BCG

The Boston Consulting Group

GETTING PHYSICAL

THE RISE OF HYBRID ECOSYSTEMS

By Martin Reeves, Daichi Ueda, and Claudio Chittaro

On June 16, 2017, Amazon surprised the business world by announcing that it would acquire Whole Foods for approximately $13.7 billion. The acquisition is Amazon's largest to date by far as well as a significant departure from its traditional strategy of growing businesses organically.

There has been much speculation about the strategic rationale behind this move. Some have referred to the overlap between the clientele of Amazon Prime and of Whole Foods, others to the value of a brick-and-mortar presence, and still others to the need for scale in building out grocery supply chains.[1]

Whatever the specific motivation for this transaction, we believe the acquisition is not an isolated occurrence but part of a broader trend: the shift from the largely digital ecosystems that dominate today to ones richly exploiting both the digital and the physical worlds. This shift signals opportunities not only for digital giants but also for physical incumbents to build new digital-physical ecosystems. Orchestrators of these hybrid ecosystems must follow some new principles and adopt a set of behaviors different from those that purely digital ecosystems require. The Japanese company Recruit offers a rich example of how to succeed in this new realm.

The Rise of the Digital Giants

Digital ecosystems—networks of companies and consumers that interact dynamically to create mutual value—have enabled some of the most profitable and most valuable business models that exist today.[2] Digital ecosystems create value primarily through the delivery of digital goods and services, using scalable digital platforms such as two-sided marketplaces. The five most valuable public companies in the US—Apple, Google, Microsoft, Facebook, and Amazon—are all orchestrators of digital ecosystems. This is a strong contrast with ten years ago, when Microsoft was the only digital player alongside four physical giants (Exxon Mobil, General Electric, AT&T, and Citigroup) in the top five.[3]

What has allowed digital ecosystems to become so dominant? The answer lies in a winner-take-all dynamic of competition, which allows winners to reach tremendous scale and build impregnable moats around their positions. Three sets of factors have contributed to this competitive dynamic:

- **Zero Marginal Costs and Positive Network Effects.** Successful digital ecosystem orchestrators offer a dominant service in their core category. Think of Google's search engine or Facebook's social network. Starting from this service, orchestrators have relied on virtually zero marginal production costs, network effects, and low barriers to geographical expansion (in the absence of protectionism) to grow their digital ecosystems to gigantic proportions. Digital marketplaces, like Amazon's, embody all these features: adding one or a thousand more products for sale comes at virtually no additional cost; the more people who use the marketplace, the more attractive it becomes; and digital goods can be delivered around the world at little extra cost.

- **Unprecedented Data Accumulation and Analysis.** Successful digital giants take advantage of the "data flywheel effect": as digital ecosystems grow, they accumulate more data, which then fuels improvements in services, thus stimulating further growth. Improvements in data processing and analysis, driven by cumulative experience, and the spreading of investment costs over large volumes of data, strengthen the advantage. The ability of digital giants to attract and develop digital talent in areas of short supply, like machine learning and data engineering, reinforces the virtuous circle even more.

- **Seamless and Comprehensive Digital Experience.** Finally, once they reach a certain scale, digital ecosystems can become even bigger by providing a seamless experience for users, giving them the ability to satisfy multiple needs on a single platform. Digital winners manage to build comprehensive ecosystems, including a wide variety of service providers, to this end. By reducing the incentive for users to leave the platform, these ecosystems are able to capture most of their attention, time, and value. The most salient example of the one-stop digital ecosystem so far is the Chinese app WeChat (which combines the functionalities of Amazon, Facebook, Instagram, Twitter, Yelp, and others), but all US digital ecosystem orchestrators are moving in this direction.

Orchestrators of digital ecosystems have all focused on exploiting this winner-take-all dynamic to establish dominant positions. Nondigital players, by contrast, lacking the kind of advantages noted above, have mostly not succeeded in building digital ecosystems. Consider the fate of Sears, which in the early 2010s invested heavily in an e-commerce business that would complement its traditional brick-and-mortar business. In the end, Sears's digital business failed to achieve the necessary scale, and this, coupled with a sales decline in the neglected core business, led to a loss of more than 75% of market value for the company.[4]

The Digital-Physical Intersection

So far, the winning model has been the giant digital ecosystem, which uses physical assets only as complementary infrastructure to provide services to customers (such as Amazon's warehouses) or to create a platform to better interact with them (Apple's flagship stores). However, we are now starting to see a new dynamic: increasing attempts to create ecosystems spanning and engaging deeply with both the digital and the physical worlds. We see this across all types of players: digital natives, physical incumbents, and newcomers.

Consider a few examples in the digital space. Beyond the acquisition of Whole Foods, Amazon is also building physical channels to connect with customers, such as Amazon Go and Amazon Books. At the same time, Etsy has entered physical re-

tailing with its partnership with Macy's. Snap has not only launched digital spectacles but also, ahead of its IPO, has shifted its mission away from the purely digital to the intersection of the digital and the physical, calling itself a "camera company." In the words of Alibaba Group CEO Daniel Zhang, such shifts are happening because "today, we always say we cannot separate online and offline.… So it's about making the experience better" by combining the two in new ways.

Traditional players have not remained idle. GE has embraced the Internet of Things by launching Predix, a cloud-based platform that connects with industrial machines and analyzes their data to improve performance. Siemens has followed the same route with MindSphere, another cloud-based platform that, among other achievements, helped Amtrak reduce delays by 33% in 2016. Finally, newcomers are increasingly placing themselves at the intersection of the physical and the digital, rather than choosing one or the other. Using AI products as a wedge to establish platforms in the physical word, companies like Opendoor, Blue River Technology, and Prodea are looking to become orchestrators of digital-physical ecosystems in residential real estate, agriculture, and IoT, respectively.

Attempts to create ecosystems at the digital-physical intersection are becoming more and more widespread. Three main factors are behind this phenomenon.

- **New Frontiers and Unexploited Opportunities.** The size of the physical economy remains enormous. It is difficult to measure with precision, but, according to a recent BCG estimate, the digital economy still accounts for only 8% of the world's economic activity.[5] As parts of the purely digital economy mature, battles will increasingly be fought in the physical realm.

- **More Connected Hardware.** The border between the digital world and the physical world has become blurred. Robotics, drones, 3D printing, and the like have enabled digital technology to encroach on industries that could not have been entered with software alone. More and more parts of the physical economy are now connected to the digital realm. Logistics, manufacturing, agriculture, real estate, and other industries are starting to reorganize because their assets are becoming more connected and digitally tractable.

- **More Real-World Data.** The increase in connected hardware is also enabling the real world to catch up with the digital sphere in the availability of data. The more brick-and-mortar businesses that are connected to the cloud, the more widespread sensors become; and the more people who live in smart houses, the more the physical world will become an environment where digitally skilled players can thrive. In other words, the real word is becoming more and more digitized. The "data flywheel" is starting to affect physical business, and its impact is going to be felt across sectors.

This new environment is fertile ground for the birth of hybrid digital-physical ecosystems, but what does this mean for companies competing for success?

New Ecosystems, New Challenges

Building hybrid ecosystems is a new challenge that requires new guiding principles.

As we've noted, digital ecosystems rely on the winner-take-all dynamic underpinned by zero marginal costs, network effects, access to data, and user convenience. But hybrid ecosystems cannot succeed through technology and scale alone. Operating in the physical realm means dealing with the messiness of hardware. Hybrid ecosystems tend to have a narrower scope because they require deep domain knowledge and dense business relationships. They tend to grow more slowly both because of physical constraints and because the prerequisites of growth can often be acquired only through experience and commitment. Therefore, hybrid ecosystems will likely not

achieve the breadth and scale of purely digital ecosystems.

Consider Toyota, which orchestrates a hybrid ecosystem of suppliers, innovators, and collaborators to enable not just superior manufacturing but constant innovation.[6] Toyota's super-ecosystem is a prototypical hybrid ecosystem, in that it simultaneously involves a dense network of traditional physical suppliers and a newer digital ecosystem that can explore capabilities like fleet management, ride sharing, and autonomous driving. Toyota has built this ecosystem over decades, investing in its partners and their capabilities. Even so, Toyota is just one of the many players in the auto-manufacturing space, with less than 20% share globally.

The difference between hybrid ecosystems and those that are purely digital is reminiscent of a pattern in ecological succession. Pioneer species (so-called r species) in a new niche succeed by prioritizing growth. They quickly conquer the niche by reproducing and dispersing quickly. However, as the ecosystem matures and the environment becomes more diverse, new strategies emerge. In later stages, species optimized for competition in higher-density environments (K species) tend to thrive. Their strategy involves more parental investment in fewer offspring. The strategy shifts are a natural consequence of the changing ecological environment.

In the same way, different types of business environments favor different managerial approaches. The management of hybrid ecosystems requires at least three major shifts in approach:

- **Technology *and* Relationships.** Technological edge is a key success factor for digital ecosystems; delivering a strong digital product, scaling it, and making it possible for stakeholders to seamlessly build on it are all primarily technical challenges. Digital ecosystem orchestrators tend to focus only on certain relationships, neglecting others. For example, Amazon is known for its customer obsession—and for being less focused on its third-party vendors. Hybrid ecosystems face high technological requirements, but in the physical world, where business success often depends on customization, consulting, or enablement, relationships are also important. For an ecosystem to reach critical mass, the orchestrator must understand and shape the real-world behaviors of the people and the enterprises in it. This requires building strong relationships with multiple actors and often developing specific capabilities. Creating value in hybrid ecosystems requires not only transactions but also change management.

- **Depth *and* Breadth.** The breadth of successful digital ecosystems is one of their chief characteristics. For example, the vast majority of consumers in developed countries use the services of near digital monopolies like Google and Facebook. But these ecosystems tend not to be deep; they are not optimized for specific niches or particular modes of use but instead fulfill the "common denominator" use cases. Hybrid ecosystems need to develop sufficient breadth to reach critical mass but, at the same time, must have a deep focus on particular problems and deploy the relevant domain expertise to address them. Their business model relies on creating greater value by solving specific problems rather than populating a large open niche. Only in this way will they be able to fully satisfy customer needs.

- **Creation of New Ecosystems *and* Rejuvenation of Old.** Digital ecosystems mostly occupy completely new niches, and the occupiers are mostly upstarts. They have the luxury of starting from scratch and writing the rules as they build out new markets. Hybrid ecosystems will mostly involve existing niches, with existing capabilities and existing competitors. Therefore, hybrid ecosystems must balance between creating entirely new capabilities and taking advantage of or actively reshaping existing ones. They must be able both to create something new and to rejuvenate something old.

It's natural to ask whether any company has successfully translated these guiding principles into action. Let's turn to a company that has done so serially and has demonstrated a robust repeatable formula.

Recruit: The Champion of Hybrid Ecosystems

Recruit is currently one of Japan's most successful large companies, with close to 20% annual growth in the past five years in a sluggish economy. The company's approach to management: to build multiple digital-physical ecosystems in areas as diverse as tourism, dining, education, used-car sales, and recruiting. In each area, Recruit aims to be the orchestrator of a tight, vertically focused hybrid ecosystem of digital and physical players.

For example, Recruit has built an ecosystem of restaurants in Japan by bringing together hundreds of thousands of restaurants and various service providers and developers onto a single platform. Through this platform, AirREGI, restaurants are able to access not only a variety of Recruit's own services but also dozens of others in areas such as advertising, accounting, work force management, procurement, payment processing, and even cutting-edge recommendation engines powered by machine learning. Although Recruit's role was to build the digital platform, the company was able to penetrate the physical restaurant market only because it had a capable field force that already had relationships with restaurants and vendors.

Recruit has been successful in building hybrid ecosystems in part because the company underscores the importance of coming up with generalizable formulas (called "kata"). In fact, when it chooses employees for its company-wide innovation award, it explicitly looks for innovations that have the potential to be applied in multiple contexts. Recruit calls its formula for building and managing successful hybrid ecosystems the Ribbon Model. The following five imperatives are some of the key elements of this model.

Create a culture of *serial* entrepreneurship.

Given their tight vertical focus, hybrid ecosystems tend to lack the scale that broad digital ecosystems enjoy. This implies that companies that seek to become hybrid-ecosystem orchestrators must create multiple ecosystems in order to maintain their growth trajectory. In fact, this is how Recruit approaches growth: it has invested in more than a dozen ecosystems.

This means that Recruit must hire and train entrepreneurial talent, and it does so by building an entrepreneurial ecosystem within the company. Recruit acts as seed accelerator, venture capitalist, advisor, back-office service provider, and recruiter for would-be entrepreneurs within the company. Recruit is able to systematically identify, encourage, and nurture entrepreneurial talent through programs that allow any employee, potentially in collaboration with outside stakeholders, to apply to start new businesses, which could develop into new ecosystems. One such program, New Ring, receives more than 1,000 proposals every year and has given birth to some of Recruit's core ecosystems.

Combine domain and technology experts.

The competitive edge of digital ecosystems often lies in their superior technology, and the orchestrators unsurprisingly obsess over technological talent: strong engineers and designers are crucial for scalability and creating a superior product experience. However, in hybrid ecosystems, domain experts are just as necessary to uncover and address deep customer needs. Therefore, the crucial capability of hybrid ecosystem orchestrators is to recruit both domain and technology experts and to bring them together to solve challenges collaboratively.

Recruit facilitates collaboration between such experts by allowing some of its top talent to roam freely across business domains. For example, Recruit was able to vastly reduce the labor cost associated with processing online customer reviews by connecting a content management expert and a machine learning expert, who technically resided in separate companies. Such suc-

cesses are shared in an enterprise-wide platform to motivate other technologists and domain experts to seek opportunities to collaborate.

Balance all sides of the ecosystem, including the supply side. Within an ecosystem, there is often a particular group of stakeholders that generates revenue (consumers, advertisers, or business clients, for example). It's tempting to focus on catering to the needs of the revenue-generating side. In digital ecosystems, this group is often end consumers, and suppliers and innovation partners in these ecosystems often feel neglected or squeezed. Hybrid ecosystems, more so than other ecosystems, depend on all participants, and their orchestrators must make sure that each stakeholder group gets its fair share of attention.

Recruit has built this notion into its model for ecosystem management, which places Recruit as the glue between consumers and suppliers, with many explicit milestones between first contact and value creation. For example, the milestones on the consumer side of the used-car-sales ecosystem include number of views, number of inquiries, number of in-person contacts, and number of sales. These milestones are then translated into and measured as KPIs, along with indicators that track the overall health of the ecosystem.

Experiment and co-evolve with other stakeholders. In order to thrive in the long run, hybrid ecosystems must adapt and learn continuously. The orchestrator, which is in the position to set the ecosystem's direction, must drive this process. But rather than setting the agenda by dictum, the orchestrator should act as an antenna that picks up on learning opportunities as well as an enabler to help guide other partners to address those opportunities. Orchestrators must have the humility to experiment and learn with other members.

At the heart of Recruit's ecosystem innovation strategy is its strong field force and its emphasis on co-evolution. Recruit's field force is trained not only to generate revenue and hit targets, but also to build deep relationships with clients so that it's able to learn about latent opportunities in the market and mobilize stakeholders around them. For example, Recruit coordinated a large campaign called Yuki Maji! 19 to revitalize winter sports in Japan. This campaign, which provided free ski-lift tickets to 19-year-olds, initially experienced strong pushback from resort owners. However, by working with advertisers, government agencies, resorts, and industry organizations, Recruit was ultimately able to persuade hundreds of resorts to participate in the effort, which was a commercial success.

Have the courage to re-engineer old ecosystems. Every successful company faces a dilemma born from its very success: it is often difficult to change what has been working. This is the familiar story of Kodak and Blockbuster, who had profitable business models and ample resources, but still failed to respond adequately to highly visible disruptions. This is a persistent threat for both physical incumbents and digital natives. To win the battle for new hybrid niches, companies must be willing to cannibalize their existing business models, whether digital or physical. Often, this requires creating a sense of urgency to stir up energy for self-disruption.

Recruit experienced this in the early 2000s, when it transformed its magazine-based tourism ecosystem (called Jalan) into an online travel ecosystem. Jalan, which sold advertisement slots in its magazines, faced revenue declines of 5% a year because of increasing competition. Jalan's online platform had no booking functionality and could not compete with more advanced online travel agents. In the 2000s, Jalan went through a painful transformation, replacing its old business model with a new, untested online model. This required both decisiveness and persistence: Recruit placed new managers (from outside the travel industry) in the business to signal a new direction, and it invested in the new model for seven years before reaching profitability. The approach was like gene augmentation therapy—the company pulled in completely new "genes" to endow an old ecosystem with new capabilities.

A New Shot for Physical Incumbents

Recruit's experience demonstrates how to be successful in the realm of digital-physical ecosystems. But purely physical incumbents can also be competitive in this realm. Emerging opportunities at the intersection of the digital and the physical give incumbents a new opportunity to build valuable ecosystems.

To make the most of these opportunities, incumbents should recognize that they are no longer playing catch-up but are pioneering a new game—one in which they have the potential to define new niches and new rules. Leaders of physical businesses can take a few lessons from Recruit to aid in their journey.

First, they must reinforce strategic ambidexterity: the ability to explore the new and exploit the old at the same time. Managing conflicting goals is crucial for all business leaders today, but it is doubly so for those attempting to build hybrid ecosystems. That task will be about both technology and relationships, breadth and depth, and creation and rejuvenation.

Second, they must have the courage and the ability to envision and shape new spaces and orchestrate corporate and noncorporate stakeholders. These "shaping capabilities" are often more strongly associated with digital giants than with physical incumbents.[7] It is thus all the more urgent that physical incumbents start investing in the management skills essential for ecosystem building and management.

Finally, they must treat hybrid ecosystems as repeated rather than one-off games. Unlike in digital ecosystems, where winning once was sufficient, hybrid ecosystems will often involve multiple wins and a system for achieving this. Companies may end up as orchestrators in one ecosystem and participants in others. This dynamic will favor plays that invest in a repeatable formula and prioritize trustworthiness and collaboration.

The digital ecosystem is one of the most successful business model innovations we have ever seen. Nevertheless, it is only one of many possible models of collaboration in business. As digital economies grow and proliferate, they will inevitably create new opportunities for digital-physical ecosystems. Incumbents should start preparing today.

Notes

1. For different interpretations of the rationale behind the deal, see L. Stevens and H. Haddon, "Big Prize in Amazon-Whole Foods Deal: Data," *Wall Street Journal,* June 20, 2017; A. Bhattarai, "Amazon to Buy Whole Foods Market in Deal Valued at $13.7 Billion," *Washington Post,* June 16, 2017; M. Vandevelde and L. Hook, "The Whole Foods Fight Is Amazon's Chance to Conquer Supermarkets," *Financial Times,* June 16, 2017.

2. See S. Tamim, J. Brock, N. Yousif, and A. Luers, "The Age of Digital Ecosystems: Thriving in a World of Big Data," BCG article, July 2013.

3. Based on market capitalization as of August 1, 2017, and August 1, 2007, respectively.

4. D. Rigby, "Digital-Physical Mashups," *Harvard Business Review,* September 2014.

5. This percentage reflects the figure for "technology economy" divided by global GDP; see H. Rubin, R. Dreischmeier, C. Duthoit, and H. Hrishikesh, *The Power of Technology Economics,* BCG report, October 2016.

6. For more about Toyota's ecosystem, see M. Reeves, S. Levin, and D. Ueda, "The Biology of Corporate Survival," *Harvard Business Review,* January–February, 2016, and M. Schrage, "Innovating the Toyota, and YouTube, Way," hbr.org, January 8, 2013.

7. See M. Reeves, K. Haanaes, and J. Sinha, *Your Strategy Needs a Strategy,* Harvard Business Review Press, 2015.

About the Authors

Martin Reeves is a senior partner and managing director in the New York office of The Boston Consulting Group and the director of the BCG Henderson Institute. You may contact him by email at reeves.martin@bcg.com.

Daichi Ueda is a consultant in the firm's Washington, DC, office and an ambassador to the BCG Henderson Institute. You may contact him by email at ueda.daichi@bcg.com.

Claudio Chittaro is a consultant in BCG's New York office and an ambassador to the BCG Henderson Institute. You may contact him by email at chittaro.claudio@bcg.com.

The BCG Henderson Institute is The Boston Consulting Group's internal think tank, dedicated to exploring and developing valuable new insights from business, science, technology, and science by embracing the powerful technology of ideas. The Institute engages leaders in provocative discussion and experimentation to expand the boundaries of business theory and practice and to translate innovative ideas from within and beyond business. For more ideas and inspiration from the Institute, please visit https://www.bcg.com/bcg-henderson-institute/thought-leadership-ideas.aspx.

The Boston Consulting Group (BCG) is a global management consulting firm and the world's leading advisor on business strategy. We partner with clients from the private, public, and not-for-profit sectors in all regions to identify their highest-value opportunities, address their most critical challenges, and transform their enterprises. Our customized approach combines deep insight into the dynamics of companies and markets with close collaboration at all levels of the client organization. This ensures that our clients achieve sustainable competitive advantage, build more capable organizations, and secure lasting results. Founded in 1963, BCG is a private company with more than 90 offices in 50 countries. For more information, please visit bcg.com.