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Innovating for Cash

by James P. Andrew and Harold L. Sirkin

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A little over three decades ago, Bruce Henderson, the Boston Consulting Group's founder, warned managers, "The majority of products in most companies are cash traps. They will absorb more money forever than they will generate." His apprehensions were entirely justified. Most new products don't generate substantial financial returns despite companies' almost slavish worship of innovation. According to several studies, between five, and as many as nine, out of ten new products end up being financial failures. Even truly innovative products often don't make as much money as organizations invest in them. Apple Computer, for instance, stopped making the striking G4 Cube less than 12 months after its launch in July 2000 because the company was losing too much cash on the investment. In fact, many corporations make the lion's share of profits from only a handful of their products. In 2002, just 12 of Procter & Gamble's 250-odd brands generated half of its sales and an even bigger share of net profits.

Yet most corporations presume that they can boost profits by fostering creativity. During the innovation spree of the 1990s, for instance, a large number of companies set up new business incubators, floated venture capital funds, and nurtured intrapreneurs. Companies passionately searched for new ways to become more creative, believing that returns on innovation investments would shoot up if they generated more ideas. However, hot ideas and cool products, no matter how many a company comes up with, aren't enough to sustain success. "The fact that you can put a dozen inexperienced people in a room and conduct a brainstorming session that produces exciting new ideas shows how little relative importance ideas themselves actually have," wrote Harvard Business School professor Theodore Levitt in his 1963 HBR article "Creativity Is Not Enough." In fact, there's an important difference between being innovative and being an innovative enterprise: The former generates lots of ideas; the latter generates lots of cash.

For the past 15 years, we've worked with companies on their innovation programs and

commercialization practices. Based on that experience, we've spent the last two years analyzing more than 200 large (mainly *Fortune* Global 1000) corporations. The companies operate in a variety of industries, from steel to pharmaceuticals to software, and are headquartered mostly in developed economies like the United States, France, Germany, and Japan. Our study suggests there are three ways for a company to take a new product to market. Each of these innovation approaches, as we call them, influences the key drivers of the product's profitability differently and generates different financial returns for the company. The approach that a business uses to commercialize an innovation is therefore critical because it helps determine how much money the business will make from that product over the years. In fact, many ideas have failed to live up to their potential simply because businesses went about developing and commercializing them the wrong way.

Each of the three approaches has its own investment profile, profitability pattern, and risk profile as well as skill requirements. Most organizations are instinctively *integrators*: They manage all the steps needed to take a product to market. Organizations can also choose to be *orchestrators*: They focus on some parts of the commercialization process and depend on partners to manage the rest. Finally, companies can be *licensors*: They sell or license a new product to another organization that handles the rest of the commercialization process. In our study of the three approaches, we found that they can produce very different profit levels, with the best approach often yielding two or three times the profits of the least optimal approach for the same innovation.

In the following pages, we'll explore the strengths and weaknesses of each approach. We'll show how choosing the wrong one can lead to the failure of both innovation and innovator, as happened at Polaroid. We'll also describe how companies like Whirlpool have changed approaches to ensure that their innovations take off in the marketplace. Indeed, we'll demonstrate that a company's ability to use different innovation approaches may well be a source of competitive advantage.

Three Approaches to Innovation

First, let us explain in more detail what we mean by an innovation approach. It is, simply, a broad management framework that helps companies turn ideas into financial returns. Corporations use innovation approaches when launching new products or services, introducing improvements to products or services, or exploiting new business opportunities and disruptive technologies. The approaches are neither innovation strategies such as first mover and fast follower, nor ownership structures like joint ventures and strategic alliances, but they can be used alongside them. And they extend beyond processes such as new product development or product life cycle management but certainly incorporate them.

Many companies manage all the stages of the process by which they turn ideas into profits—what we call the innovation-to-cash chain. By being integrators and controlling each link in the chain, companies often assume they can reduce their chances of failure. Intel exemplifies the do-it-all-yourself approach. The $26 billion company invested $4 billion in semiconductor research in 2002, manufactured its products almost entirely at company-owned facilities, and managed the marketing, branding, and distribution of its chips. Intel has even introduced high-tech toys and PC cameras to stimulate demand for semiconductors. Most large companies believe that integration is the least risky innovation approach, partly because they are most familiar with it. But integration requires manufacturing expertise, marketing skills, and cross-functional cooperation to succeed. It also demands the most up-front investment of all the approaches and takes the most time to commercialize an innovation.

By comparison, the orchestrator approach usually requires less investment. Companies can draw on the assets or capabilities of partners, and the orchestrators' own assets and capabilities contribute to only part of the process. For example, Handspring (which recently agreed to merge with Palm) became one of the leaders in the personal digital assistant market, but its success depended on the company's relationships with IDEO, which helped design the devices, and Flextronics, which manufactured them. Companies often try the orchestrator approach when they want to launch products quickly or reduce investment costs. When Porsche, for instance, was unable to meet demand for the Boxster after its launch in 1997, it used Valmet in Finland to manufacture the coupe instead of setting up a new facility. But this ap-

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proach isn't easy to manage and can be riskier than integration. Organizations must be adept at managing projects across companies and skilled at developing partnerships. They must also know how to protect their intellectual property because the flow of information between partners increases the risk of knowledge theft and piracy. Most companies also find it difficult to focus only on areas where they can add value, hand over all other activities to partners, and still take responsibility for a product's success or failure, as orchestrators must.

Corporations are waking up to the potential of the third innovation approach, licensing. It is widely used in industries like biotech and information technology, where the pace of technological change is rapid and risks are high. For example, in 2002 Amgen earned $330 million and IBM, $351 million, from royalties of products and technologies they let other companies take to market. In other industries, companies have used licensing to profit from innovations that didn't fit with their strategies. Instead of worrying that they might be selling the next "big idea," smart licensors ask for equity stakes in the ventures that commercialize orphans. That lets the innovator retain an interest in the new product's future. For instance, in early 2003 GlaxoSmithKline transferred the patents, technology, and marketing rights for a new antibiotic to Affinium Pharmaceuticals in exchange for an equity stake and a seat on the board. Licensors may play a role only in the early stages of the innovation-to-cash cycle, but they need intellectual property management, legal, and negotiation capabilities in order to succeed. In addition, they must be hard-nosed enough to sell off innovations whenever it makes financial sense, despite the objections of employees who may be attached to the ideas they've developed.

Each of the three approaches entails a different level of investment, with the integrator usually being the highest, and the licensor being the lowest. Orchestration usually falls somewhere in between, but it often doesn't require much capital investment because the company's contribution is intangible (brand management skills, for example). Since capital requirements differ, the cash flows, risks, and returns vary from approach to approach. Companies must analyze all those elements when planning the development of new products. Doing so can improve a project's economics by changing the way managers plan to take the product to market. Executives gain not only better financial insights but also a greater understanding of the key trade-offs involved when they analyze all three approaches.

Too often, however, companies find themselves wedded to one approach, usually out of sheer habit. The old favorite appears less risky because companies have become comfortable with it. Moreover, we've found that many companies don't know enough about all the approaches or how to weigh their advantages and disadvantages. Because no one likes to "give away part of the margin"—a complaint we hear often—the orchestrator and licensor approaches are evaluated in the most cursory fashion, if at all. Indeed, the choice of innovation approach isn't even built into the decision-making processes of most companies. That can lead to the failure of a new product, and also the company itself—as Polaroid found when it entered the digital photography market.

Polaroid's Mistake

Polaroid didn't lack the ideas, resources, or opportunities to succeed in the digital photography business. The world leader in instant photography for decades, the company had a great brand, brilliant engineers and scientists, and a large global marketing and distribution network. Polaroid wasn't caught unawares by the shift to digital photography; it was one of the first companies to start investing in the area, in the early 1980s. Nor did the corporation lose to faster-moving upstarts; it was beaten by old, well-established foes like Kodak and Sony. So what went wrong?

Polaroid had enjoyed a near monopoly in instant photography, but it sensed early that the digital photography market would be different. The company would face intense competition not just from traditional photography companies but also from consumer electronics giants and computer manufacturers. However, it didn't realize how accustomed its engineers were to long product development cycles as well as 20-year patent protection. Similarly, Polaroid's manufacturing processes were vertically integrated, with the company making almost everything itself. But Polaroid's manufacturing skills wouldn't be of much help in the digital market, where Moore's Law governed the costs and capabilities of a key new component, computer chips. In addition, the

company's expertise lay in optics, perception, and film technology—not electronic digital signal processing, software, and storage technologies. As a result, Polaroid had to invest heavily to establish itself in the digital-imaging market.

Still, Polaroid chose to enter the digital space as an integrator. The company used the output of in-house research to manufacture its own high-quality, new-to-the-world products—just as it had always done. But Polaroid's first digital offerings were expensive and didn't catch on. For instance, Helios, a digital laser-imaging system meant to replace conventional X-ray printing, consumed several hundred million dollars in investment but never became successful. Launched in 1993, the business was sold by 1996, the year Polaroid launched its first digital camera, the PDC-2000. Technically sophisticated, the PDC-2000 was targeted mainly at commercial photographers but was also intended as a platform for entering the consumer market. However, the PDC-2000 retailed for between $2,995 and $4,995, when other digital cameras were available for well below $1,000. In fact, Polaroid's real thrust into the consumer market didn't start until late 1997—five years after its rivals' products had shipped.

Polaroid could have leveraged its advantages differently. It could have focused its research and budgets on key digital technologies, outsourced the manufacturing of digital cameras to other companies, and licensed its image-processing software to third parties. That would have allowed it to offer high-quality digital cameras at inexpensive prices. Since the brand was still powerful, and the company enjoyed good relationships with retailers, commercial customers, and consumers, Polaroid could have carved out a strong position for itself in the marketplace—without having to invest so heavily. Instead, the approach Polaroid chose resulted in its digital cameras being too slow to market and too expensive for consumers.

By the time Polaroid realized its mistake, it was too late. The company discontinued the PDC-2000 in 1998 and turned into an orchestrator. For the first time in its history, the company outsourced the manufacturing of digital cameras to companies in Taiwan, added some cosmetic features, and sold them under its brand name. Polaroid was the first to sell digital cameras through Wal-Mart, and its market share jumped from 0.1% of the U.S. market in 1999 to 10.4% by 2000. However, the company couldn't command premium prices with a brand that several others had overtaken by then. Trapped by declining instant-film sales, an inability to generate sufficient profits from the digital business, and rising demands for investment in technology, the company ran out of time. Relying on the wrong innovation approach proved fatal for Polaroid, which finally filed for Chapter 11 bankruptcy court protection in October 2001.

Choosing the Right Tack

We don't have a "black box" that helps managers choose the most effective innovation approach. The selection process entails a systematic analysis of three dimensions of the opportunity: the industry, the innovation, and the risks. That may sound familiar, but we find that most companies base their commercialization decisions on fragmented and partial evaluations of these factors. Managers make assumptions—"We are as low cost as any supplier can be"—and fail to explore consequences—"We'll be the leader even if we're late to market." Only a rigorous three-pronged analysis captures what's unique and important about the innovation and points to the approach that will maximize a company's profits.

The Industry. A company has to take into account the structure of the industry it's trying to enter, particularly if the industry is unfamiliar to the company. Four factors, we find, should be analyzed when thinking about an industry and the choice of approach:

- The physical assets needed to enter the industry. (For example, will we need to invest heavily in factories?)
- The nature of the supply chain. (Are partners mature or unsophisticated? Are they tied to rivals?)
- The importance of brands. (Will our brand provide a permanent or temporary advantage?)
- The intensity of rivalry. (What strategies will rivals use to respond to our entry?)

The exact metrics that executives use for the analysis are often less important than the direction they suggest. If a company needs to invest heavily in physical assets, partner maturity levels are low, and rivals will probably use standard weapons to fight back, the integrator approach may be a good fit. That's why most

companies in the white goods industry, like Maytag and Whirlpool, are integrators. However, if the supplier base is sophisticated, rivalry will be intense, and the value attributed to brands is high, the orchestrator approach may be best in order to share both risks and investments. Players in the computer hardware and consumer electronics industries, like Cisco and Sony, tend to be orchestrators.

The Innovation. The characteristics of an innovation play a central role in the choice of approach—a realization that surprises most managers. For instance, it's very important to look at the product's potential life cycle in order to figure out the window available to recoup investments. Disk-drive makers like Western Digital have only six to nine months before the next set of technological advances spell the end of their products. Such companies prefer to be orchestrators and work with many partners to keep incorporating the latest technologies into products.

If the product is a radical breakthrough rather than an incremental innovation, it will require additional resources for both educating the market and ramping up production quickly when demand takes off. When TiVo launched digital video recorders in 1999, for example, it realized that large investments would be necessary to communicate the product's benefits to customers. So the start-up focused its efforts on growing the market and handed off the manufacturing of the product. Later, TiVo even licensed the technology to Sony and Toshiba in order to drive adoption while it continued to use its resources to educate consumers.

Other innovation characteristics to consider are a product's complements and infrastructure. For example, U.S. automakers are racing to develop hydrogen-based engines, but it isn't clear who will build the hydrogen fuel stations (the complements) and transmission networks (the infrastructure) that will also be needed. If the Big Three don't factor that into their innovation approaches, they may spend too much time and money developing everything on their own, or they may enter the market with a technology that no one can use. What else is required, and when, needs to be factored into the choice of an approach. It's also important to note that as long as an innovation enjoys patent protection, a company will gravitate to-

Which Model Works for You?

Integrator

Description

Manage all the steps necessary to generate profits from an idea.

Investment requirements

High. Capital may be needed to set up new manufacturing facilities, for instance.

Capability requirements

- Strong cross-functional links within organization
- Product design
- Manufacturing-process design skills
- Technical talent sourcing

Best used when

- speed-to-market is not critical.
- technology is proven.
- customer tastes are stable.
- innovation is incremental.

Orchestrator

Description

Focus on some steps and link with partners to carry out the rest.

Investment requirements

Medium. Capital may be needed only to market the product, for example.

Capability requirements

- Ability to collaborate with several partners simultaneously, while not having direct control
- Complex project-management skills
- Customer insight
- Brand management
- Culture that can let go of certain areas, while focusing on core competencies
- Ability to move quickly; nimbleness

Best used when

- there is a mature supplier/partner base.
- there is intense competition—a need for constant innovation.
- strong substitutes exist.
- technology is in early stages.

Licensor

Description

License the innovation to another company to take it to market.

Investment requirements

Low. Manufacturing and marketing expenses are borne by other companies.

Capability requirements

- Intellectual-property management skills
- Basic research capabilities
- Contracting skills
- Ability to influence standards

Best used when

- there is strong intellectual property protection.
- importance of innovator's brand is low.
- market is new to the innovator.
- significant infrastructure is needed but not yet developed.

ward the integrator approach because competitive pressures won't be seen as so critical.

Callaway's Big Bertha golf club illustrates how important the nature of the innovation is to picking an approach. While Big Bertha wasn't a true breakthrough because it wasn't the first oversized golf club, it did offer several patented features, including a design that eliminated most of the weight from the club shaft, and, most important, better performance. It was different enough for founder Ely Callaway not to license the design or market the product through another company. So to bring Big Bertha to market, he built the brand, the manufacturing capability, the sales and marketing infrastructure, and a research department. Callaway Golf became a leader in golf clubs, balls, and sportswear, all built by the integrator approach on the back of Big Bertha's success.

Risks. There are four risks a company should be particularly mindful of when deciding which innovation approach to use. The first risk is whether the innovation will work in a technical sense. Can the new product actually deliver the improved performance it promises? If Callaway had doubted Big Bertha's ability to deliver the terrific performance improvement it promised, it might have made more sense for the company to license the unusual design for a small royalty. The second risk is that customers may not buy the new product even if it works. The incremental improvement or the breakthrough may not be exciting enough for customers, and they may not bite. For instance, people are waiting longer than before to buy PCs because they don't see enough of a difference between old and new models.

The third risk comes from substitutes, whose availability shrinks margins. Even pharmaceutical companies with patented products face competition from rival drugs with similar benefits. For instance, Merck's Mevacor was the first in a new class of cholesterol-lowering drugs, called statins, to gain FDA approval in 1987. But Bristol-Myers Squibb's Pravachol and Merck's own Zocor arrived in 1991, and Pfizer's Lipitor followed in 1997. Mevacor's 20-year patent couldn't insulate it from competition for more than four years.

Finally, the innovation's risk profile will also be influenced by the investment that the company needs to commercialize it. Some products, clearly, are more expensive to bring to market than others are (jet aircraft versus industrial fasteners, for instance).

By analyzing all four risk factors, managers can decide early on if the company should favor an approach that passes on some of the risks—and rewards—to other companies. We must warn, though, that unwarranted optimism seeps in at this stage because the innovation's backers want it to succeed and almost everyone in the company will want to do it all in-house.

Managers must take great care not to focus on any one dimension but instead to consider the composite picture that the analysis offers. Such a broad perspective will align the innovation's requirements for commercial success with marketplace conditions. At the same time, picking the right approach is not a mechanical process. Each business opportunity is different, and the choice of approach is often a judgment call.

In general, the integrator approach generates the greatest level of returns in situations where conditions are relatively stable: an existing market, well-understood customer tastes, proven technology, and relatively long product life cycles, for example. In addition, the approach tends to work best for companies that have strong market positions and have already made the investments that are needed to commercialize innovations. The orchestrator approach usually works best in situations where a company has developed a breakthrough innovation that is a step removed from its core business, where there are several capable suppliers and potential partners, and where time to market is critical. And the licensor model makes sense when the market is new to the company, when strong intellectual property protection for the innovation is possible, when there is a need for complements or infrastructure to the new product, and when the innovator's brand isn't critical for success.

Sometimes, companies won't be able to use their preferred innovation approach because competitors have preempted their first choice. For instance, when Microsoft decided to enter the video game industry with its software, its best option was licensing its products. However, the company couldn't take that route because Sony and Nintendo dominated the video game market. They had already developed their own software, and they didn't want to risk becoming too dependent on Microsoft's oper-

ating system. So the high-tech giant became an orchestrator instead of a licensor: Flextronics assembles the consoles while Microsoft focuses on winning over game developers and marketing its entry, the Xbox. The company loses money on every console it sells, but it loses less by being an orchestrator than it would have as an integrator. Moreover, Microsoft is gaining a toehold in a market that it wants to be in for strategic reasons.

Getting a sense of which innovation approach is best for an opportunity is not enough; managers must also gauge which approach will fit best with a company's internal skills. To successfully commercialize the product, the company's capabilities—those it has or can muster quickly—must match the requirements of the approach. Executives will need to honestly assess the company's starting position and how it can win in the industry. If an integrator approach is called for, does the company have the financial, human, and physical assets necessary to ramp up production quickly? If it has to be an orchestrator, is the company skilled at managing projects across several different organizations? If it must be a licensor, does the organization have the ability to protect intellectual property and to structure the right long-term deal? Companies should match their skills with the demands of the approaches only after they have evaluated all three models; otherwise, the capabilities overtake the decision, and companies often end up using their favorite approach instead of the most effective one.

If there isn't a good match between the organization and the approach, or the company can't use the desired approach, managers have two options. They can use a less-attractive approach to take the product to market. Or, they can invest time and money to develop the skills needed for the optimum approach. Companies will often start with the less-attractive approach as they build the capabilities to move to the optimum one. Switching to an unfamiliar approach is hard because companies have to learn to operate outside their comfort zones. But it isn't impossible, as companies like Whirlpool have shown.

How Whirlpool Changed Its Approach

In early 2001, a group of sales and marketing employees at Whirlpool came up with the idea of creating a line of appliances and storage systems for the garage. It was an intriguing opportunity because it targeted both a new "room" in the house as well as a new demographic for the company: men rather than women. The company thought that some products, like the wall rack system, had elements that the company could patent. (For more on how Whirlpool builds a pipeline of innovative ideas, see the article "The Quest for Resilience," in the September 2003 HBR.) But establishing a strong brand position, securing floor space at retailers, and learning how consumers bought, installed, and used the products were going to be equally important to the product's success.

The team was told to commercialize the series of innovations, dubbed the Gladiator line, as inexpensively as possible because money was tight, and no one knew how big the market would be. Most people at Whirlpool took it for granted that the Gladiator team would develop the new products using the integrator model, as the company had always done. But CEO David Whitwam had given the team the freedom to commercialize the new line the way it wanted to, even if that meant a radical departure from company practices.

In September 2001, based on consumer research, the project received $2 million in funding. But the funding came with a caveat: If Gladiator couldn't show revenues, customers, and a product line by the end of 2002, the project would be shelved. Compounding the problem, the project team realized that they would need a full line of products at launch; otherwise, consumers would not understand the idea that the system would "transform the garage." A full line would also extend the time Whirlpool could command premium prices because the competition would find it harder to duplicate the product line.

The Gladiator team also realized that Whirlpool's traditional approach of in-house design and manufacturing would take more time and money than it had at its disposal. So the team outsourced the manufacturing of everything except the appliances—a move that met with resistance in other parts of the company. Whirlpool plants asked the Gladiator team why components were being made by vendors when they themselves could do it more cheaply. But the fact was, they couldn't deliver the same cost, quality, and turnaround times. The Gladiator team also tried working with suppliers

who were new to Whirlpool in order to save money. For example, it sourced tooling from a supplier that delivered it at one-third the cost and one-third the time of the company's current suppliers. Similarly, the team utilized the design capabilities of several suppliers in order to save time.

Despite using an innovation approach that was new to Whirlpool, the Gladiator team pulled off the project. The company tested the products in a few Lowe's stores in Charlotte, North Carolina, in the fall of 2002, and they are currently being rolled out nationally. Getting the products to market in just over a year from the time the project was funded was fast in the appliances industry, where it normally takes three to five years to launch new products. Whirlpool reports that the products have exceeded expectations. Moreover, the project has taught Whirlpool how to be an orchestrator, with the Gladiator team transferring those skills to the company's units all over the world.

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Innovation is high on the agenda of every company. It is the subject of countless articles and speeches and the rationale behind scores of mergers and acquisitions. It lies at the very heart of growth strategy. However, companies in every industry struggle with a litany of problems in commercializing innovations: poorly conceived products that fail to meet customer needs, development processes that are too slow or expensive or both, launches that are delayed or ineffective, and even cannibalization of existing products. Whirlpool demonstrates what is possible when companies examine the entire innovation-to-cash process and not merely the individual pieces of it. The key is to determine which innovation approach is most appropriate for an opportunity. The result is a company that is able to turn ideas into cash. That's critical because, unless companies can make money from it, innovation is just another expense.

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