Companies can build stronger business models if they assess their own capabilities and the context for a co-development partnership.

Henry Chesbrough and Kevin Schwartz

OVERVIEW: Business model innovation is vital to sustaining open innovation. External technology partnerships allow open business models to accomplish even more. One important mechanism for innovating one's business model is through establishing co-development relationships. The proper character of these relationships varies, depending on the context for the relationship. To sustain co-development relationships, one must carefully define the business objectives and align the business models of each firm. One should also determine whether the various R&D capabilities are core, critical or contextual. The decision to partner externally will have different implications for each of these.

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Co-development partnerships are an increasingly effective means of innovating the business model to improve innovation effectiveness. These partnerships embody a mutual working relationship between two or more parties aimed at creating and delivering a new product, technology or service. The potential for business model innovation via co-development is significant. Traditional business models center around the idea of developing a product from internal technology (R&D) and then producing, marketing and selling that product oneself. The use of partners in the research and/or development of a new product or service creates business model options that can significantly reduce R&D expense, expand innovation output, and open up new markets that may otherwise have been inaccessible (4).

Millennium Pharmaceuticals is an example of a company that from its inception built its entire business model around co-development. When Millennium was created, its founders realized that they did not have the capital and scale to take multiple new drugs through the 10-year or more development process required in order...
to gain Food and Drug Administration approval. So, they focused on the early portions of drug development only and partnered with larger firms such as Pfizer and Merck to handle the later stages of drug development (e.g., clinical trials and commercialization). Hence, Millennium’s early business model became one of technology licensing rather than selling drugs to consumers. As it grew, however, it was able to evolve its business model and eventually become a direct (and successful) competitor with its former partners in the full drug development business, leveraging new co-development relationships for other parts of its business (4).

As Millennium (and many others) have demonstrated, when well conceived and well managed, co-development (or co-dev, hereafter) can increase the return from internal R&D, by leveraging the capabilities of a partner firm. However, such partnerships can also pose significant hazards and may doom a business model to failure if they are poorly designed or implemented.

**Designing the Effective Model**

The first requirement for designing a business model that leverages co-development partnerships is to define the business objectives for partnering. Table 1 lists five possible objectives, and then shows some potential implications of those objectives for the initial design of how to utilize co-dev partners.

Note that key dimensions of the co-dev design vary, depending upon the business objective. This is very important, because the appropriate relationship for one kind of objective may lead to a design that is poorly matched to the requirements to achieve a different objective. A pharmaceutical company such as Merck, worrying about how to compete with a generics maker after its drug goes off patent, needs to establish a very different co-dev partnership model than a pharma company such as Pfizer seeking a way to bring inhalable insulin (a new form of drug delivery) to the diabetes market.

**Classifying R&D**

A second analysis to be performed in formulating effective co-dev structures is to classify the various R&D capabilities of the firm into three discrete categories: core, critical and contextual. While all three may be required to deliver a new offering to the market, the decision to partner externally has very different implications in each of the three areas, and imposes different requirements for managing the partnerships.

**Core** capabilities are the key sources of a company’s distinctive advantages and value added. They comprise the key assets to be leveraged in any co-dev deal. They must be managed closely and shared only sparingly. Creating a business model that involves co-development of core elements of a company’s product or service offering can be a risky venture, and should generally be undertaken only after an extensive strategic analysis.

An example of co-dev in the “core” gone wrong is the classic case of IBM’s partnership deal to develop its personal computer operating system with a small software startup called Microsoft. On the other hand, some companies have made co-dev of core capabilities a successful element of their business models. Cisco, for example, often works with external partners that have new technologies that are viewed as being of core interest to Cisco. To protect itself, however, Cisco generally does core co-dev partnerships only with smaller companies and will often cement such partnership arrangements with an equity investment or eventually an outright acquisition.

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<th>Objective</th>
<th>Business Requirement</th>
<th>Implication for Co-dev Design</th>
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<tbody>
<tr>
<td>Increase profitability</td>
<td>Lower cost</td>
<td>Increase volume to spread fixed costs; partner for less-critical components</td>
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<tr>
<td>Shorten time to market</td>
<td>Incorporate already-developed components or subsystems</td>
<td>Seek partners with proven capabilities</td>
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<td>Enhance innovation capability</td>
<td>Increase the number and variety of front-end technologies</td>
<td>Create strategic research partnerships with universities, research labs</td>
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<td>Create greater flexibility in R&amp;D</td>
<td>Share risks with partners</td>
<td>Develop research partnerships in bottleneck areas</td>
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<td>Expand market access</td>
<td>Broaden the pathways to market for products and services</td>
<td>Leverage partner’s complementary R&amp;D to tailor offerings for new markets</td>
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Critical capabilities are those that are vital to the success of the complete product or service offering in the marketplace, but are not core capabilities of the firm. These are the capabilities that lend themselves most easily to co-dev arrangements. Pfizer's partnership with Nektar, for example, brought new drug development capabilities that allowed Pfizer to expand the diabetes market with a form of insulin that does not require painful injections, but could be inhaled instead. Pfizer is not (and does not intend to be) the world's expert at developing delivery mechanisms such as the inhalable formulation, but this capability was critical to the business opportunity in diabetes and hence presented a prime opportunity for co-development. By making this type of co-dev arrangement a well-understood part of its business model, a company can dramatically expand the value proposition of its offerings to customers without the need for a commensurate increase in R&D investment.

Contextual capabilities are capabilities needed to complete the offering, but provide little of the differentiation or value added for the business. However, what is contextual for one firm (Pfizer) may be core for a possible co-dev partner (Nektar). In such cases, it is more effective to leverage the management focus and expertise of a core firm that possesses such capabilities than it is to try to develop and manage them (inevitably with less focus and scale) internally.

Table 2 illustrates how these three different types of capabilities influence the co-dev design that a company should create.

Business models can be structured to successfully utilize co-dev partnerships in any one of these areas or in all three. Microsoft, for instance, has co-dev partners in all three categories. Companies like Intel provide core complementary microprocessor technology for Microsoft's software. Employees from both companies are co-located at the other company, and there is intensive and extensive ongoing data sharing and problem solving. Microsoft's OEM customers, such as Dell and HP/Compaq, provide critical capabilities in the form of the machines that run the software. New generations of these machines require close cooperation with Microsoft. And Microsoft has more than 70,000 independent software vendors (ISVs) that provide contextual capabilities. Microsoft interacts with these ISVs in fairly standardized ways, through authorization programs, software development kits, co-marketing programs, and the like.

Business Model Alignment

Earlier, we alluded to the potential hazards of co-dev arrangements. One source of potential problems is a mis-assessment of the business objectives for the co-dev partnership, or misjudging how critical a particular capability is to the overall success of the company or its product/service offering. Another important source of concern is the potential lack of alignment between the business models of co-dev partners.

While there are other items to assess, already noted above, in designing a co-dev relationship and choosing partners, one fundamental analysis is to determine the extent to which your business model is aligned with that of your co-dev partner(s). Aligned business models are complementary; if you execute your model well, your partner will benefit, and vice versa. Such alignment increases the chances that the co-dev partnership can be sustained over time.

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**Table 2.---Co-Dev Partnerships in Relation to Required R&D Capabilities**

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<tr>
<th>Partnership Attributes</th>
<th>Core</th>
<th>Critical</th>
<th>Contextual</th>
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<tr>
<td>Partner role</td>
<td>Vital; utilize in-house R&amp;D or very select strategic partners</td>
<td>Important, but not core to overall business (may be core to partner)</td>
<td>Necessary but not value adding; develop multiple sources of capability</td>
</tr>
<tr>
<td>Number of partners</td>
<td>None or very few</td>
<td>Small number</td>
<td>Safety in numbers</td>
</tr>
<tr>
<td>Depth of co-dev relationship</td>
<td>Deep</td>
<td>Medium</td>
<td>Low</td>
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<tr>
<td>Contingency plan (if things don't go as planned)</td>
<td>Best to develop yourself; recruit strategic R&amp;D suppliers if needed</td>
<td>Partner on a win-win basis; align business models; go in-house only as last resort</td>
<td>Switch to another partner if one partner is not performing</td>
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sustained over time and perhaps even expanded, as we explain in the next section.

In other cases, though, a company that executes its model well may undercut the business model of a co-dev partner. When Go Corporation created its pen-based operating system for computers back in the early 1990s, it needed to attract some critical capabilities from third-party software developers. They were needed to develop the applications that would harness the pen interface and make it valuable for customers.

One applications developer that Go approached was Microsoft (5). Because Microsoft had industry-leading applications on both the PC and the Mac computer systems, Go realized that getting Microsoft to commit to providing applications for the Go operating system would provide a significant boost to the company. Consequently, Go’s business model would benefit greatly from Microsoft’s support.

What Go didn’t consider carefully enough, though, was that its successful execution of its business model would represent a direct threat to the business model of Microsoft’s Windows operating system. A third PC operating system would create higher costs for all software developers, who would now have to choose between three PC operating environments (Windows, Mac, Go) instead of two. And if Go were to gain significant market share, that could further weaken the commitment of ISVs to Windows.

With the benefit of hindsight, Microsoft’s business model was fundamentally not aligned with that of Go. As it happened, Microsoft chose to challenge Go with its own version of a pen-based operating system. That froze other ISVs, who sat on the fence rather than risk supporting the “wrong” operating system. That delayed the emergence of the pen-based applications, which diminished the market for pen-based computing and forced Go to go out of business.

P&G Aligns Its Business Model with Clorox

A superb example of mutually aligned business models comes from P&G and its equity joint venture with one of its oldest competitors, Clorox. Clorox had acquired the Glad brand from SC Johnson (for baggies, food wrap, trash bags, and such products), but it soon realized that its business model would need some new technology to differentiate itself in the market (6).

Without some new technology to differentiate itself, the Glad brand faced the risk of commoditization in its markets. As it turned out, P&G had two internal technologies in its labs that would create meaningful differentiation; these were its Press ’n Seal and Force Flex technologies. These ideas had even been taken into a local market test by P&G, where they rose to Number 1 in the categories of baggies and garbage can liners. However, exploiting this technology would require extensive investment to develop, launch and gain distribution for a new brand at P&G, at a time when the company was experiencing some financial difficulty.

Instead of burying these technologies and waiting for better times, P&G sought out potential partners, and soon identified Clorox as a candidate to be a business partner. When it ran the numbers on the alternative ways to commercialize its technology, the Clorox deal trumped the internal approach, in part because it did not require P&G to spend the up-front money required to gain distribution for that new brand.

But there were significant hazards to be considered. Clorox and P&G were long-time competitors. What if P&G licensed its two technologies to Clorox, and Clorox didn’t do much with them? There were also risks from Clorox’s standpoint. The companies needed not just a legal license to use the technologies, but also needed access to the people who created those technologies.

Accessing their know-how was critical for Clorox to get these technologies embedded in its products, and getting them ramped up in manufacturing. So there were big risks on both sides to take into account.

After months of careful investigation and planning, the two companies created a joint venture in January, 2003, in which Clorox held 80 percent, P&G received 10 percent and held an option to obtain another 10 percent. This equity-based model went a long way toward aligning the business models of the two participants. Clorox would fully utilize the technologies because it owned the lion’s share of the venture, and so wanted to make as much money as possible. P&G was motivated to provide its people and know-how to help Clorox master the technology, in part because P&G had a meaningful stake at the outset and the ability to expand that stake if it wished.

In the event, the venture performed so well that P&G did exercise its additional 10 percent option in January, 2005, at the price of $133 million (7). Subsequently, Clorox has approached P&G to take some of its brands into other parts of the world, such as Japan, where P&G has strong distribution and Clorox does not.

This follow-on business opportunity was never envisioned when the two companies first started talking, nor was it part of the financial modeling that led P&G to work with Clorox. Yet this opportunity fits a larger
Implementing Co-Development Partnerships

1. Define your business objective (see Table 1).
2. Assess the capabilities you require (see Table 2).
3. Determine the degree of business model alignment with partner.
4. In managing the partnership, think of future collaborations—not just the current need.

pattern that Jeff Weedman, P&G VP, External Business Development, refers to as “Weedman’s Corollary” to Moore’s Law:

The second deal takes 1/2 the time of the first deal. The third deal takes 1/3 of the time, and so on. And the subsequent deals are not only faster, they tend to be more profitable (3).

An implication of Weedman’s observation is that you don’t get to do the second or third deal unless you have done the first one.

Weedman’s corollary means that P&G doesn’t simply maximize the value of the initial transaction, precisely because it wants the opportunity to pursue later deals. Gil Cloyd, P&G’s CTO, puts it this way:

We are getting very interested in how to build better collaborations with others. We have used customer creation teams for many years with key customers, in some cases going back to the 1980s. This is not easy to do, however, because there are tensions that arise in who owns what IP. The best partnerships require both sides to make accommodations in order for the potential from the collaboration to be realized (3).

As Cloyd’s comment reveals, P&G is playing for the long run, and now approaches its partnerships in more open and creative ways. By focusing on alignment with its co-dev partners, P&G is benefiting from sustained collaborations, and discovering new value creation opportunities that it previously did not know about.

Implications for Innovation

Every company has a network of relationships, ranging from its supply chain to its distribution system and its customers. But few companies in our experience take the time to articulate their own business model. Fewer have any clear idea about the business models of their external relationships. By assessing others’ business models, understanding one’s own business needs, and the degree of their alignment with one’s own business model, one can turn these relationships into more valuable co-development partnerships.

References and Notes

5. Kaplan, J. 1994. Startup: A Silicon Valley Adventure, Penguin Press. Our discussion of Go and Microsoft relies heavily on Jerrold Kaplan’s book. While Kaplan is hardly a disinterested observer, we cross-checked the basic facts with trade press articles from that period, and Kaplan’s assertions accord reasonably well with those articles. However, his account does not grapple with a fundamental problem in his business model: his company’s success required a key potential competitor (Microsoft) to ally with his business by agreeing to make application software. This was always destined to be a difficult challenge.
6. Up through the 1980s, Glad was owned by Union Carbide. In the 1990s, though, the brand was spun out into a consumer products firm, First Brands. First Brands was acquired by Clorox in 1999. In parallel, the Ziploc and Saran Wrap brands were sold by Dow to SC Johnson. So there was something of a pattern of chemical companies selling off consumer brands to consumer products companies.
7. For the announcement of P&G’s purchase of the additional 10% of the joint venture, see http://www.cloroxcompany.com/company/news/pr1215604-1.html (last accessed November 15, 2005). Other elements of this joint venture were described in interviews with P&G staff on October 20, 2005, and in a visit by Jeff Weedman to the first author’s class at Berkeley on May 5, 2005. A more complete description of this and other examples of business model alignment may be found in H. Chesbrough, Open Business Models: How to Thrive in the New Innovation Landscape (Harvard Business School Press, 2006).

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