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The Evolving Nature of Disruptive Change

OUR LIVES ARE marked by technology and innovation. We have collective memories, such as when the world paused to watch Neil Armstrong walking on the moon. We have individual memories, like receiving a first Zoom call with a distant family member during the early days of the COVID-19 pandemic. We remember these as times when the world changed in a moment and the impossible became possible.

These moments also open our minds to future innovation. Though for some it may be hard to imagine working side by side with virtual intelligent agents and humanoid robots, it's worth reminding ourselves that many of the technologies that we take for granted today were once considered miracles of science. It wasn't that long ago that someone with a touchscreen iPhone would attract jealous attention from the flip-phone-wielding traveler sitting next to them on a plane.

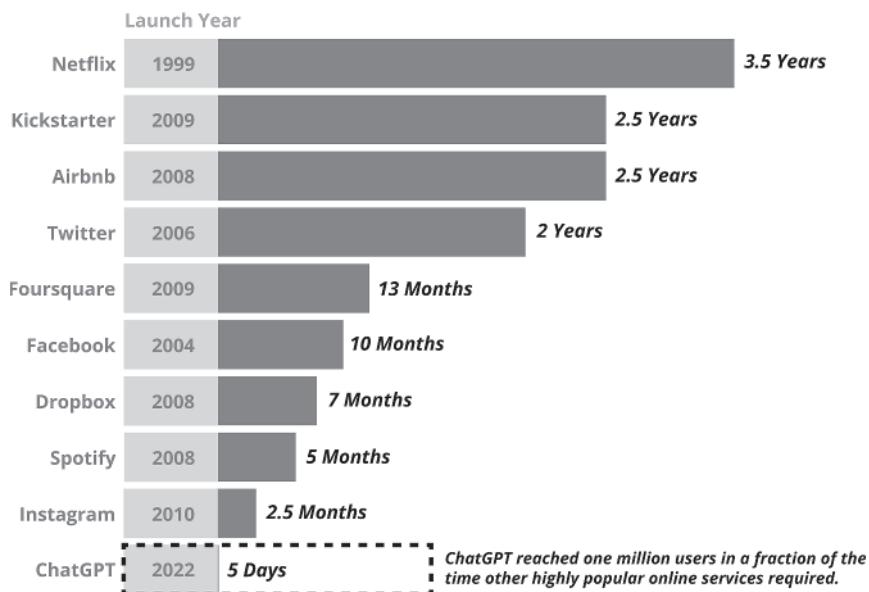


Figure 1.1 Time required for online services to reach one million users.

It's especially interesting if we notice how quickly these innovations become part of the status quo. The acceptance of new technologies is getting faster. Figure 1.1 shows the velocity of adoption for several online services introduced since 1999. Netflix took 3.5 years to reach one million users. ChatGPT took five days.¹

In addition to this increase in velocity, we've also seen significant turmoil. Disruption seems to be a permanent feature of our lives. A look back since the early 2000s can serve as a reminder:

- **Financial collapse:** In 2008, a financial crisis, triggered by the collapse of Lehman Brothers, brought on a global economic downturn sending most international economies into an extended recession.
- **Swine flu:** In 2009, the H1N1 influenza virus unexpectedly emerged to test global health care resources. H1N1 served as an unheeded warning for future pandemic conditions.
- **Arab Spring:** In 2011, anti-government protests known as the Arab Spring triggered significant political change in the Middle East and eventually globally.

- **Ebola:** In 2015, the outbreak of the Ebola virus in West Africa caused thousands of deaths across six countries, requiring health workers to rush to contain an outbreak that could have devastated the entire continent.
- **Brexit:** In 2016, the United Kingdom voted to exit the European Union, leading to global political and economic ramifications while causing governments to question the value of economic union.
- **Global pandemic:** In 2020, the world was taken by surprise with the rapid and devastating effects of the COVID-19 pandemic. The virus caused unprecedented widespread economic disruption and the death of countless millions of people globally.
- **Climate change:** Throughout this period, the science of climate change triggered an increasingly urgent international call for enforceable treaties and redirected capital to combat the effects of rising sea levels and carbon-based pollution.
- **War:** As of this writing, ongoing military conflicts involving major countries such as the Ukraine and the Middle East dominate international political discussions about security, safety, and allyship across the world.

Just as this list reminds us of the degree to which disruptive events can occur over a relatively short period, it should also open our minds to the potential forms of change that might lie ahead.

As we consider the implications of technological speed and disruptive change, we should also reflect on instances when these two trends intersect—indeed, the rapid adoption of technology can often prompt the disruption of well-established norms and institutions. Corporations like Montgomery Ward, Blockbuster, and Kodak have disappeared due to new forms of competition brought on by innovative technologies.

COVID-19 brought the combined implications of speed and disruption into stark focus. Only a few months after news stories emerged from China regarding a mysterious virus, most of the economic, social, and governmental systems of the world came to an abrupt halt. The world was paralyzed without a clear pathway out. Since then, the systemic effects of the COVID-19 pandemic have forced decision-makers to confront the underlying sources of continued disruption as they examine strategic choices affecting their organizations.

Technology, Speed, and Disruption

We can take three key points away from these examples:

- The speed of technological change is accelerating. Some product life cycles are now measured in months and quarters rather than years or decades.
- Disruption is enabled by technology. At the base of most disruptive events is some form of technological innovation without which that event's impact would not have been as significant or as widespread.
- The speed of technological change is driving the speed of disruptive change. Improvements in data processing, advances in data management, and the development of generative AI capabilities bring new decision challenges and opportunities.

Arguably, disruption and technological innovation have always been part of the human experience. Leaders have always had to identify, analyze, and respond to disruptive conditions. What is different today is the scale and speed of disruption and the impact that has on how we make decisions. The way we generate insights, evaluate choices, and assess risk needs to incorporate an understanding of ongoing, rapid disruption and its impact. In a world where disruption is an almost daily phenomenon, many of us feel like we are in constant evolution and change. The challenge for leaders is how to adapt to this new reality.

To confront this challenge, we need to explore what drives these trends. This chapter sets the stage for an exploration that will run the course of this entire book. We'll begin with a review of how our understanding of disruptive innovation has evolved over time. We'll then look at why innovation is accelerating and what that means for organizations and those who lead them.

The Concept of Disruptive Innovation

The concept of disruptive innovation in its commonly understood form was introduced in Clayton Christensen's groundbreaking book

The Innovator's Dilemma. After starting his career as a consultant and White House Fellow, Christensen spent a decade teaching the mechanics of sustainable business performance as a member of the faculty at Harvard Business School. After his book achieved critical and popular success, Christensen went on to cofound Innosight, a management consultancy that provides innovation-related consulting and training.

In his writing and research, Christensen used a series of thoughtful case studies to reveal why organizations often achieve product or service innovation in the short to medium term, only to lose their innovative edge over time as they mature. His research started with two fundamental questions:

- Why is (business) success so difficult to sustain?
- Is successful innovation as unpredictable as the (available) data would suggest?²

Christensen's case studies highlighted two relatively unsettling and counterintuitive puzzles. First, he observed that over time most organizations who experienced success could not sustain their market position and eventually devolved into "middle of the pack" performers (or worse). Second, he observed that even when these companies listened to their customers and concentrated investment on opportunities that "promised" the highest returns, they still faltered.³

Christensen writes:

These two principles, in practice, actually sow the seeds of every successful company's ultimate demise. That is why we call it the innovator's dilemma: doing the right thing is the wrong thing. This dilemma rears its head when a type of innovation that we have termed disruptive technology arises at the low end of the market in the simplest most unassuming applications.⁴

This dilemma hit a nerve for Christensen and his students. Innovation was already well established as the life blood of the American economy and widely recognized around the world. The reason American companies struggled to maintain their leadership was far less clear.

To understand this dilemma, Christensen evaluated the decline of well-known companies including Sears Roebuck, IBM, Digital Equipment, and Hewlett Packard. He also examined the evolution of various established product categories and service models that were eventually upended by newer technologies:

- Computer disk drives (disrupted by increasing capacity of solid-state storage)
- Mechanical excavators (disrupted by the development of hydraulic backhoe technology)
- Steel manufacturing (disrupted by the development of thin slab technology)
- Traditional retailing (disrupted by changes in inventory management and distribution)

In each instance, these disruptive products start off by filling a unique niche within their respective market. In fact, at the outset they often don't look disruptive at all. Christensen notes this is in fact a key feature:

Disruptive technologies bring to a market a vastly different value proposition than had been available previously. Disruptive technologies underperform established products in mainstream markets. But they have other features that a few fringes (and new) customers value. Products based on disruptive technologies are typically cheaper, simpler, smaller, and frequently more convenient to use.⁵

As he examined each case, Christensen focused on the decisions organizations made when faced with “innovation choices.” He found that decision-makers consistently opted to continue investing in an existing product/service mix rather than pursue new opportunities, even when the emergence of innovative products offered real benefits to customers or the potential for future revenue. The pattern behind these decisions was clear—if new opportunities generated relatively lower benefits for the company (think lower profit margins or small amounts of incremental revenue), leaders acted so as not to upset current customer relationships or existing higher margin revenue streams.

While rational when measured in the near term, over longer periods these choices resulted in the organization missing new markets and eventually losing share in existing ones. Newer competitors gained customers by offering new products, typically at lower prices and with lower margins, enabled by novel technology. While these products started off producing relatively small profit, they provided a foothold with customers. Profits were reinvested to improve quality, increasing customer satisfaction. Higher quality also often enabled the use of products in wider applications, further expanding customer adoption. Over time, these disruptive products came to equal or even surpass the quality of traditional products in their category. Much like the frog caught unaware in the slowly boiling pot, the legacy organization's fate was sealed.

Once called to the decision-maker's attention, this pattern should prompt several challenging questions:

- How do you maximize performance of the existing business while also investing in future sources of growth?
- What if organizational leadership is unable or unwilling to recognize the threat of technological innovation coming from outside?
- What if innovation means the active deconstruction of the core business as it exists today?

Every leader of an existing business is eventually confronted with these challenges. Indeed, these challenges will likely increase given the trend toward accelerating technological innovation.

Christensen proposed a number of organizational solutions to the innovator's dilemma. First, he suggests that an organization's leadership needs to recognize the product or service innovations that are most likely to displace the basic structure of the existing business. Second, leaders must also accept that disruptive innovation may force the organization to cannibalize or deemphasize portions of that existing business. Leaders who accept the inevitable nature of these truths are more likely to take necessary action when the time comes.

Christensen also noted that any effort to transform the organization will likely be met with institutional resistance. The fundamental principles of capital allocation taught in every business school rest on

the principle of expected return. In practice, these broadly accepted accounting practices can act like biological antibodies that find, attack, and kill disruptive thinking. A variety of internal systems exist to protect the core business and manage issues that might threaten the achievement of expected returns. In this environment, promising ideas and innovative solutions can look like threats if they require extraordinary resources or introduce unwelcome risk. In the face of skepticism or direct refusal, ideas will typically retreat in favor of delivery on established expectations. With that acquiescence, the prospect of achieving breakthroughs in competition or how work gets done is understandably quite low.

Christensen's solution is to recognize that innovation needs to be a core value of the organization and that change needs to be fostered and encouraged, sometimes located away from the core business. He suggests the development of separate "skunk works" type structures that operate with a high degree of autonomy outside the decision-making structures of the core business. Once isolated, the separate unit is permitted to experiment and create new capabilities that can extend current products and services or even disrupt them entirely.

We see this practiced today by many organizations, particularly in the technology and engineering sectors. For example, Lockheed's Skunk Works, launched in 1943 and more formally referred to as the Advanced Development Programs (ADP), is renowned for its innovative and classified aerospace projects. Aircraft produced by ADP included the U-2 spy plane, the SR-71 Blackbird, the F-117 Night-hawk, and the F-22 Raptor. To this day, the autonomy of ADP fuels innovation by insulating the engineers from the pressures of the core business and various forms of bureaucratic interference.

Yet even as these management techniques have become mainstream, challenging questions remain:

- How can organizations ensure they have an accurate understanding of the nature and velocity of disruptive technologies?
- What if the organization has limited access to the technology driving new disruptive innovation?
- What can organizations do to position themselves to adapt when disruptive innovation emerges and scales with unprecedented speed?

These questions become even more pressing when we consider the clear evidence that the pace of technological change has accelerated over time. In the face of that new reality, it's important that leaders understand the nature of this acceleration, including its drivers and implications.

The Evolving Impact of Disruptive Innovation

In our view, a key aspect of this acceleration is the compounding nature of technological innovation. As highlighted in Figure 1.1, leaders have had less time to react to the rise of ChatGPT than they did during the rise of any other internet-enabled technology since 1999. The consequences are arguably more far reaching as well. With the prevalence of cloud-based technologies, companies can deploy novel forms of AI in almost any aspect of their organization at a speed that was impossible in the era of on-premises mainframes and dial-up modems. The speed with which organizations must wrestle with the implications of disruptive change is faster than it has ever been. As we will see, there is reason to believe that the frequency of these challenges is also accelerating.

We see this shift if we take a step back and look at the impact of disruptive innovation over time. Figure 1.2 is an interpretation of the impact disruptive technologies have had on the business world since 1940. The timeline was first developed by Denise Garth, chief strategy officer at InsurTech Majesco⁶ and published in a 2017 white paper for the Risk and Insurance Management Society (RIMS).⁷

Garth's goal was to learn from past innovations and how they drove shifts in the work and focus of organizations by examining three critical business ages between 1940 and 2030—the Industrial Age, the Information Age, and the Digital Age—which she mapped to corresponding generational workforces, defined by when the initial members of that generation turned 18 years old. Garth's ambitious graphical analysis then attempted to convey the primary impact these technological innovations drove in each period.

Garth determined this impact by categorizing each technology as driving either automation, efficiency, effectiveness, or innovation—an

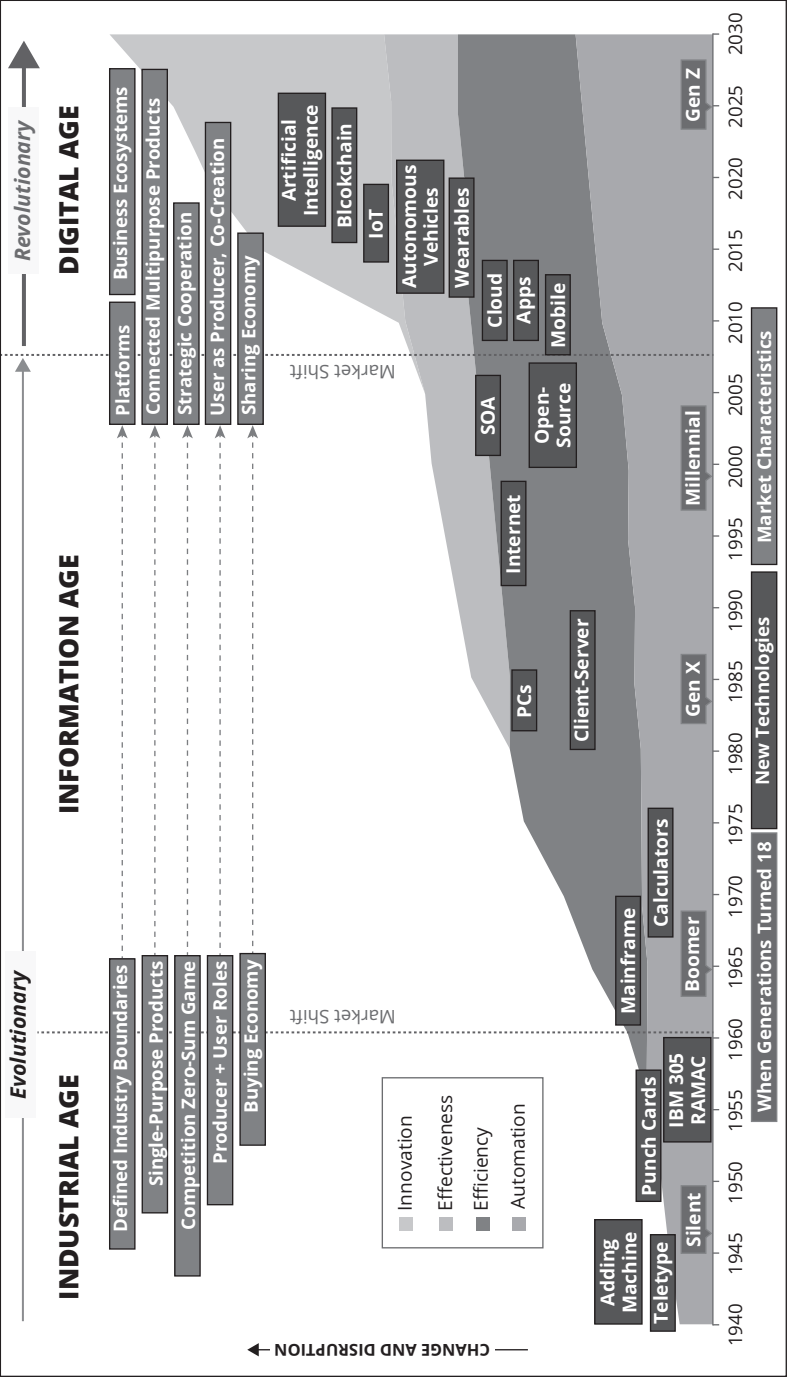


Figure 1.2 The impact of disruptive innovation over time.

Source: Copyright © 2023 RIMS.

admittedly subjective and somewhat binary judgment but one that helps to call out the practical benefits organizations have gained from the integration of these technologies in their business strategies and operations. The vertical axis attempts to size the resulting impact over time—again, admittedly subjective—across a time frame that is bookended by the start of World War II and by a projected reality that we can just begin to see taking shape from where we sit here in 2025.

Garth's resulting analysis gives us a useful framework against which to examine the relationship between the pace of technological change and the role it plays in enabling disruptive innovation over time. Here are a few observations for each era.

Disruptive Innovation in the Industrial Age

In the beginning of the Industrial Age we can see most companies, industries, and markets conforming to a few general principles:

- Companies operated within defined industry boundaries such as manufacturing, services, and distribution, each of which were distinct and were focused on scaling the necessary building blocks of supply chain infrastructure, production capacity, and core operations required to “build the business.”
- Companies were typically founded as single purpose businesses. Auto manufacturers built cars and home builders focused on individual homes. The time and resources required to scale these businesses left relatively little time for thinking about market adjacencies or product extensions. Community planning would not become a significant part of homebuilding until the rise of suburban neighborhoods in the early 1950s.
- Competition was typically considered on a “zero-sum” basis within traditional categories. The primary goal was to compete with other providers on the basis of criteria like quality, speed, and cost. Decision-makers were looking to “take” and “hold” market share at the expense of their rivals. Collaboration with competitors was not a priority (with the notable exception of instances of price fixing, of course).

- The definition of a producer and user of goods and services was well defined and protected. Each player had a diverse set of economic and societal expectations, incentives, and placement validated by the markets and the shareholders they served.

The characteristics of the Industrial Age are consistent with the economic and social structure of most advanced western countries at the time. These characteristics were most prevalent in the United States and most of Western Europe.

This held true until a global disruption of the age—World War II. Now everything was turned on its head. Companies that were designed as a single purpose were enrolled in government-backed initiatives to accelerate key capabilities necessary for the war. They began adding new products, manufacturing processes, and operational strategies. Previous competitors began to collaborate and work together. In the United States, Ford Motor Company began producing aircraft parts and even entire B-24 Liberator Bombers, alongside jeeps and armored tanks in service of the war efforts. Aircraft manufacturers such as Boeing, Douglas Aircraft, McDonnell, and Hughes cooperated in unprecedented ways to meet the demands of the US military and its allies. In these examples we also see traditional industry boundaries fade away as corporations found that they had core capabilities that could be applied to new markets.

Disruptive Innovation in the Information Age

Market characteristics continued to morph and transform through the advent and maturation of the Information Age. Here organizations made great strides forward in technology-based efficiency and effectiveness. Mainframe systems evolved into client server structures. IBM introduced the first commercial computer in 1956—the IBM 305 RAMAC—followed by one of the first personal computers in 1981—the IBM 5150—forever changing the computing use case.

At the same time, the technology industry made great strides in network connectivity. The US Department of Defense established DARPA (or the Defense Advanced Research Projects Agency Network) in the late 1960s. Later, Usenet gained popularity among universities in the 1980s as one of the first online communities,

organizing online discussion groups into categories called *newsgroups*. By the 1990s, a more widespread introduction of these technologies took place as the creation of user-friendly internet applications like the Netscape web browser and the rise of open-source software development accelerated information sharing.

Enthusiasm for the transformative potential of these technologies drove investment in new “dot-com” business models like Google and Amazon.com. Information businesses like the newspaper industry were transformed by the ability to accelerate customer access and reduce the cost of production. Inside companies, operational strategies also evolved as networking and information technology enabled new business-to-business service models. A Western push for business expansion and worldwide shifts in political diplomacy gave rise to global outsourcing. China and India became global superpowers, marked by China’s entry into the World Trade Organization in 2001, first as beneficiaries and eventually as major drivers of these technological shifts.

As we look at Figure 1.2, we can see that technology driving disruptive change is clearly sitting in the background and spreading deep within the structure of the global economy. This machine/software critical mass coalesced in 2006 in conjunction with several global events that dramatically moved the world into the Digital Age.

Disruptive Innovation in the Digital Age

In the Digital Age we see a dramatic movement from legacy Industrial Age business practices to something entirely new, digitally enabled, accessible, widespread, and *fast*. The seeds of these changes build on technologies introduced through all three ages but now take on a form only possible when they are able to interact with and build on each other. Organizations operating in this era take on distinct new behaviors:

- Companies transition from defined and boundary-constrained business models to platform strategies situated within business ecosystems. Previous boundaries between production and intellectual property have been weakened, and a dynamic sharing of product and service capabilities has become the norm.

- Companies founded with a single purpose have been transformed into digitally connected multiuse systems and product suites. Extending Information Age technologies like electronic payments, the digital economy expands through the creation of tokenized payment technologies, which were a key feature of the first-generation Apple iPhone.
- Companies partner to supplement their core competencies, with creators and implementers of disruptive innovation housed and organized in close proximity to each other. You see venture capital, private equity, and pension funds taking large capital positions in startup technology companies with minimal near-term profit expectations beyond attracting and aggregating “users.” Silicon Valley became the global hub of capital and innovation—a model others have raced to replicate around the world.
- Companies engage with customers in entirely new ways. The explosion of personal computing devices with accelerated computational and software sophistication launches an entirely new business environment—the digital and sharing economy.

These shifts in business behavior are both responding to and driving an enormous collective change. Corporations are racing to convert data into new sources of value and competitive advantage. Consumers are trying, adopting, and discarding products and services in a way that would have seemed irrational in any previous era. Increased corporate and venture investments are simultaneously improving efficiency, effectiveness, and a step change in rapid innovation.

In Garth’s depiction of the Digital Age, that step change is reflected by a new label—*innovation*. Clearly innovation existed before this era, so what is this part of the figure referring to?

In our view, the answer lies in the nature of the technologies being introduced. In recent years we have seen a series of breakthroughs driven by extraordinary advances in machine processing, cloud-based data storage, and software design—specifically, the Internet of Things (IoT), blockchain, and artificial intelligence (AI). Those technologies have themselves then enabled a wide range of more discrete innovative solutions like smart thermostats, Bitcoin, and ChatGPT. In that spirit, we see the “innovation” segment of Figure 1.2 as calling out the

unique accelerative and enabling attributes of these key innovative technologies. In effect, these are “compounding innovations” that enable more frequent and rapid scaling of transformative solutions. The steep increase in business impact depicted in the figure is driven by those collective technologies, reflecting both the realized and expected change and disruption they will create.

We are not alone in this opinion. In 2016, Thomas Friedman cited several nonlinear accelerations that emerged just as the Digital Age was breaking through.⁸

- True digitization of all sources of data was closer to being accomplished.
- Data use per month grew exponentially, which validated the massive investments in machine and data storage. Having bigger and more capable computing hardware powered by super-fast chip processing technology drove up the number of systems that could enable the IoT, thus connecting everyone with everything.
- Climate change, biodiversity, and population migration also influenced and was influenced by the introduction of the Digital Age in various ways.

Put differently, Friedman sees the interconnected nature of systems as driving an ever more interconnected set of outcomes. Digitization increases those connections and accelerates the pace at which ideas and actions can ripple through the economy and society. This is consistent with Garth’s key insight across the three eras she reviewed.

The Implications of Disruptive Innovation

As we digest the implications of this review, we would again highlight the impact technology has had on the way organizations do business. The behaviors required for success in today’s global economy are radically different from those required in the Industrial Age or the Information Age. Pure, zero-sum competition, while still a key component of most modern economies, has been replaced by a more nuanced mixture of competition and cooperation. Single-solution corporations have increasingly been replaced by complex global organizations that interact

within sophisticated commercial ecosystems, with the largest acting as the very platforms on which those commercial ecosystems operate.

With the emergence of technologies that have a compounding effect on innovation itself, we believe these behaviors will continue to evolve. In an environment of persistent change and disruption, success 10 and 20 years from now will certainly involve different ways of operating and succeeding in the world.

This is an important addition to our earlier review of Christensen's work: not only do new innovations introduce a challenging decision for incumbent organizations if they disrupt an existing business model but they can also introduce permanent shifts in behaviors required for success. Organizations need to monitor for disruptive innovations and anticipate how they might affect their existing business model (think, the impact of Netflix as a threat to the existence of Blockbuster) *and* recognize how some disruptive innovations can create basic shifts in how business is done (think, the impact eBay had on small businesses looking to auction off their products).

A good example of these two challenges in practice is Amazon. Initially, Amazon was viewed by traditional retailers as a threat. Indeed, traffic and sales declined at many traditional brick-and-mortar stores as the convenience of Amazon's service took hold across an expanding array of product categories. The largest competitors, like Walmart and Target, move quickly to invest in their own online retail operations. Smaller competitors struggle to keep pace and some, like Toys 'R Us, eventually ceased to exist. That said, the story is incomplete if we only look at Amazon through the lens of traditional competition. Six years after it first launched with a focus on books, Amazon extended its business model through the creation of Amazon Marketplace. In doing so, Amazon became a platform to help other companies sell and distribute their products via the internet. This shift fundamentally changed the relationship between Amazon and other companies, who now had to interact with it as both a competitor and as a partner.

With this example in mind, our review highlights not one but two key shifts that disruptive innovation introduces for organizations and those who lead them:

- Disruptive innovation can affect the viability of a core business.
- Disruptive innovation can affect how businesses operate.

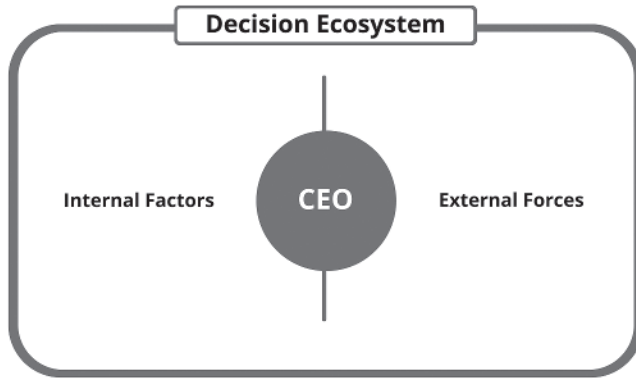


Figure 1.3 The decision ecosystem.

Being caught unprepared can have a range of consequences, from missing opportunities for growth to falling short of performance expectations to undermining the viability of the organization.

Taken in combination, we can see the complex decision-making environment that organizations and leaders operate in today. This complexity is a key aspect of why we chose to write this book—*organizations are facing fundamental shifts in both how they decide their strategy and how they choose to activate it.*

To incorporate this new consideration into our discussion, we will add a new term to our conversation—the decision ecosystem.

As shown in Figure 1.3, the decision ecosystem refers to the combination of factors and forces that inform the decision-making of an organization and its leadership. It is made up of two components: the internal factors that are contemplated when identifying and weighing options and the external forces that shape those considerations.

Using our Amazon example, in the first instance Amazon appeared as a competitor and behaved accordingly. They operated on the basis of a novel technology, the internet, which was difficult for traditional competitors to match without making a significant investment that was challenging or impossible for others to make. For incumbents, that external force—new competition—was weighed against internal factors—the availability of capital. In the second instance, Amazon appeared as a partner, inviting others to sell their own goods on the Amazon platform for a percentage of the revenue drawn from each sale.

For incumbents, now the external force—a new distribution channel—was weighed against different internal factors—the willingness to adapt business operations and the degree to which Amazon could be perceived as a trustworthy partner.

This brief example illustrates a key point: the decision ecosystem defines a set of internal and external considerations for a given choice *at a given point in time*, but those considerations can themselves change if the environment in which the organization operates is dynamic. And the world organizations operate in today is nothing if not dynamic.

Looking Ahead: An Era of Persistent Disruptive Change

When we combine our analysis of disruptive innovation with the implications it has for the decision ecosystem, we reach another conclusion—we see the ingredients for a new era that will shape organizations and challenge those who lead them—an era of persistent disruptive change.

In its most fundamental form, we define disruptive change as the aggregate impact of all forms of environmental change on the decision ecosystem. By this we mean both instances of disruptive innovation that affect the competitive viability of an organization's core business and any disruptive innovation that alters the way that business operates. Importantly, we are also referring to the fact that these forms of disruption are likely to arise more frequently due to the accelerating and compounding nature of technological innovation.

We describe our current state as one of persistent disruptive change because we believe these circumstances are unlikely to change for the foreseeable future. As noted by Garth, the Digital Age has been characterized by a step change in the impact these technologies can have in our lives and organizations. If we are correct to expect such an era, here are some of the key assumptions we bring and the implications we anticipate:

- Disruptive change is now, and will be, a permanent driver of economic and societal transformation.
- Disruptive change has major implications for how organizations determine and activate their strategies. These will manifest as regular shifts in the many factors and forces that comprise the decision ecosystem.

- Strategic decision-makers will continue to rapidly develop and adopt decision frameworks, tools, and solutions that anticipate the influence of disruptive change.
- Data-backed decision tools will increasingly be easier to use due to the adoption of advanced AI techniques. The AI tools will be powered by hyper-fast machine processing.
- Unchallenged acceptance of legacy decision frameworks or business models will put future business success at risk.
- Older tools incorporate a variety of biases that can lead to wrong conclusions. The pandemic showed us how legacy business decision tools exposed organizations to poor decision planning, which, for many, led to competitive disruption and market failure.

Implications for Organizations

Key shifts in the decision ecosystem have already taken place. As described previously, the last century has seen organizations transition from an environment where competition was narrowly defined to one where competitors and collaborators can take many forms. We expect these environmental factors will continue to shift on a rapid and persistent basis.

The focus for decision-makers should be on managing transitions and adapting to persistent disruptive change. It is important to assume that disruption is now a part of the decision ecosystem and that a culture of innovation (disruptive or not) must be embedded into the DNA of the organization. Without a strong, real-time awareness of external and internal change, organizational survival and future growth are at risk.

What might this look like? A few initial examples will preview the kind of evaluation and problem-solving we will be doing throughout the rest of this book.

Translating Noise to Signals

Dr. Paul Walker, a recognized expert in enterprise risk management at St. John's University, recommends using various tools to translate "noise to signal to business models." This involves filtering out irrelevant

information (noise) to identify valuable insights (signals) that can drive strategic decisions and business success (business models). Here are some key attributes of the work to be done:

- **Anticipation and interpretation:** Organizations should develop processes to anticipate, interpret, and react to changes, trends, and disruptions. This involves distinguishing between noise and meaningful signals that can affect the business.
- **Data filtering:** Effective data filtering techniques are critical to separate useful and actionable information from the vast amount of irrelevant data. This helps in making informed choices about options and decisions based on accurate and relevant insights. See Chapters 4–6.
- **Machine learning and AI:** Advanced technologies like machine learning will likely be used to analyze large datasets and identify patterns that represent signals. This may be particularly useful in financial markets, where separating signal from noise can lead to better investment decisions. This may also be a place where disruptive innovation signals may be discovered as well.

Distinguishing the Waves of Change

These tools can be key to identifying the meaning and implications of distinct waves, then harnessing the most relevant ones into innovation opportunities—thereby using the resources of the organization to create its own waves.⁹

These initial waves are disruption activities as viewed coming toward the company, where leaders within the organization should be identifying the disruptive risks facing the organization and make timely mitigation decisions. This wave is inherently reactive in that all activities are in response to the initial detection of new forms of disruptive change.

Outbound waves occur when an organization chooses to anticipate market conditions brought on by a new wave of disruptive change and where the organization is in a position to then exploit the change as the basis for its own organizational innovation.

This wave is inherently proactive in that the organization is aware of the potential for opportunity and has taken steps to capitalize on it for their own predetermined purposes.

The wave concept is an important first step in “widening the aperture” on sources of disruptive change and ensuring the organization is prepared to act if and when the time comes.

Recognizing the Varied Impact of Disruption Change

We should also be conscious that disruption can have both negative and positive connotations. They certainly can involve violence, disconnection, or an unwanted breach of social norms. That said, we can also see disruptive behaviors that contribute to strategic and positive change such as challenging the status quo, revisiting negative stereotypes, or introducing new ways of communication that remap social relationships.

While most people remember 2005–2010 as a period of significant economic disruption due to the collapse of the global banking system and subsequent rise in inflation, an astounding number of transformational technologies also came out of that period:

- The internet crossed the one billion user threshold (2005).
- Facebook, Twitter, and YouTube launched publicly (2006).
- Apple introduced the iPhone, Amazon released the Kindle, and Netflix streamed its first video (2007).
- Airbnb rented three air mattresses with free cold breakfast cereal (2007).
- Google launched the Android operating system and GitHub launched to host open-source software (2008).
- IBM introduced Watson, recognized as the first cognitive computer that combined machine learning and AI (2010).

Each of these innovations generated clear, positive benefits to consumers and more broadly to society. Voices and ideas were heard without traditional gatekeepers. Arguably, they also created challenges. Two decades in, we’ve come to accept that many of these tools have simultaneously brought us closer together and at times created greater

fractures between us. Many of the disruptive events cited at the beginning of this chapter would not have happened as quickly, or perhaps not happened at all, if it weren't for the new technologies that enabled new forms of activity and interaction to take place.

Summary

This chapter explained the phenomenon of disruption. Clayton Christensen's body of work was used as a foundational and bridging framework behind the concept of disruptive change. We consider disruption to be a major influencer on decision-making. Disruption, viewed as reactive or proactive waves, influences how organizations derive decision insights, create choices, and conduct decision risk assessment in three critical ways:

- **Understand the nature of persistent disruptive change**, driven by underlying shifts in the speed of technological innovation and the sources of disruptive innovation.
- **Monitor shifts in the decision ecosystem**. Organizations will see continued change to both external forces and internal factors, while advanced data systems and generative AI will supplement or replace traditional decision-making processes.
- **Equip the organization to act**. Organizations are going to be challenged as they try to manage the persistent and hyper-accelerated rate of change taking place, driving the need for new tools to manage change.

We are deliberately not being prescriptive here. These observations are intended to prompt you, the reader, to recognize disruptive change and its implications for decision-making in your organization. The rest of this book performs as an aid and companion as you consider those implications.

Questions for Reflection

- How does disruptive change present itself in your business?
- What technological innovations affect your current business's product/service mix?

- Who in your organization is accountable for disruptive change?
- How can you measure the consequences of a disruptive change on your organization?
- Are you a market disruptor or market incumbent (or both)?

Behind the Scenes: An Important Source of Our Insights

As we mentioned in the Preface, we expanded our writing team for this second book to ensure we had the right mix of expertise to properly evaluate the topic of disruption. We thought we'd share a bit about the sources that went into this particular chapter.

In late 2021, Paul Walker at St. John's University and Ward Ching of the University of Southern California and Aon were asked to draft a technical paper for the Risk and Insurance Management Society (RIMS).¹⁰ That paper, entitled "Rethinking the Impact of Disruption on Enterprise Risk Management Tools and Processes," focused on the efficacy and usefulness of a broad portfolio of decision-making tools in light of the COVID-19 pandemic. The paper became the topic of a number of professional conference panel discussions.

As Walker and Ching struggled to inventory the variables and assess the risk tool portfolio related to this complicated event, a pressing set of questions became apparent:

- If all of the risk profession's quantitative and qualitative decision tools were so robust and effective, how did every tool miss the impact of the COVID-19 pandemic?
- Why did these tools fail to see or acknowledge that a pandemic was coming, along with its consequences?
- Why did this failure appear as a systemic problem and what can organizational leaders learn from the lead-up to and aftermath of the event?

Walker and Ching hypothesized that an underlying shift driving these types of disruptive events isn't measured by existing frameworks. They decided to focus on the underlying infrastructure

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or system that drove what we are now calling *disruptive change*. In effect, what would enable professionals to better understand, predict, and elevate impending change events?

In light of technological changes, Walker and Ching suggested that disruptive change had produced new decision behaviors. In parallel to their writing, a number of successful disruptive business models were being used across a variety of markets. These new business structures sought to displace established commercial markets—think Amazon displacing brick-and-mortar retail or Uber displacing taxi fleets.

Walker and Ching asserted that it was the orientation of the organization that played a key role in their posture to recognize these forms of disruptive change. As Christensen pointed out in his previous work, disruptors outflank and outperform legacy companies by focusing on different outcomes and success metrics. In turn, this drove different behaviors. Walker and Ching determined that just as incumbent organizations were prone to overlook or dismiss disruptive innovation, managers were also likely to overlook forms of disruptive change that resulted in fundamental shifts to the nature of decision-making.

To answer the question about how disruptive change drives changes in decision-making, Walker and Ching began with models that they were intimately familiar with and evaluating available data on perceived risk, particularly through the review of several widely recognized risk registers and surveys. Examining two well-known surveys,¹¹ they focused on results gathered between late 2019 and early 2021. Unsurprisingly, the most important risk identified tracked with the primary orientation of the survey participants: corporate risk managers focused on topics like damage to reputation/brand, economic slowdown/slow recovery, and increased competition. Political surveys focused on issues of client action, extreme weather, and information infrastructure. Both gave attention to the risk of cyberattacks.

Absent from the top in 2019? Pandemic risk/health crises was ranked 51st out of 55 risks among corporate risk managers. Infectious disease was 10th among government officials. Unsurprisingly, the risk of a pandemic would shoot to the number one position on both lists soon thereafter.

Clearly the risk wasn't appreciated as fully in the lead-up to a major event. That said, the clearest common risk across both studies was pandemic risk. Given the risk rankings, why weren't more people in the community of decision-makers paying attention? What processes and tools would have propelled us to recognize more of the possibilities and to be more prepared in the event of disruption?

The pursuit of those answers drove the work of both Walker and Ching over the next several years. Many of their resulting observations informed what you will read here. We thank them both for their thought leadership and for the contributions they made to our work.

