadership role carries its own risks: It often requires massive resource investments over long period of time before they find out whether the opportunity is real and whether they have managed to secure the orchestrator's role. Taking a less ambitious ecosystem role also requires new choices—which leadership

candidates to follow, how aggressively to commit, how to defend turf. In all cases, a clear understanding of the full ecosystem and its dynamics is critical for EIs successful strategy (Adner, 2006). Like an ecosystem, an open-market innovation plays a critical role in influencing an EI's external innovation processes. The section that follows discusses how EIs leverage their open-market innovation as a source of sustainable competitive advantage.

### *5.2 Leveraging Open-Market Innovation as a Critical Source of Competitive Advantage*

Research shows the conventional methods to spark corporate innovation are falling short and that global executives know the best ideas are not always coming out of their R&D labs. Studies also indicate that some of the fastest growing and most profitable industries are finding open-market innovation to be a critical new source of competitive advantage.

Open-market innovation is defined as an approach that uses tools such as licensing, joint ventures, and strategic alliances to bring the benefits of free trade to the flow of new ideas. By systematically opening their innovation borders to vendors, customers, and even competitors, businesses are increasing the import and export of novel ideas. As they do, they improve the speed, cost, and quality of innovation. What's more, open-market innovation lets firms set realistic market values for their internal ideas, helping them to better define their core business (Adner, 2006).

Why do EIs innovate with outsiders? Open-market innovation is fostered by several complementary business and technology trends and offers EIs four distinct advantages. First, importing new ideas is a good way to multiply the building blocks of innovation. If those responsible for innovation in EIs have more ideas to choose from and different kinds of expertise available to them, it can improve the cost, quality, and speed of innovation. Therefore, it should come as no surprise that companies that collaborate with outsiders on their R&D reap a higher percentage of their total sales from new products than companies that don't collaborate. The experience of Tetra Pak, one of the world's largest suppliers of packaging systems for milk, fruit juices, and other food products, exemplifies the wisdom of importing expertise (Hegell and Brown, 2005).

Second, exporting ideas is a good way for EIs to raise cash and keep talent. A case in point, in 1980, the market for patent licensing was about \$3 billion. Today, it is about \$110 billion and growing rapidly. IBM earns nearly \$2 billion a year in royalties from the patents it exports. But the money may be less important than what the patent exports signal to the organization: Act fast on promising ideas, or risk seeing them offered to outsiders, even competitors. Exporting ideas adds urgency to the innovative enterprise and improves motivation and loyalty among employees. Creative people are more likely to stay on board when they know their good ideas won't get buried but instead may find a home in the outside world. Similarly, BellSouth's faith in the power of exporting innovation runs so deep that it sells its technologies to competitors. Management decided to license its telecommunication technologies to maximize returns while creating industry standards that favor BellSouth's technology platform (Rigby and Zook, 2002).

Third, exporting ideas gives EIs a way to measure an innovation's real value and to ascertain whether further investment is warranted. As the flow of exports grows, EIs can look at their innovation initiatives through market-hardened eyes that often reveal where the business is headed and where the company holds advantages over its rivals. For instance, pharmaceutical company Eli Lilly offers licenses for some compounds under development, when the therapeutic and business value of the drugs is still unclear and the competition for the resources to develop new products is keen. Fourth, exporting and importing ideas helps EIs clarify what they do best. Companies often delude themselves into thinking that their core business is broader than it really is. A sustainable core must have economic advantages that will let the business produce something at lower cost, or with higher quality, than other companies in the open market can. When a company starts collecting actual market data about its capabilities relative to competitors, executives often discover that they are stronger in some areas and weaker in others than corporate lore had led them to believe.

An example is Boeing. When Boeing CEO Phil Condit took over in 1996, he urged his managers to increase the return on every R&D dollar by focusing more intently on innovations they could develop better than anyone else. As Boeing executives began testing what they could profitably buy, sell, and trade with others, they found that their true comparative advantage was not in manufacturing but in systems integration. That said, open-market innovation also seems to require formalized decision processes that demand outside data. Indeed, open-market innovation becomes part of a company's soul when nobody can approve a strategic plan or a budget without talking about what's going on in the outside world. Cargill is moving in that direction: The company has established a coordinated, three-tier approach that speeds up the decisions made about outside deals and alliances. Commitments at the scale of the Cargill Dow initiative are driven and managed from the top (Rigby and Zook, 2002).

In addition to working with their external partners, EIs also leverage their relationship with their customers to bring about innovation that add value to both parties. In the next section, the author analyzes this mutually beneficial relationship between EIs and their customers.

## **6. Leveraging Customers as Strategic Partners in Innovation**

Academic investigation suggests that a firm's ability to produce multiple product innovations in quick succession is critical in high-velocity environments (Brown and Eisenhardt, 1997). For this reason, EIs adopt external development strategies in order to avoid the time-consuming, path-dependent, and uncertain processes of internally accumulating capabilities for producing streams of innovation (Dierickx and Cool, 1989; Leonard-Barton, 1995). However, it is not important to note that outsourcing product development to an external partner, such as customers, does not eliminate EIs commitment to learning by doing—nor should it. What it does is make traditional product development better and faster for EIs—for two reasons. First, EIs can bypass the expensive and error-prone effort to understand customer needs in detail. Second, the trial-and-error cycles that inevitably occur during product development can progress much more quickly because the iterations will be performed solely by the customers.

However, developing the right tool kit for customers is hardly a simple matter. Specifically, tool kits must provide four important capabilities. First and most important, they must enable customers to complete a series of design cycles followed by learning by doing. Computer simulation, for example, allows customers to quickly try out ideas and design alternatives without having to manufacture the actual products. Below are five steps employed by EIs for turning customers into innovators. (1) They develop a user-friendly tool kit for customers. The tool kit must enable customers to run repeated trial-and-error experiments and tests rapidly and efficiently. The technology let customers work in a familiar design language, making it cheaper for customers to adopt EIs tool kit. The tool kit includes a library of standard design modules so customer can create complex custom designs rapidly. The technology is adapted to EIs production processes so that customer designs can be sent directly to EIs manufacturing operations without extensive tailoring. (2) EIs increase the flexibility of their production processes. Their manufacturing operations are retooled for fast, low-cost production of specialized designs developed by customers. (3) EIs carefully select the first customers to use the tool kit. The best prospects are customers that have a strong need for developing custom products quickly and frequently, have skilled engineers on staff, and have little experience with traditional customization services. These customers will likely stick with EIs when EIs are working out the system's bugs. (4) EIs evolve their tool kit continually and rapidly to satisfy their leading-edge customers. Customers at the forefront of technology will always push for improvements in EIs tool kit. Investments in such advancements pay off for EIs, because many of their customers will need for tomorrow what leading-edge customers desire today. (5) EIs adapt their business practices accordingly. Outsourcing product development to customers will require EIs to revamp their business models to profit from the shift. The change might, for instance, make it economically feasible for EIs to work with smaller, low-volume customers. Tool kits will fundamentally change EIs relationship with customers. Intense person-to-person contact during product development will, for example, be replaced by computer-to-computer interactions.

EIs prepare for these changes by implementing incentives to reduce resistance from their employees. A variety of EIs use this approach. For example, Bush Boake Allen (BBA), a global supplier of specialty flavors to companies like Nestle', has built a tool kit that enables it customers to develop their own flavors, which BBA then manufactures. In the materials field, GE provides customers with Web-based tools for designing better plastic products (Thomke and von Hippel, 2002). In the section below, the author discusses how EIs maintain their innovation edge with their customers.

### *6.1 Cementing Innovation Advantage with Customers*

EIs understand that they cannot successfully innovate and grow unless they systematically invest in customer R&D. In doing so, they must take both an offensive and a defensive approach. The offensive strategy has three phases: Establish a deep relationship with core customers, then extend the number of customers beyond the core, and, finally, stretch into new customer realms. The defensive strategy focuses on continually scanning for potential competitive disruptions (Selden and McMillan, 2006).

### *6.2 Moving Beyond Customer R&D*

Customer centricity is not just a slogan. It's a prerequisite for sustainable profitable growth. But it's the rare organization that understands what it means to be customer-centric, and true customer-centric innovation includes two additional efforts that both frame and go beyond the customer R&D endeavors. For this reason, one of the most important first steps EIs take, even before embarking on customer R&D, is to measure and manage customer profitability. For instance, EIs such as Tumi, a leading global marketer of high-end luggage and accessories, have tried to discern which customers are profitable and which aren't by fully allocating all invested capital and expenses

to individual customers. They do such analysis on a regular basis and make customer ROIC (return on invested capital) a central metric for business performance. EIs do so because it helps them get a solid idea of who their customers really are in the first place and where and why they make a profit or don't. Similarly, EIs such as Dell, Best Buy, Royal Bank of Canada have set up customer segment units led by individuals who are responsible and accountable for the financial performance and customer satisfaction of those segments. These EIs develop strategies for their segments and allocate resources with the goal of growing their markets and achieving a high customer return on invested capital from customer R&D (Selden and MacMillan, 2006). Dealing with customers and other external partners is not always easy. This is because each party has its strategic interest to protect. However, EIs use this partnership complexity to facilitate innovation. Below the author analyzes how EIs leverage partnership difficulty to accelerate innovation successfully.

### *6.3 Dealing with Partnership Difficulty to Accelerate Innovation*

Between enterprises there are often difficult problems that both parties have a stake in solving—the most important of which involve finding new ways to meet customer's needs. Different enterprises bring different perspectives and competencies to tackling a problem. And the potential for innovative solutions rises when people from diverse specializations interact. It should be noted, of course, that productive friction does not usually happen so naturally. It cannot be relied on to carry the day. This is because when people with different backgrounds, experiences, and skills set engage with one another on problems, misunderstandings arise, arguments occur, and time is consumed before resolution and learning take place. Too often, in fact, the friction becomes dysfunctional. Misunderstanding hardens into mistrust, and opposing sides focus on the distance that separates them rather than the common challenges they face. How then do EIs harness this potentially destructive force so as to accelerate learning, generate innovation, and build capabilities? Below are three strategies deployed by EIs for dealing with destructive forces:

First, EIs keep all eyes on the Prize. One thing that allows collaborating companies to move forward quickly is a shared sense of what must be achieved. In product development, productive friction is enhanced when teams have clear and aggressive performance targets but few, if any, constraints are imposed on how the product design might meet these targets. The more restrictions there are—for example, a specification that the product design must use certain components—the less room there is for problem solving and the greater the potential for dysfunctional friction. To make performance requirements tangible and immediate, EIs adopt a concept that is termed the “action points”: A specific product must be introduced, performance shortfall addressed, or operations breakdown resolved. In some way, concrete actions must be at stake. Otherwise, it is far too easy to produce abstract answers or perspectives that give the appearance of resolution but gloss over profound disagreements or misunderstandings.

Second, EIs leave the evolution of productive friction to the people involved. Productive friction ultimately depends on the people involved. If they don't have relevant specializations and diverse perspectives, their problem solving will be weakened, and they may not even be able to tackle the issues at hand. Yet different skill sets and experiences can create misunderstanding and undermine trust. Since time is usually at a premium, identifying and connecting with people who have relevant specialization is often a challenge. This is why, in some cases, local ecosystems are hotbeds of productive friction. But even then, specialized knowledge brokers may be required to determine who should be involved and to bring these people together. This challenge becomes even more acute in distributed operations like global process networks or dispersed field operations. Hence, to mobilize the right people, EIs use knowledge brokers who are well versed in the practices at hand. Even more fundamentally, knowledge brokers help bridge participants' knowledge gaps. This was the case at GaSonic, a developer and manufacturer of semiconductor-processing equipment. Back in 1999, GaSonic had acquired Branson, which made similar equipment. The two companies had perfected different approaches handling a certain stage of semiconductor manufacturing. Unfortunately, neither method could deliver the required performance as customers moved to new generation of semiconductor technology.

Each company's engineering team was determined to refine its own approach. Fierce battles broke out over which system should prevail. Dave Toole, the CEO of GaSonic at the time and an executive with extensive industry experience, was the knowledge broker. Recognizing that both sides were stuck on processes that just could not resolve the issues, Toole urged the teams to look at the problem from a new perspective and consider a two-part solution. This reframing helped the engineers discover that a hybrid approach could be used in the initial phase of processing. By intervening and reorienting the teams at a critical stage in their discussions, Toole was able to help them generate solution that built upon both sides' experiences. It was an important breakthrough because it facilitated the move to subsequent generations of semiconductor technology (Hagell and Brown, 2005).

Third, EIs Rub shoulders with the best. A firm's ability to generate productive friction with its suppliers and customers is a source of competitive advantage now—but over time; it will become a competitive necessity. Why?

Because specialization is the way of the world. As information technology makes it easier for companies to contract with outsiders for more and more of the business tasks that once needed to be performed in-house, organizations sharpen their focus on what it is they do uniquely well. Companies that hew to their old forms will truly find themselves jacks of all trades and masters of none—and this will cripple them in two ways. First, their own core strengths will fall increasingly short of world-class; second, they will not be availing themselves of world-class capability in peripheral functions. Meanwhile, for the companies that specialize, the name of the game will be capability building. Once they have chosen to focus their resources on a particular function, the imperative is to be the best—and to keep getting better at a faster rate than the competition. How will they accomplish this? Not in isolation, but through productive friction with other specialized players. For instance, EIs such as Dell is thinking along these lines, as can be seen in its approach to relationships with Taiwanese original design manufacturer (ODMs). When Dell uses ODMs, it works closely with them, sharing knowledge in formal meetings that occur throughout the product life cycle. These interactions are structured so Dell can systematically integrate its expertise with that of its suppliers and, in the process, build new capabilities (Hagell and Brown, 2005).

## 7. Concluding Remarks

For firms wishing to adopt the concept of ecosystem or open-market innovation, here are six steps to follow during the data collection and analysis process to support the initiative. First, management must start with the company's business objectives. Which activities will be central to the company's future and must be strengthened? Which are less critical? Second, management must analyze the company's innovation projects and categorize how those efforts support the main business objectives. Which innovation areas are core, adjacent, or distant? Where has the company's track record in open-market innovation tended to succeed or fail? Management must ask itself: "Were we the barrier to success? Why?" Third, management must map the hot spots for relevant innovation around the periphery of the business. Management must ask itself: "How many innovations burst on the scene from the periphery and surprised us?" Fourth, management must survey people inside the company about what they think are the barriers to innovation. Management must also do the same with important vendors and customers to gauge how working with your company compares to working with others. Management must ask itself: "Where are the main bottlenecks in the organization? Who can offer solutions?" Fifth, management must define, with numbers, the gap between what management expects the company to achieve with its innovation initiatives in the next three to five years and what it thinks competitors will achieve. How may key enabling technologies could be sourced more efficiently or effectively from outside of the company? Finally, management must identify the ten most important innovations in the company and in the industry in recent years. Understand the origins of these ideas. Management must ask itself: Could any open-market techniques have given the firm greater access to these external innovations?

Once a firm has conducted this kind of ecosystem or innovation audit, it can begin building the basic infrastructure for open-market innovation. It can set up systems for capturing and circulating ideas inside and outside the company. It can set up the rules for the innovations that are being imported and exported—which technologies will be imported or exported, for instance, and under what time frames will they be released? It can start licensing out and selling its ideas. Most important, a firm can measure and reward its progress with ecosystem or open-market innovation; common metrics might include the contribution of open-market innovations to revenues and profits and the time it takes to reach certain milestones (Rigby and Zook, 2002).

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