

From Disruption to Collision: The New Competitive Dynamics

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Airbnb is colliding with traditional hotel companies like Marriott International and Hilton. In just over a decade, the online lodging marketplace has assembled an inventory of more than 7 million rooms — six times as much lodging capacity as Marriott managed to accumulate over 60-plus

years. In terms of U.S. consumer spending, Airbnb overtook Hilton in 2018 and is on track to move ahead of Marriott.¹

Although Airbnb serves similar consumer needs, it is a completely different kind of company. Marriott and Hilton own and manage properties, with tens of thousands of employees in separate organizations devoted to enabling and delivering customer experiences. And whereas the two traditional lodging companies are made up of clusters of different groups and brands, with siloed business units and functions equipped with their own information technology, data, and organizational structures, Airbnb takes a radically different approach: Its core function is to match users to hosts who have unique homes or rooms to rent on a daily basis, via its platform. In the process, Airbnb accumulates customer data, mining it for insights and to produce predictive models to inform key decisions. It is often able to give its customers a superior experience, with far fewer employees, than its hotel-industry competitors.

Airbnb is representative of a wave of new organizations that are built on an integrated digital foundation. Every time we search Google, buy from Alibaba or Amazon, or get a ride from Lyft, the same phenomenon occurs. Rather than relying on traditional business processes operated by workers, managers, process engineers, supervisors, and

customer service representatives, these companies deliver value through software and algorithms. Although humans design the systems, the computers do the work: producing search results, setting prices, identifying and recommending products, or selecting a driver. This reality defines a new kind of digital company, with data and AI at the core and human labor pushed to the edge.

The Analysis

- The authors conducted several research projects to understand and model the impact of network effects, digital platforms, and digital learning on company performance and competition.
- They have also led research projects across more than 500 organizations to understand the impact of analytics, digital operating models, digital networks, and AI.
- They have advised many organizations on these topics, including Amazon, Microsoft, Mozilla, Facebook, Fidelity, Disney, and Marriott.

Many of these changes are being played out in other parts of the economy as well, including the retail and entertainment media sectors. The collisions between innovators and established players are forcing leaders of existing companies to reexamine how they do business in environments where new players follow radically different rules. In many settings, making small or incremental changes won't be enough. Rather, companies will need to fundamentally alter how they gather and respond to information and how they interact with their customers and users. Organizations will have to rethink their operating models from top to bottom.

The digital model has intrinsic advantages over traditional models. Thanks to its operating architecture, Airbnb, for example, can take advantage of network effects in its platform, and learning effects through its data integration and AI systems, to rapidly improve operational scale, scope, and learning. Whereas Marriott's ability to grow and

respond is limited by traditional operational constraints, Airbnb digitizes internal processes and connects beyond the company boundaries to build an ecosystem of travel services. On an ongoing basis, it can mine its data to acquire new customers, identify traveler needs, optimize experiences, run experiments, and analyze risk exposure. Along the way, it can accumulate even more data on hosts and travelers and use artificial intelligence and machine learning to gain new insights. Beyond the lodging business, Airbnb is expanding the scope of its offerings to include other types of travel experiences, such as concerts, cooking classes, and local tours, opening its ecosystem to a variety of new service providers.

Airbnb isn't the only company leveraging its digital capabilities to drive change in the global travel market. Other well-known travel brands like Booking.com, Kayak, and Priceline (all owned by Booking Holdings) also use software- and data-centric operating models to promote scale, scope, and learning without encountering traditional operational constraints. In November 2019, the public valuation of Booking Holdings was almost double that of Marriott.

The entire industry is transforming before our eyes. In just a few years, both Airbnb and Booking have dramatically increased the number of room nights sold and have catapulted into leadership positions. Market concentration among the leading traditional hotel operators is also increasing, with merger-and-acquisition activity on a high boil. Marriott, for example, merged with Starwood in 2016 to exploit synergies across their loyalty programs and related data assets. In a race against time, Marriott is working hard to re-architect its operating model to remain competitive against Airbnb's and Booking's data-driven growth machines. Indeed, the entire lodging and travel industry is in the midst of major upheaval, with companies like Marriott and Hilton in a fight for their existence.

The Competitive Dynamics of Collision

The collision between digital and traditional companies shows what happens when user needs are met by a new

kind of operating model that digitizes some of the most critical tasks to deliver value. In the travel industry, customer needs haven't changed — travelers continue to need accommodations and experiences. But unlike hotel chains, Airbnb's and Booking's systems can satisfy those needs without armies of hotel managers and salespeople or cumbersome labor- or management-intensive operating processes.

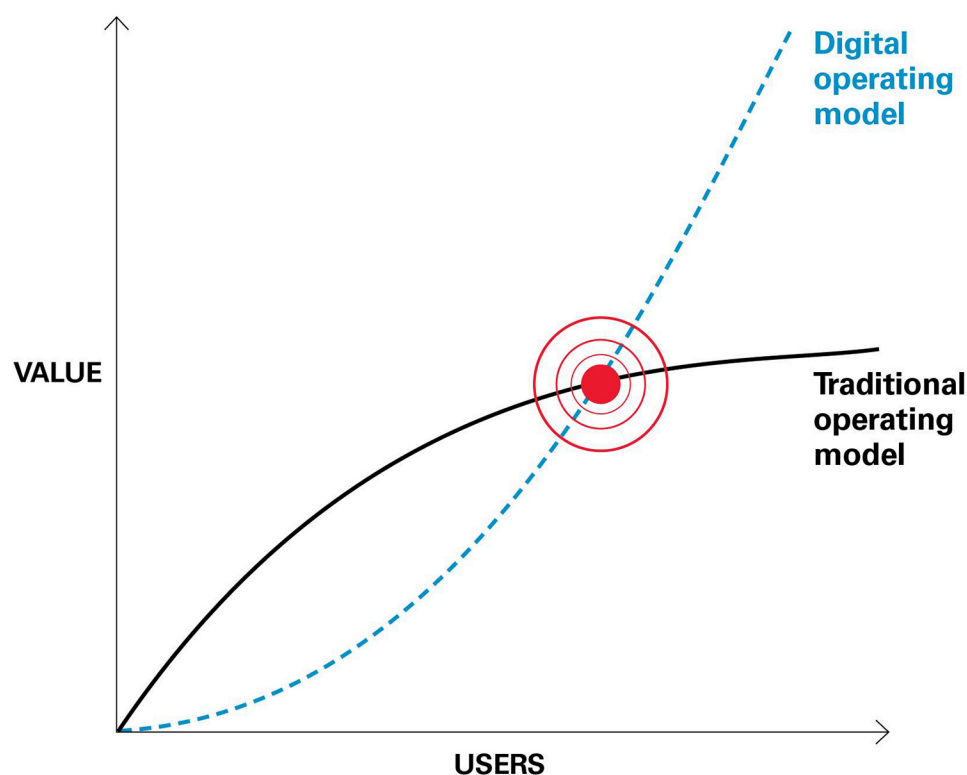
In many ways, Airbnb and Booking are built like software companies. They provide a software layer to the travel industry, functioning in effect as operating systems. If Marriott is the industry's IBM mainframe company, Airbnb and Booking are vying to become the Windows operating system. In doing so, they aim to push traditional operational bottlenecks outside the walls of their organizations and remove constraints on their own scalability, scope, and learning potential. This dramatically shapes their ability to deliver value to customers. Traditional businesses can scale up quickly but often run into diminishing returns in their value generation as they encounter problems from getting too big. They face diseconomies of scale in human-centric managerial processes and administrative inertia, which slows their growth and, if they are not careful, can lead to

worse outcomes.²

Digital operating models scale differently. Google's search engine and Alibaba's Alipay payment app, for example, can scale to a virtually infinite number of customers, link to a vast array of complementary businesses, and get better with experience and with more users, because they do not suffer from any diseconomies of scale. Companies with traditional operating models encounter diminishing returns as they scale and grow the number of customers they serve, but those with digital operating models can achieve increasing returns to scale. The collision occurs when the value curves of traditional and digital operating models intersect. (See "A Collision in Action.") Although nothing grows forever, and the value generated by digital operating models will eventually plateau during the period when managers and executives of traditional incumbent companies need to react, the scale potential can seem unlimited. Indeed, the growth of some of these digital operating models will slow only through a catastrophic failure such as a massive privacy scandal or a cybersecurity breach, or through regulatory concerns about market concentration and consumer data protection.

A Collision in Action

Traditional and digital operating models collide with one another where their value curves intersect. While the former tend to have diminishing returns, the latter can continue to grow in scale, scope, and learning, increasing in value as users and engagement grow.



The travel industry examples show how AI, learning, and network effects can go hand in hand to build a rapidly growing value proposition in a series of self-reinforcing loops. As the operating model develops more connections, it also develops new opportunities to generate and accumulate data. With more data come more opportunities for better services and greater incentives for third parties to plug in. This, in turn, increases the potential for learning and amplifies network effects. In general, the larger the network, the more data it generates, the better the algorithms, and the higher the value it can deliver.³

These self-reinforcing loops in network and learning effects make a big difference to the nature of competition. In traditional operating models, the value that can be delivered begins to level out as the organization grows. This often

implies that entrants can threaten incumbents, because the advantages of scale are significant but not insurmountable. New companies can bring innovative solutions to market even on a smaller scale — think of a network of boutique country inns taking room nights away from Marriott resorts. In contrast, in digital operating models, traditional constraints go away, and the value delivered will continue to increase, possibly at a faster and faster rate. No small-scale outfit can reasonably compete with Airbnb.

This has an exponential competitive effect. As digital operating models deliver more value, the value-capture space left for traditional players shrinks, making it increasingly difficult for traditional companies to sustain a profitable offering. Airbnb and Booking do not compete head-to-head with Marriott or Hilton by opening their own hotel chains. Rather, they extract much of the consumer

value and commoditize the hard-won brands and experiences of the hotel companies. While hotel companies may never disappear, their profits will continue to migrate to the “software layer.” For example, research shows that Airbnb interferes with the ability of hotel chains to protect their prices during busy time periods (for example, when a special event like a convention or the Super Bowl comes to town); by increasing the supply of alternative beds, Airbnb puts a ceiling on the prices that hotels can charge, to the benefit of consumers and the detriment of hotels’ bottom lines.⁴

A Repeating Pattern

The Airbnb story is becoming a common one — many of its themes are being played out in other industries. Just as the cloud computing services of Amazon and Microsoft are replacing traditional IT software and hardware solutions, and fintech providers such as Wealthfront and Kabbage are nipping at the heels of established banks and investment firms, marketplace platforms such as Alibaba, JD.com, and Amazon are overtaking traditional retailers. The transformations are profound, with serious implications for how companies design their business models (that is, how they create and capture value), how they execute their operating models (how they deliver value), and the competitive dynamics and market structures of their industries.

Below, we will discuss in more detail what’s happening in the retail and entertainment media industries.

Retail. Amazon was founded in 1994 and was among the first online retailers, establishing a pattern for other online retailers, including Drugstore.com, JD.com, and Pets.com. Over time, the online retailers created platforms, and Amazon broadened and deepened its marketplace with thousands of third-party merchants offering millions of products. In essence, Amazon became a scaled-up Sears and Kmart, but without needing physical stores or having to carry extensive amounts of inventory.

Traditional retailers were able to compete with the first generation of online retailers fairly well; the big changes didn’t occur instantly. For example, the ability of online retailers to tap into data and analytics was still quite limited,

and like others they had to suffer through supply chain bottlenecks. Some online retailers (Pets.com and Drugstore.com, to name two) proved incapable of meeting customer needs any better than traditional retailers and went out of business.

However, Amazon found a way to take on traditional retailers using a data-centric operating platform to transform the retail experience. The transformation went beyond simply moving transactions online. It called for a fundamentally different operating approach, based on a data- and AI-centric analysis of the customer in order to personalize the retail experience. Retail supply chains became centered on software, shifting labor from the core of the process to the edge (for example, in picking products from warehouse shelves), which removed traditional bottlenecks and scale constraints. By the late 2010s, the weaknesses of traditional retailers were in full view, illustrated by the demise of many well-known players, including Toys R Us, Sports Authority, Sears, Nine West, Kmart, and Brookstone.

It took a while for online retailers (notably Amazon in the United States and Alibaba and JD.com in China) to figure this out and deploy the right operating model, but once they did, traditional retailers faced challenges like never before.⁵

Entertainment. The earliest data- and software-centric operating model to collide with traditional players in the entertainment industry was Napster in the late 1990s, which allowed people to digitize and share their music online — skipping over the usual payments to the various players in the music industry and offering music as a “free” service. Despite its immense popularity, Napster ran into a buzz saw of legal troubles that led to its shutdown in 2001. Following Napster’s demise, Apple Music, Spotify, and others clashed with traditional music-distribution companies, eventually transforming both business and operating models for music distribution in the United States and beyond. Essentially, they converted a music-acquisition expense that individual consumers made on a case-by-case basis (resulting in a limited home-based music library) into monthly subscription services, offering unlimited music anywhere, anytime. Spotify, YouTube, and Apple are now the main hubs

for music flow in the United States and Europe.

A similar battle has taken place in video. Although RealNetworks launched the first internet streaming video company in 1997,⁶ it soon attracted stronger competitors such as Microsoft and Apple, and eventually YouTube and Netflix. YouTube and Netflix offered more compelling value propositions for consumers, as well as more scalable operating models based on software, data, and AI. However, the video market shows that despite similarities in the operating models, significant differences in business models can lead to differences in competitive outcome.

YouTube, with a business model based on aggregating a huge community of small content providers, dominates video sharing. By taking advantage of strong network effects, it has become a true video-sharing hub. In contrast, the kinds of premium video-streaming services Netflix provides originate from a more concentrated set of professional content production studios. Although Netflix's data and learning advantages are important, it can't compete with YouTube's network-effect advantages at scale, which are gained by the video-sharing company's ability to aggregate content from a vast variety of sources. This weakness has permitted a number of companies, notably Hulu, Amazon, and Apple, to also focus on content production and compete directly with Netflix. Without access to strong network effects, these providers are attempting to differentiate themselves by tapping into a more focused range of unique content (through special studio relationships and vertical integration).

As a group, Netflix, Apple, and Amazon are also colliding with traditional cable and satellite television providers, as well as traditional TV and entertainment companies, providing over-the-top (internet-based) video content distribution platforms that have rapidly scaled to hundreds of millions of users globally. Threatened by more efficient data- and AI-centric competitors, and mindful of the devastation that has occurred in other industries, traditional media companies are scrambling to react, merging with content and internet service providers to spark transformation, and re-architecting their operations around a digital core. Digital cable provider Comcast has made major headway by introducing and upgrading its Xfinity

X1 platform. Disney is following suit with its ESPN+ and Disney+ streaming services. In contrast to video sharing, the premium content-streaming setting is likely to be highly competitive for the foreseeable future.

The changing shape of the entertainment industry highlights some interesting issues. As we have seen in other contexts, being first offers no guarantee of success. And the transition to a digital operating model is pervasive throughout the entire industry. Both new and old competitors must shift to an operating architecture focused more on data, AI, and digital networks. Finally, despite convergence in the operating models, different players can still achieve different kinds of competitive outcomes (as we have seen with video sharing versus the creation of premium content) because of the nature of each business model and the strength of network effects available.

How Collision Differs From Disruption

Collision and disruption are, of course, closely related. They are connected historically through a “law” named for computer scientist Melvin Conway, who noted that organizations are constrained to perform activities (design, in the original example) that reflect the communication patterns prevalent in each organization.⁷ Conway's law explains why the physical architecture of products or services developed by companies reflects their organizational architectures. If we look at the organization of a product development project, we will see separate groups dedicated to the design of each component or subsystem. But because this architecture makes it easier for organizations to perform similar tasks over and over again, it also makes it difficult for them to respond to change, causing organizational inertia.

In a landmark 1990 paper, economists Rebecca Henderson and Kim Clark argued that “architectural” innovations — ones that require changing the architecture between technological components — are a particular danger to established companies.⁸ The paper explained the demise and subsequent obsolescence of many notable companies that failed to change their organizational architectures to

match the new requirements. Among them: RCA's failure to re-architect and miniaturize its tabletop radios and music devices even in the face of competition from Sony (which licensed RCA's technology!), and IBM's failure to transition from mainframe computers to PCs.

The idea of architectural inertia, in turn, is at the center of Clayton Christensen's disruption theory, first described in 1995.⁹ According to the original framing, architectural inertia due to a company's links with existing customers prevented the company from responding effectively to "disruptive" change.¹⁰ Twenty-five years later, this remains a fundamental tenet of the theory: that newer and smaller companies with fewer resources can challenge incumbents by addressing a neglected segment of the market.¹¹ At its core, disruption is still an outgrowth of architectural inertia. As inertia keeps the incumbent focused on existing customers (continuing what it has successfully done in the past), the entrant jumps in front of the incumbent by coming up with a novel solution.

Clearly, disruptive innovation is a critical — and popular — theme in strategy. But as Christensen and others have pointed out, it's often invoked to describe situations where it doesn't actually apply. Uber, for example, isn't really disrupting the traditional taxi business — it's *colliding* with it. Like Airbnb in the lodging industry, Uber meets recognized customer needs in a completely new (and highly threatening) way.

Collision, unlike disruption, involves more than introducing a technological innovation or revamping the business model or customer value proposition — it's about the emergence of an entirely different kind of company. As a result, defending oneself *against* collision can't be achieved by simply spinning off an online business, setting up a laboratory in Silicon Valley, or creating a digital business unit. It calls for rebuilding the core of the business and changing how the organization works, gathers and uses data, reacts to information, makes operating decisions, and executes operating tasks. Ultimately, it requires rebuilding the operating model, with software doing what many workers might have done in the past. This goes well beyond altering the patterns of human communication on which Conway focused.

Like Airbnb, Amazon, and YouTube, the companies that are driving collisions don't look or act like traditional companies. For better and for worse, they operate as software companies, fulfilling customer needs in new and more scalable ways. Furthermore, they are not constrained in any way by customary industry boundaries. They will use their universal capabilities in data, analytics, and AI, and their ability to generate network and learning effects, to increase their scope and the depth of interactions with their customers, causing collateral damage to those in their wake. Yet as they succeed by leveraging their scale, scope, and learning advantages, the digital operating models introduce a number of new problems. Among them: the preservation of privacy, algorithmic bias, cybersecurity, and increased market concentration.

As a new generation of players goes up against traditional companies, it is defining a new age and transforming our economy. The last time we saw changes of this magnitude was more than a century ago, with industrial leaders like GE, Sears, and Ford maintaining strong market positions for 50 to 100 years. New leaders are emerging today with very different operating structures. The way things are unfolding, the first dramatic effects of artificial intelligence will have less of an impact on human nature than on the nature of organizations, how they create and capture value, and how they shape the world around us.

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