March 2016

McKinsey Quarterly

The economic essentials of digital strategy

A supply and demand guide to digital disruption

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In July 2015, during the championship round of the World Surf League's J-Bay Open, in South Africa, a great white shark attacked Australian surfing star Mick Fanning. Right before the attack, Fanning said later, he had the eerie feeling that "something was behind me."[1] Then he turned and saw the fin.

Thankfully, Fanning was unharmed. But the incident reverberated in the surfing world, whose denizens face not only the danger of loss of limb or life from sharks—surfers account for nearly half of all shark victims—but also the uncomfortable, even terrifying feeling that can accompany unseen perils.

Just two years earlier, off the coast of Nazaré, Portugal, Brazilian surfer Carlos Burle rode what, unofficially, at least, ranks as the largest wave in history. He is a member of a small group of people who, backed by board shapers and other support personnel, tackle the planet's biggest, most fearsome, and most impressive waves. Working in small teams, they are totally committed to riding them, testing the limits of human performance that extreme conditions offer. Instead of a threat of peril, they turn stormy seas into an opportunity for amazing human accomplishment.

[1] "Full story: Mick Fanning shark attack," *Surfing Magazine*, July 19, 2015, surfingmagazine.com.

These days, something of a mix of the fear of sharks and the thrill of big-wave surfing pervades the executive suites we visit, when the conversation turns to the threats and opportunities arising from digitization. The digitization of processes and interfaces is itself a source of worry. But the feeling of not knowing when, or from which direction, an effective attack on a business might come creates a whole different level of concern. News-making digital attackers now successfully disrupt existing business models—often far beyond the attackers' national boundaries:

- Simple (later bought by BBVA) took on big-cap banks without opening a single branch.
- A DIY investment tool from Acorns shook up the financial-advisory business.
- Snapchat got a jump on mainstream media by distributing content on a platform-as-a-service infrastructure.
- Web and mobile-based map applications broke GPS companies' hold on the personal navigation market.

No wonder many business leaders live in a heightened state of alert. Thanks to outsourced cloud infrastructure, mix-and-match technology components, and a steady flood of venture money, start-ups and established attackers can bite before their victims even see the fin. At the same time, the opportunities presented by digital disruption excite and allure. Forward-leaning companies are immersing themselves deeply in the world of the attackers, seeking to harness new technologies, and rethinking their business models—the better to catch and ride a disruptive wave of their own. But they are increasingly concerned that dealing with the shark they can see is not enough—others may lurk below the surface.

DEEPER FORCES

Consider an insurance company in which the CEO and her top team have reconvened following a recent trip to Silicon Valley, where they went to observe the forces reshaping, and potentially upending, their business. The team has seen how technology companies are exploiting data, virtualizing infrastructure, reimagining customer experiences, and seemingly injecting social features into everything. Now it is buzzing with new insights, new possibilities, and new threats.

The team's members take stock of what they've seen and who might disrupt their business. They make a list including not only many insurance start-ups but also, ominously, tech giants such as Google and Uber—companies whose driverless cars, command of data, and reimagined transportation alternatives could change the fundamentals of insurance. Soon the team has charted who needs to be monitored, what partnerships need to be pursued, and which digital initiatives need to be launched.

Just as the team's members begin to feel satisfied with their efforts, the CEO brings the proceedings to a halt. "Hang on," she says. "Are we sure we really understand the nature of the disruption we face? What about the next 50 start-ups and the next wave of innovations? How can we monitor them all? Don't we need to focus more on the nature of the disruption we expect to occur in our industry rather than on who the disruptors are today? I'm pretty sure most of those on our list won't be around in a decade, yet by then we will have been fundamentally disrupted. And how do we get ahead of these trends so we can be the disruptors, too?"

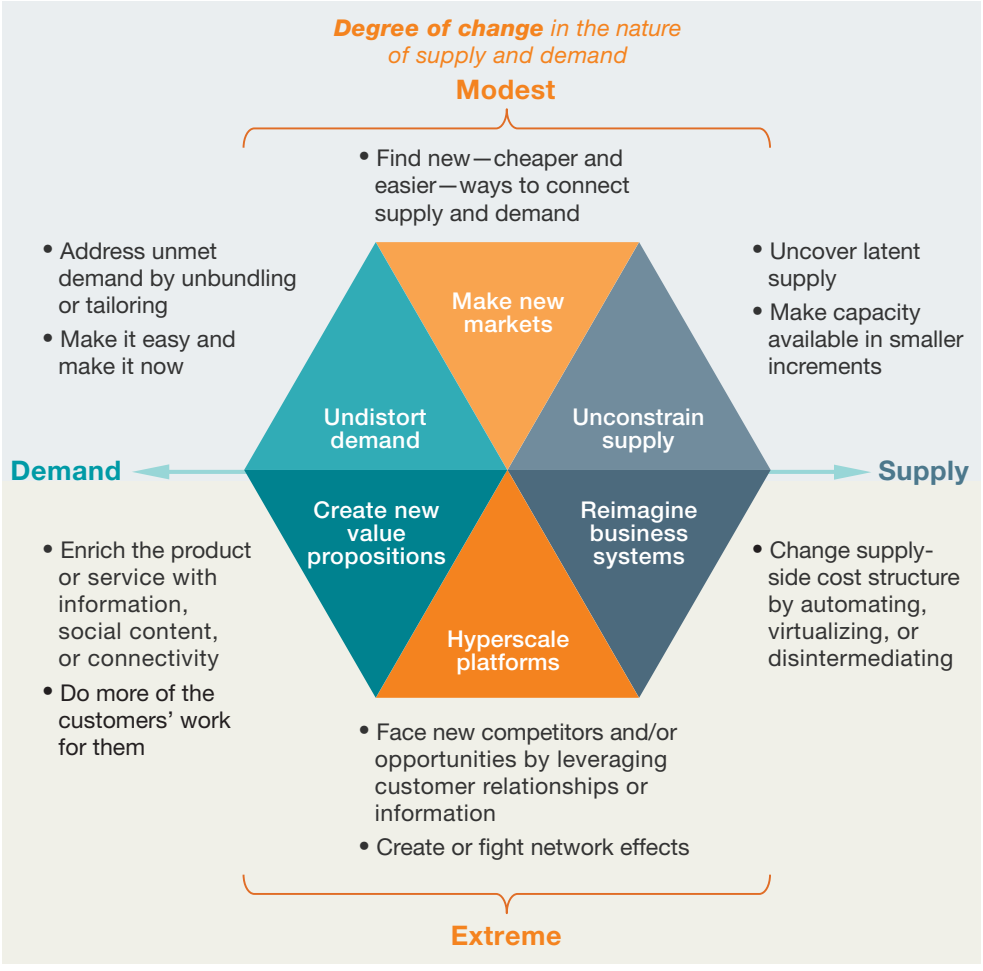
This discussion resembles many we hear from management teams thoughtful about digital disruption, which is pushing them to develop a view of the deeper forces behind it. An understanding of those forces, combined with solid analysis, can help explain not so much *which companies* will disrupt a business as *why*—the nature of the transformation and disruption they face rather than just the specific parties that might initiate them.

In helping executives to answer this question, we have—paradoxically, perhaps, since digital "makes everything new"—returned to the fundamentals of supply, demand, and market dynamics to clarify the sources of digital disruption and the conditions in which it occurs. We explore supply and demand across a continuum: the extent to which their underlying elements change. This approach helps reveal the two primary sources of digital transformation and disruption. The first is the making of new markets, where supply and demand change less. But in the second, the dynamics of hyperscaling platforms, the shifts are more profound (exhibit). Of course, these opportunities and threats aren't mutually exclusive; new entrants, disruptive attackers, and aggressive incumbents typically exploit digital dislocations in combination.

We have been working with executives to sort through their companies' situations in the digital space, separating realities from fads and identifying

Exhibit

Digitization can disrupt industries when it changes the nature of supply, demand, or both.



the threats and opportunities and the biggest digital priorities. Think of our approach as a barometer to provide an early measure of your exposure to a threat or to a window of opportunity—a way of revealing the mechanisms of digital disruption at their most fundamental. It's designed to enable leaders to structure and focus their discussions by peeling back hard-to-understand effects into a series of discrete drivers or indicators they can track and to help indicate the level of urgency they should feel about the opportunities and threats.

We've written this article from the perspective of large, established companies worried about being attacked. But those same companies can use this framework to spot opportunities to disrupt competitors—or themselves.

Strategy in the digital age is often asymmetrical, but it isn't just newcomers that can tilt the playing field to their advantage.

REALIGNING MARKETS

We usually start the discussion at the top of the framework. In the zone to the upper right, digital technology makes accessible, or "exposes," sources of supply that were previously impossible (or at least uneconomic) to provide. In the zone to the upper left, digitization removes distortions in demand, giving customers more complete information and unbundling (or, in some cases, rebundling) aspects of products and services formerly combined (or kept separate) by necessity or convenience or to increase profits.

The newly exposed supply, combined with newly undistorted demand, gives new market makers an opportunity to connect consumers and customers by lowering transaction costs while reducing information asymmetry. Airbnb has not constructed new buildings; it has brought people's spare bedrooms into the market. In the process, it uncovered consumer demand—which, as it turns out, always existed—for more variety in accommodation choices, prices, and lengths of stay. Uber, similarly, hasn't placed orders for new cars; it has brought onto the roads (and repurposed) cars that were underutilized previously, while increasing the ease of getting a ride. In both cases, though little has changed in the underlying supply and demand forces, equity-market value has shifted massively: At the time of their 2015 financing rounds, Airbnb was reported to be worth about $25 billion and Uber more than $60 billion.

Airbnb and Uber may be headline-making examples, but established organizations are also unlocking markets by reducing transaction costs and connecting supply with demand. Major League Baseball has deployed the dynamic pricing of tickets to better reflect (and connect) supply and demand in the primary market for tickets to individual games. StubHub and SeatGeek do the same thing in the secondary market for tickets to baseball games and other events.

Let's take a closer look at how this occurs.

Unmet demand and escalating expectations

Today's consumers are widely celebrated for their newly empowered behaviors. By embracing technology and connectivity, they use apps and information to find exactly what they want, as well as where and when they want it—often for the lowest price available. As they do, they start to fulfill their own previously unmet needs and wants. Music lovers might always

have preferred to buy individual songs, but until the digital age they had to buy whole albums because that was the most valuable and cost-effective way for providers to distribute music. Now, of course, listeners pay Spotify a single subscription fee to listen to individual tracks to their hearts' content.

Similarly, with photos and images, consumers no longer have to get them developed and can instead process, print, and share their images instantly. They can book trips instantaneously online, thereby avoiding travel agents, and binge-watch television shows on Netflix or Amazon rather than wait a week for the next installment. In category after category, consumers are using digital technology to have their own way.

In each of these examples, that technology alters not only the products and services themselves but also the way customers prefer to use them. A "purification" of demand occurs as customers address their previously unmet needs and desires—and companies uncover underserved consumers. Customers don't have to buy the whole thing for the one bit they want or to cross-subsidize other customers who are less profitable to companies.

Skyrocketing customer expectations amplify the effect. Consumers have grown to expect best-in-class user experiences from all their online and mobile interactions, as well as many offline ones. Consumer experiences with any product or service—anywhere—now shape demand in the digital world. Customers no longer compare your offerings only with those of your direct rivals; their experiences with Apple or Amazon or ESPN are the new standard. These escalating expectations, which spill over from one product or service category to another, get paired with a related mind-set: amid a growing abundance of free offerings, customers are increasingly unwilling to pay, particularly for information-intensive propositions. (This dynamic is as visible in business-to-business markets as it is in consumer ones.) In short, people are growing accustomed to having their needs fulfilled at places of their own choosing, on their own schedules, and often gratis. Can't match that? There's a good chance another company will figure out how.

What, then, are the indicators of potential disruption in this upper-left zone, as demand becomes less distorted? Your business model may be vulnerable if any of these things are true:

- Your customers have to cross-subsidize other customers.

- Your customers have to buy the whole thing for the one bit they want.

- Your customers can't get what they want where and when they want it.

- Your customers get a user experience that doesn't match global best practice.

When these indicators are present, so are opportunities for digital transformation and disruption. The mechanisms include improved search and filter tools, streamlined and user-friendly order processes, smart recommendation engines, the custom bundling of products, digitally enhanced product offerings, and new business models that transfer economic value to consumers in exchange for a bigger piece of the remaining pie. (An example of the latter is TransferWise, a London-based unicorn using peer-to-peer technology to undercut the fees banks charge to exchange money from one currency into another.)

Exposing new supply

On the supply side, digitization allows new sources to enter product and labor markets in ways that were previously harder to make available. As "software eats the world"—even in industrial markets—companies can liberate supply anywhere underutilized assets exist. Airbnb unlocked the supply of lodging. P&G uses crowdsourcing to connect with formerly unreachable sources of innovation. Amazon Web Services provides on-the-fly scalable infrastructure that reduces the need for peak capacity resources. Number26, a digital bank, replaces human labor with digital processes. In these examples and others like them, new supply becomes accessible and gets utilized closer to its maximum rate.

What are the indicators of potential disruption in this upper-right zone as companies expose previously inaccessible sources of supply? You may be vulnerable if any of the following things are true:

- Customers use the product only partially.

- Production is inelastic to price.

- Supply is utilized in a variable or unpredictable way.

- Fixed or step costs are high.

These indicators let attackers disrupt by pooling redundant capacity virtually, by digitizing physical resources or labor, and by tapping into the sharing economy.

Making a market between them

Any time previously unused supply can be connected with latent demand, market makers have an opportunity to come in and make a match, cutting into the market share of incumbents—or taking them entirely out of the equation. In fact, without the market makers, unused supply and latent demand will stay outside of the market. Wikipedia famously unleashed latent supply that was willing and elastic, even if unorganized, and unbundled the product so that you no longer had to buy 24 volumes of an encyclopedia when all you were interested in was, say, the entry on poodles. Google's AdWords lowers search costs for customers and companies by providing free search for information seekers and keyword targeting for paying advertisers. And iFixit makes providers' costs more transparent by showing teardowns of popular electronics items.

To assess the vulnerability of a given market to new kinds of market makers, you must (among other things) analyze how difficult transactions are for customers. You may be vulnerable if you have any of these:

- high information asymmetries between customers and suppliers
- high search costs
- fees and layers from intermediaries
- long lead times to complete transactions

Attackers can address these indicators through the real-time and transparent exchange of information, disintermediation, and automated transaction processing, as well as new transparency through search and comparison tools, among other approaches.

EXTREME SHIFTS

The top half of our matrix portrays the market realignment that occurs as matchmakers connect sources of new supply with newly purified demand. The lower half of the matrix explains more extreme shifts—sometimes through new or significantly enhanced value propositions for customers, sometimes through reimagined business systems, and sometimes through hyperscale platforms at the center of entirely new value chains and ecosystems. Attacks may emerge from adjacent markets or from companies with business objectives completely different from your own, so that you become "collateral damage." The result can be not only the destruction of sizable profit pools but also the emergence of new control points for value.

Established companies relying on existing barriers to entry—such as high physical-infrastructure costs or regulatory protection—will find themselves vulnerable. User demand will change regulations, companies will find collaborative uses for expensive infrastructure, or other mechanisms of disruption will come into play.

Companies must understand a number of radical underlying shifts in the forces of supply and demand specific to each industry or ecosystem. The power of branding, for example, is being eroded by the social validation of a new entrant or by consumer scorn for an incumbent. Physical assets can be virtualized, driving the marginal cost of production toward zero. And information is being embedded in products and services, so that they themselves can be redefined.

Taken as a whole, these forces blur the boundaries and definitions of industries and make more extreme outcomes a part of the strategic calculus.

New and enhanced value propositions

As we saw in the top half of our framework, purifying supply and demand means giving customers what they always wanted but in new, more efficient ways. This isn't where the disruptive sequence ends, however. First, as markets evolve, the customers' expectations escalate. Second, companies meet those heightened expectations with new value propositions that give people what they didn't realize they wanted, and do so in ways that defy conventional wisdom about how industries make money.

Few people, for example, could have explicitly wished to have the Internet in their pockets—until advanced smartphones presented that possibility. In similar ways, many digital companies have gone beyond improving existing offerings, to provide unprecedented functionality and experiences that customers soon wanted to have. Giving consumers the ability to choose their own songs and bundle their own music had the effect of undistorting demand; enabling people to share that music with everyone via social media was an enhanced proposition consumers never asked for but quickly grew to love once they had it.

Many of these new propositions, linking the digital and physical worlds, exploit ubiquitous connectivity and the abundance of data. In fact, many advances in B2B business models rely on things like remote monitoring and machine-to-machine communication to create new ways of delivering value. Philips gives consumers apps as a digital enrichment of its physical-world lighting solutions. Google's Nest improves home thermostats. FedEx

gives real-time insights on the progress of deliveries. In this lower-left zone, customers get entirely new value propositions that augment the ones they already had.

What are the indicators of potential disruption in this position on the matrix, as companies offer enhanced value propositions to deepen and advance their customers' expectations? You may be vulnerable if any of the following is true:

- Information or social media could greatly enrich your product or service.
- You offer a physical product, such as thermostats, that's not yet "connected."
- There's significant lag time between the point when customers purchase your product or service and when they receive it.
- The customer has to go and get the product—for instance, rental cars and groceries.

These factors indicate opportunities for improving the connectivity of physical devices, layering social media on top of products and services, and extending those products and services through digital features, digital or automated distribution approaches, and new delivery and distribution models.

Reimagined business systems

Delivering these new value propositions in turn requires rethinking, or reimagining, the business systems underlying them. Incumbents that have long focused on perfecting their industry value chains are often stunned to find new entrants introducing completely different ways to make money. Over the decades, for example, hard-drive makers have labored to develop ever more efficient ways to build and sell storage. Then Amazon (among others) came along and transformed storage from a product into a service, Dropbox upped the ante by offering free online storage, and suddenly an entire industry is on shaky ground, with its value structure in upheaval.

The forces present in this zone of the framework change how value chains work, enable step-change reductions in both fixed and variable costs, and help turn products into services. These approaches often transform the scalability of cost structures—driving marginal costs toward zero and, in economic terms, flattening the supply curve and shifting it downward.

Some incumbents have kept pace effectively. Liberty Mutual developed a self-service mobile app that speeds transactions for customers while

lowering its own service and support costs. The *New York Times* virtualized newspapers to monetize the demand curve for consumers, provide a compelling new user experience, and reduce distribution and production costs. And Walmart and Zara have digitally integrated supply chains that create cheaper but more effective operations.

Indicators of disruption in this zone include these:

- redundant value-chain activities, such as a high number of handovers or repetitive manual work
- well-entrenched physical distribution or retail networks
- overall industry margins that are higher than those of other industries

High margins invite entry by new participants, while value-chain redundancies set the stage for removing intermediaries and going direct to customers. Digital channels and virtualized services can substitute for or reshape physical and retail networks.

Hyperscaling platforms

Companies like Apple, Tencent, and Google are blurring traditional industry definitions by spanning product categories and customer segments. Owners of such hyperscale platforms enjoy massive operating leverage from process automation, algorithms, and network effects created by the interactions of hundreds of millions, billions, or more users, customers, and devices.[2] In specific product or service markets, platform owners often have goals that are distinct from those of traditional industry players.

Moreover, their operating leverage provides an opportunity to upsell and cross-sell products and services without human intervention, and that in turn provides considerable financial advantages. Amazon's objective in introducing the Kindle was primarily to sell books and Amazon Prime subscriptions, making it much more flexible in pricing than a rival like Sony, whose focus was e-reader revenues. When incumbents fail to plan for potential moves by players outside their own ecosystems, they open themselves up to the fate of camera makers, which became collateral damage in the smartphone revolution.

[2] Michael Chui and James Manyika, "Competition at the digital edge: 'Hyperscale' businesses," *McKinsey Quarterly*, March 2015, mckinsey.com.

Hyperscale platforms also create new barriers to entry, such as the information barrier created by GE Healthcare's platform, Centricity 360, which allows patients and third parties to collaborate in the cloud. Like Zipcar's auto-sharing service, these platforms harness first-mover and network effects. And by redefining standards, as John Deere has done with agricultural data, a platform forces the rest of an industry to integrate into a new ecosystem built around the platform itself.

What are the indicators that hyperscale platforms, and the dynamics they create, could bring disruption to your door? Look for these situations:

- Existing business models charge customers for information.
- No single, unified, and integrated set of tools governs interactions between users and suppliers in an industry.
- The potential for network effects is high.

These factors invite platform providers to lock in users and suppliers, in part by offering free access to information.

FINDING VULNERABILITIES AND OPPORTUNITIES IN YOUR BUSINESS

All of these forces and factors come together to provide a comprehensive road map for potential digital disruptions. Executives can use it to take into account everything at once—their own business, supply chain, subindustry, and broader industry, as well as the entire ecosystem and how it interacts with other ecosystems. They can then identify the full spectrum of opportunities and threats, both easily visible and more hidden.

By starting with the supply and demand fundamentals, the insurance executives mentioned earlier ended up with a more profound understanding of the nature and magnitude of the digital opportunities and threats that faced them. Since they had recognized some time ago that the cross-subsidies their business depended on would erode as aggregators made prices more and more transparent, they had invested in direct, lower-cost distribution. Beyond those initial moves, the lower half of the framework had them thinking more fundamentally about how car ownership, driving, and customer expectations for insurance would evolve, as well as the types of competitors that would be relevant.

It seems natural that customers will expect to buy insurance only for the precise use and location of a car and no longer be content with just a discount

for having it garaged. They'll expect a different rate depending on whether they're parking the car in a garage, in a secured parking station, or on a dimly lit street in an unsavory neighborhood. Rather than relying on crude demographics and a driver's history of accidents or offenses, companies will get instant feedback, through telematics, on the quality of driving.

In this world, which company has the best access to information about where a car is and how well it is driven, which could help underwrite insurance? An insurance company? A car company? Or Apple, which might know the driver's heart rate, how much sleep the driver had the previous night, and whether the driver is continually distracted by talking or texting while driving? If value accrues to superior information, car insurers will need to understand who, within and beyond the traditional insurance ecosystem, can gather and profit from the most relevant information. It's a point that can be generalized, of course. All companies, no matter in what industry, will need to look for threats—and opportunities—well beyond boundaries that once seemed secure.

Digital disruption can be a frightening game, especially when some of the players are as yet out of view. By subjecting the sources of disruption to systematic analysis solidly based on the fundamentals of supply and demand, executives can better understand the threats they confront in the digital space—and search more proactively for their own opportunities. Q

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The authors would like to thank Chris Bradley, Jacques Bughin, Dilip Wagle, and Chris Wigley for their valuable contributions to this article.