

# **DIGITAL VORTEX**

How Today's Market Leaders Can Beat  
Disruptive Competitors at Their Own Game

Jeff Loucks, James Macaulay, Andy Noronha and Michael Wade

© 2016, IMD. All rights reserved.

# Digital Vortex:

## How Today's Market Leaders Can Beat Disruptive Competitors at Their Own Game

Jeff Loucks, James Macaulay, Andy Noronha and Michael Wade

Copyright © 2016, IMD

International Institute for Management Development

Ch. de Bellerive 23, □P.O. Box 915, □CH-1001 Lausanne, □ Switzerland

All rights reserved.

No part of this book may be reproduced or transmitted in any form or any manner, electronic or mechanical, including photocopying, recording or by any information storage and retrieval system, without permission in writing from the publisher.

ISBN-10: 1-945010-01-0

ISBN-13: 978-1-945010-01-9

To my sons, Dominic and Malcolm, who are growing up in the Digital Vortex, with all its challenges and opportunities. – J.L.

To the memory of Jim Macaulay – a great business mind, an even better father. – J.M.

To my children, Alessandra and Mateus.  
Never stop daring, discovering, and disrupting! – A.N.

To Heidi, for your patience, support, and love ...  
and for putting up with yet another academic indulgence. – M.W.



FOREWORD.....	1
INTRODUCTION .....	3
<b><u>SECTION 1 .....</u></b>	<b><u>11</u></b>
CHAPTER 1: DISRUPTION IN THE DIGITAL VORTEX.....	13
CHAPTER 2: DIGITAL VALUE AND BUSINESS MODELS .....	29
CHAPTER 3: VALUE VAMPIRES AND VALUE VACANCIES.....	51
CHAPTER 4: STRATEGIC RESPONSE OPTIONS.....	71
<b><u>SECTION 2 .....</u></b>	<b><u>91</u></b>
CHAPTER 5: DIGITAL BUSINESS AGILITY .....	93
CHAPTER 6: HYPERAWARENESS .....	111
CHAPTER 7: INFORMED DECISION-MAKING .....	135
CHAPTER 8: FAST EXECUTION.....	153
CONCLUSION.....	177
AFTERWORD .....	191
ACKNOWLEDGMENTS.....	197
APPENDIX A: DIGITAL VORTEX METHODOLOGY .....	203
APPENDIX B: DIGITAL DISRUPTION DIAGNOSTIC .....	209
APPENDIX C: DIGITAL BUSINESS AGILITY DIAGNOSTIC .....	211
ENDNOTES .....	213
INDEX.....	231
ABOUT THE AUTHORS.....	241



## Foreword

Over my 20 years as CEO of Cisco, one of the most important lessons I learned was that you must have the courage to disrupt yourself. This means anticipating and capturing market transitions ahead of peers, often requiring leaders to make bold moves and step outside of their comfort zone. I like to think of these transitions as opportunities, rather than challenges. I believe this mindset enables leaders to transform themselves, their businesses and, ultimately, the future of technology.

We are now in the midst of one of the biggest technology transitions ever – the Digital Age – where digitization will have five to 10 times the impact of the Internet to date. According to Cisco’s analysis, there were 15 billion devices connected to the Internet in 2015, and by 2020 this will grow to more than 50 billion. This unprecedented level of connectivity will create trillions of dollars in opportunity, and leaders who embrace it now will be poised to harness the full value of digital transformation moving forward. If they don’t, four out of 10 leading firms will be displaced in the next five years due to digital disruption.

At Cisco we anticipated this shift and, in partnership with the International Institute for Management Development (IMD), formed the Global Center for Digital Business Transformation (the “DBT Center” for short), a five-year commitment. Through this innovative joint initiative, we created a first-of-its-kind global research hub where corporate and academic leaders can come together at the forefront of digitization to explore and address the biggest issues facing customers, business and society in today’s hyper-connected world.

We chose IMD, the pre-eminent leader in executive education, as our partner because they shared our belief that a new model and a sustained effort were required to help our customers collectively understand and succeed in the Digital Age. Over the first year of our partnership, Cisco employees worked alongside faculty and researchers from IMD to investigate digital disruption, engage with companies to define what disruption means for them, and identify ways to overcome challenges created by this environment.

As a result, I am proud to introduce you to *Digital Vortex: How Today’s Market Leaders Can Beat Disruptive Competitors at Their Own Game*, which illustrates today’s competitive landscape – what the authors call the “Digital Vortex” – as a series of digital-driven market transitions that together are driving exponential change in business.

*Digital Vortex* documents how disruptors construct their business to create market change, and delivers what organizations need most—cutting-edge research, prescriptive insights, and the “next practices” that mature organizations and institutions can use to go on offense and become disruptors themselves. This is something at the top of every CEO and statesman’s agenda. The dynamics of the “Digital Vortex” will require organizations and governments to acquire a new level of agility that will allow them to not only change what they do, but to adapt often. This book sets out a practical roadmap for how to do this – how to disrupt, rather than be disrupted.

No matter the industry, location, or market share, leaders are facing a tipping point which I invite everyone to embrace. This book and the research and tools contained in it present an opportunity for leaders to take advantage of this critical moment in the history of technology, in which all businesses are impacted and can learn how to pull ahead and lead.

**John T. Chambers**  
**Executive Chairman**  
**Cisco Systems, Inc.**



# Introduction

The four authors of this book – Jeff Loucks, James Macaulay, Andy Noronha, and Michael Wade – came to the subject of digital transformation from very different starting points. Three of us were part of an internal research group at Cisco, the Silicon Valley-based global networking leader. The fourth was a professor at IMD, a Swiss-based business school focused largely on executive education. Between 2012 and 2014, we all noticed a large upswing in interest in digital topics from our key stakeholders. At Cisco, this interest led to a study on the convergence of technology mega-trends, the potential value of which was assessed at \$19 trillion over 10 years.<sup>1</sup> Digital technologies were growing and advancing quickly, and Cisco was at the epicenter of this.

A majority of IMD's 9,000 annual visiting executives were interested in digital, but were mostly happy to take a “wait and see” attitude. Some even expressed a healthy skepticism. Digital itself was poorly defined, and they found it hard to relate to highly touted examples of internet giants such as Google, Amazon, and Facebook, which seemed more relevant for products that could be turned into ones and zeroes than to industries that mined, made, or moved things. The applicability of digital to their own mostly legacy businesses, and the timeline for incorporating digital business models, were unclear. Many of them also felt a sense of *déjà vu*. They had lived through the bursting of the internet bubble in 2000, and had seen multiple subsequent waves of technology-fueled hyperbole.

As time went on, another word was added to the digital lexicon: disruption. Airbnb and Uber get a lot of press (perhaps too much), but their emergence was a watershed event because digital business models were now threatening industries that had been decidedly physical – this wasn't the newspaper business. Neither hotel firms nor taxi companies had appeared ripe for this type of disruption, nor were they ready for it. These industries were utterly blindsided. Suddenly, startups targeting other more hidebound sectors began attracting media attention and venture funding. Market change was accelerating across the board.

By the time 2015 rolled around, executives were asking both IMD and Cisco whether startups could use digital technologies and business models to disrupt *their* industry or company. Curiosity turned to urgency, and the nature of the questions changed: “How are these disruptors attacking established businesses so successfully and quickly?” “Could they attack my business, too?” “How can I use these digital business models to compete more effectively?”

Digital was no longer something of abstract, academic interest. It had become personal.

In response, Cisco and IMD jointly established The Global Center for Digital Business Transformation (DBT Center) in mid-2015. This Center brought together two complementary perspectives on digital transformation: IMD, which came to it from the business and management side, and Cisco, which came to it from the technology side. Together, these two perspectives created a unique and powerful research lens through which to examine digital disruption. The DBT Center brought the four of us authors together as research collaborators.

Initially, we didn't have very good answers to the questions these executives were asking us. After conducting a search of the academic and consulting literatures, we realized that no one else had these answers either. There was no shortage of books and white papers purporting to show how companies could use digital to transform themselves, but most of the recommendations were very technical, fell squarely in the realm of traditional change management, or amounted to marketing collateral. While it may be important for companies to "drive transformation from the top down" and to "change the culture," these generic prescriptions were of limited practical value for organizations staring digital disruption in the face. They cast little light on the nature of the threat digital disruptors pose to established companies, or on the strategies companies must follow to combat these threats.

Through workshops, learning events, training programs, and research projects, we and our team have tried hard to stay very close to practice. We have eschewed the ivory tower, and built up a knowledge base from hundreds of conversations with digital and non-digital executives across industries and geographies. To be clear, this is not a book about Cisco, but capitalizes on the company's unique position as a leading enabler of digital change with enterprises all over the world to ground and grow our learnings.

The insights we present in this book are the output of DBT Center research and events, including:

- A quantitative survey of 941 senior business leaders from established companies located around the world
- Dozens of in-depth interviews with founders and senior executives from startups and disruptive firms
- Analysis of the business models of more than 100 digital disruptors to understand how they work, and the value they create for end customers

- Workshops and events with hundreds of senior executives from market incumbents discussing their challenges around digital disruption and their opportunities to use digital to transform their own businesses

From this research, we have distilled lessons about how disruption occurs, the strategies required to deal with it, and the capabilities that organizations must develop to bring these strategies to fruition. While it is fun to study entrepreneurial startups, we wrote this book with established companies in mind – those who want to know how to thrive amid digital disruption. We are well aware that many – if not most – of the startups we profile in this book may not succeed in the long run. Such is the fate of the startup. We have included them not because we believe they themselves will necessarily topple today’s market leaders or because they are deserving of any special reverence. In fact, we are not exalting startups at all. Rather, the most significant disruptions these startups (and a few keen incumbents) have introduced can be dissected, studied, and applied to large, traditional companies. At various spots in this book, we make the point that it is the disruption that matters, not the disruptor. Thus it is the digital disruptions these firms *represent* that are likely to be longer-lasting, and the true source of competitive change, serving as both threats and opportunities for incumbents.

## Definitions

“Digital” has the dubious distinction of being one of the most commonly used business terms today, and also one of the least well defined. Through our research, we have crystallized several digital concepts that will guide us throughout the book.

**Digital:** We define digital as the convergence of multiple technology innovations enabled by connectivity. Naturally, these innovations evolve over time, but the most relevant technology innovations today include big data and analytics; cloud computing and other platform technologies; mobility solutions and location-based services; social media and other collaborative applications; connected devices and the Internet of Things (IoT); artificial intelligence and machine learning; and virtual reality. For us, digital must have a foundation in one or more of these technologies, and the key is connectivity.

**Digital Disruption:** We define digital disruption as the effect of digital technologies and business models on a company's current value proposition and resulting market position. Although digital disruption need not be negative, it's often cast in this light. As we will see throughout this book, however, digital disruption can illuminate opportunities as well as threats.\*

**Digital Business Transformation:** We define digital business transformation as organizational change through the use of digital technologies and business models to improve performance. First, the objective of digital business transformation is to improve business performance. Second, digital business transformation is based on a digital foundation. Organizations are continually transforming, but to qualify as a digital business transformation, one or more digital technologies must exert a significant influence. Third, digital business transformation requires organizational change – change that includes processes, people, and strategy. In sum, digital business transformation involves much more than technology.

This is not a book that is, strictly speaking, about “transformation” – at least not in the classic sense of the word. It serves as the capstone of the first year of the DBT Center partnership between IMD and Cisco, and presents the primary lessons we have gleaned to date. Over the course of the next four years of the partnership, we will delve deeply into many transformation-oriented subjects and the organizational change roadmap for companies. Instead, this book should be viewed as a manual for incumbents to harness digital disruption and compete effectively with startups and non-traditional rivals.

## The Structure of This Book

In this book, we explain how digital disruption works, how innovators create digital disruption, and the strategies that are required for incumbents to navigate in this environment. We focus on transformation (i.e., “organizational change”) in the guise of increasing the overall agility of the

---

\* It should be noted we are not interested in distinguishing between types of innovation (e.g., the constructs of “sustaining” vs. “disruptive” innovation put forth by Clayton Christensen). For us, disruption is the effect on competition. Anything that causes significant and rapid change in the competitive landscape is therefore “disruptive.” Quite simply, if digital technologies and business models are used to create this effect, then digital disruption is occurring. We then seek to understand those business models and the capabilities of firms that create digital disruption, and extract learnings from them that can be applied to the context of a market incumbent.

company, surfacing the people, process, and technology enablers that separate digital disruptors from incumbents.

This book has been divided into two sections. Section 1 makes sense of digital disruption through an image – which we call the “Digital Vortex” – and explains its effects on competition across industries. Here, we explore the mechanics of disruption by identifying the types of customer value and the business models that underpin it. We also propose strategies and approaches that executives can take to respond to this disruption. Throughout, leaders from large market incumbents will learn how to beat disruptors at their own game.

In Chapter 1, we reveal the serious and imminent threat digital disruption poses to all industries, based on an extensive body of original research and analysis, and we explain the workings of the Digital Vortex, which provides the conceptual framework for the book. Digital disruption is real, and we believe its effects on those who fail to act appropriately will be severe and swift. Companies can use the analogy of a vortex to understand the nature of disruption and the rules that govern it. This analogy helps you make sense of disruption – and how and why you will be affected.

Chapter 2 explores the specific business models digital disruptors use to deliver value for customers, and why established companies have trouble competing when disruptors enter their markets. We describe how digital disruptors create three types of value – cost value, experience value, and platform value – delivered through 15 distinct business models. The most successful disruptors use what we call “combinatorial disruption” to blend these business models to create offerings that are often less expensive and better than what market incumbents can provide. These business models provide the building blocks for incumbents’ own forays into creating disruption.

In Chapter 3, we show how the nature of competition has fundamentally changed in the Digital Vortex – as have the players. We introduce the term “value vampire,” which is a nightmarish form of disruptor for established companies. The signature effect of value vampires is their permanent reduction of the size of the markets they attack. These attacks leave incumbents scrambling to replace revenue shortfalls and profit margins – if they survive at all. We also explore the positive side of digital disruption – the ability for established companies to use digital business models themselves to capture new opportunities. We call these “value vacancies” because in the Digital Vortex, competitive advantages are far from permanent.

In Chapter 4, we see that as value vampires and other disruptors attack core businesses, companies must turn their greatest weaknesses into strengths. They must understand the critical difference between disrupting a

market and occupying – or winning – it. We introduce four generic response strategies. Two (Harvest and Retreat) are defensive, and two (Disrupt and Occupy) are offensive. These strategies will help you understand what it takes to compete in the disruptive environment of the Digital Vortex.

In Section 2, we examine how you can respond to disruption by building a foundation of agility. Agility, we believe, is the single most important weapon in the arsenal of organizations competing in an increasingly digital world. Sustained success in the Digital Vortex is impossible without robust agility.

While each company and industry may need to develop agility in specific ways, the core concepts and capabilities remain the same. When you possess strong agility, you can adjust quickly to changing market conditions and anticipate these changes to your advantage. You will be able to sense how a disruptor can attack your core market, and how you can proactively deliver a more compelling value proposition to your customers. You will learn to detect the appearance of a tough digital disruptor or an opportunity in an adjacent market. Survival in the Digital Vortex requires transformation, and transformation requires agility.

In Chapter 5, we introduce “digital business agility,” the capability companies must develop in order to use digital business models to create new forms of value. Digital business agility consists of three distinct components that reinforce one another: hyperawareness, informed decision-making, and fast execution. We define these concepts and show why you must have a combination of all three to compete effectively in the Digital Vortex.

In Chapters 6-8, we elaborate on each of the three components of digital business agility, and we provide examples of how companies – both established firms and startups – are developing them. We highlight the “next practices” and new technologies to consider as you build your own hyperawareness, informed decision-making, and fast execution capabilities. Together, the components of digital business agility allow you to become aware of threats and opportunities, to make good decisions consistently, and to execute at the speed required to thrive amid digital disruption. We can consider the operational changes required to develop digital business agility as a type of internal “digital disruption” in the service of achieving superior capabilities.

The conclusion of the book focuses on applying the research findings and ideas to your organization. It features exercises that you can use to determine how vulnerable you are to digital disruption, and the steps you can take to fight back and go on the offensive. This book is about understanding how disruptors operate, and learning how to compete in what can be a frightening and volatile new world. Ultimately, you will need to make your own determination about the exact forms that hyperawareness, informed decision-

making, and fast execution must take within your organization. To conclude, we provide you with models to follow as you embark on your transformation journey, and our perspective on the big questions that will preoccupy leaders in the years ahead as they come to grips with the reality of competing in the Digital Vortex.





# SECTION 1

---



## Chapter 1: Disruption in the Digital Vortex

The difference between digital disruption and traditional competitive dynamics boils down to two main factors: the velocity of change and the stakes involved. Digital disruptors innovate rapidly, and they use their innovations to gain market share and scale far faster than competitors who cling to predominantly physical business models. They are especially dangerous because they grow enormous user bases seemingly overnight, and are agile enough to exploit business models that threaten incumbents, often in multiple markets.

A striking example of digital disruption can be found in the telecommunications industry. In 2009, WhatsApp started attacking the \$100 billion global text messaging market<sup>1</sup> by offering a free alternative to pricey SMS messages. The company soon moved on to allowing users to make free mobile voice calls. The strengths of WhatsApp's platform of 800 million users attracted Facebook, which purchased the company for \$22 billion in 2014.<sup>2</sup> Facebook, through WhatsApp and its other brands, isn't looking to disrupt only the telecommunications industry. After introducing peer-to-peer (P2P) payments via Facebook Messenger, the company is now poised to extend this service to WhatsApp's users. Facebook is also testing a business model that would help it challenge Google's domination of the mobile advertising market by charging businesses for the ability to contact its users directly. All this disruption comes from a single innovative platform with the seemingly simple function of letting consumers send "free" messages to each other via smartphones.

In a way, the potential success or failure of these ventures is beside the point.\* Inevitably, some strategies bear fruit; others do not. However, there's no question that the stakes are incredibly high – not only for Facebook's potential revenue, but also for the many companies facing disruption. Between 2012 and 2018, WhatsApp and other over-the-top (OTT) services are projected to drain global telecommunications companies of \$386 billion in revenue from mobile voice calling alone.<sup>3</sup> How many telecommunications

---

\* Tellingly, WhatsApp itself is now being disrupted by a new slate of companies with lofty ambitions and deep pockets. Apple's iMessage platform and WeChat, from Chinese internet giant Tencent, are already taking big shares of global messaging and voice traffic.

service providers will be able to withstand such a decline in their core businesses?

Digital disruption is not an issue just for firms in high-technology sectors. As we will demonstrate in this book, digital disruption’s impact is felt across many industries, including in what are generally thought of as more traditional markets. For example, the high-end fashion sector, which has been slow to embrace digital change in the past, has been disrupted by both digitally savvy incumbents, such as Burberry, and by new entrants including Net-A-Porter and Gilt (now part of Saks Fifth Avenue). We are also seeing disruption across many business-to-business (B2B) markets, including agri-business, commercial banking, energy, insurance, manufacturing, pharmaceuticals, professional services, real estate, supply chain and logistics, and more.

When facing the specter of disruption, companies must first understand the nature of the competitive change it represents – the technologies and business models that will be most disruptive – before determining how to respond. To gain a clearer picture of how digital disruption is affecting markets worldwide, the DBT Center surveyed 941 business leaders across 12 industries and 13 countries. The responses, presented throughout this book, reveal that digital disruption has thrown many industries into a state of flux and that the rate of change is accelerating.

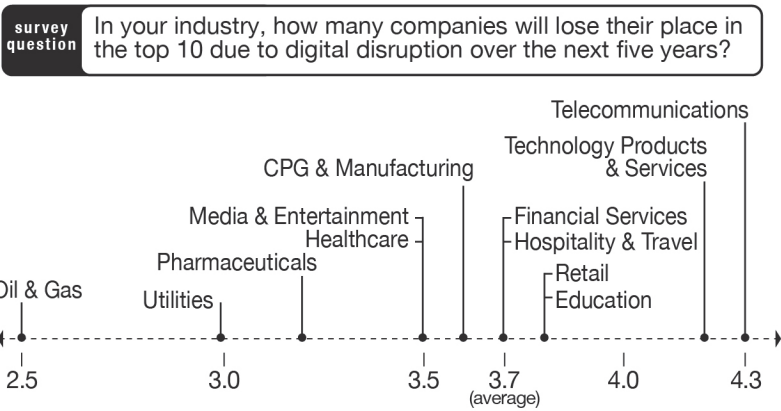


Figure 1: The Mighty Will Fall  
Source: Global Center for Digital Business Transformation, 2015

## Disruptive Dynamics

The number of digital disruptors that have amassed millions of users (and billions of dollars in value) has grown tremendously during the past three years. A case in point: In venture-capital-speak, a “unicorn” is a startup with a valuation of at least \$1 billion. So named because, historically, they are very rare animals, unicorns are becoming fixtures of the competitive scene as venture funding seeks disruptive companies with the potential to become the next Alibaba (the Chinese e-commerce portal that raised \$25 billion in capital in 2014, the largest IPO in history).<sup>4</sup> According to researchers CB Insights, by mid-2016 there were more than 150 unicorns,<sup>5</sup> 14 with valuations exceeding \$10 billion. Two of these unicorns (Uber and Chinese smartphone maker Xiaomi) were alone worth nearly \$100 billion.<sup>6</sup>

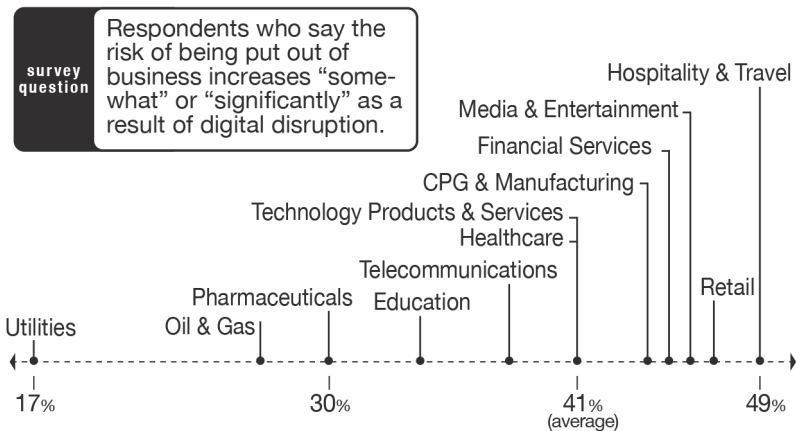


Figure 2: Existential Crisis

Source: Global Center for Digital Business Transformation, 2015

The results of our survey uncovered several troubling findings about the potential for disruption among incumbents, as well as their readiness to adapt. As Figure 1 illustrates, surveyed executives believed that roughly four of the top ten incumbents (in terms of market share) on average would be displaced by digital disruption in the following five years. The number of displaced incumbents ranges from a high of 4.3 out of 10 for the telecommunications industry to a low of 2.5 for the oil and gas industry. The threat extends beyond the “mere” displacement of big companies to encompass the very survival of entire industries. Executives in the industries we studied believed digital

disruption has significantly increased the risk of being put out of business altogether (see Figure 2).

Despite the potentially dire consequences, 45 percent of the surveyed companies dismissed digital disruption as unworthy of board-level attention (see Figure 3). This level of indifference extended even to industries such as hospitality and travel and telecommunications, sectors rocked by disruption for more than a decade.

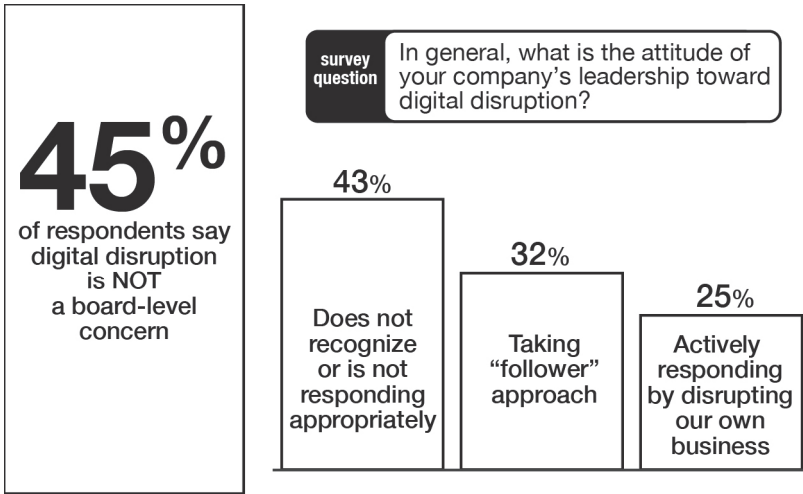


Figure 3: What, Me Worry?

Source: Global Center for Digital Business Transformation, 2015

This blithe inattention in the executive ranks was matched by inadequate strategies for coping with digital disruption. About 43 percent of companies either did not acknowledge the risk of digital disruption or had not addressed it sufficiently (again, see Figure 3). Nearly a third were taking a “wait and see” approach in the hope of emulating successful competitors. The velocity and high stakes of digital disruption, however, make it unlikely that 32 percent of companies will succeed in taking a “fast-follower” approach. Only 25 percent described their approach to digital disruption as proactive – i.e., an approach that demonstrated their willingness to disrupt *themselves* to compete.

## A Digital Vortex

Given the speed, chaos, and complexity of digital disruption, it can be difficult to identify patterns or trends, much less an effective course of action. Even so,

a fundamental understanding of how digital disruption works is vital if companies are to devise effective strategies to counter (or exploit) it.

The image of a vortex helps us conceptualize the way digital disruption impacts firms and industries. A vortex exerts a rotational force that draws everything nearby into its center. There are many examples of vortices in nature, including whirlpools and the wake of an aircraft. Although vortices are complex, they have three main features relevant to digital disruption:

1. A vortex pulls objects relentlessly toward its center, and as objects approach the center, their velocity increases exponentially.\*
2. Vortices are highly chaotic. For example, an object on the periphery of a vortex one moment can be drawn directly into the center the next, while others take a much longer, circuitous route. In other words, objects don't follow uniform or predictable paths from the outside to the center.
3. Objects within a vortex frequently collide, or break apart and recombine, as they converge toward the center.

The Digital Vortex is the inevitable movement of industries toward a “digital center” in which business models, offerings, and value chains are digitized to the maximum extent. The force of the vortex separates physical and digital sources, yielding “components” that can be readily combined to create new disruptions and blur the lines between industries.

We began to conceive of digital disruption as a vortex while using survey data to determine which industries were at greatest risk of digital disruption within the next five years. We asked executives in each of the 12 industries we studied to estimate the likelihood of disruption based on four variables (see Appendix A, “Digital Vortex Methodology”).†

---

\* This is true for a particular type of vortex, known as an “irrotational” vortex. Other forms of vortices possess different characteristics. For an overview of how vortices work, see Wikipedia contributors, “Vortex,” *Wikipedia, The Free Encyclopedia*, accessed April 5, 2016, [en.wikipedia.org/w/index.php?title=Vortex&oldid=706651597](http://en.wikipedia.org/w/index.php?title=Vortex&oldid=706651597)

† The DBT Center is not alone in pointing to profound and accelerating levels of disruption, particularly in those industries we consider closest to the middle of the Digital Vortex. Recent analysis from Citi found that digital disruption in the music sales, video rental, travel booking, and newspaper industries “resulted on average in a 44% share-shift from physical to digital business models over a 10-year period. Further, digital disruption accelerates over time – market share shifts gradually (~1.6%/year) until an inflection point around year 4 when traditional share declines rapidly accelerate to >6% per year.” See “Digital Disruption: How Fintech Is Forcing Banking to a Tipping Point,” *Citi Global Perspectives & Solutions*, March 2016, [ir.citi.com/D%2F5GCKN6uoSvhbvCmUDS05SYsRaDvAykJpb5subGr7f1JMe8w2oX1bqpFm6RdjSRSpGzSaXhyXY%3D](http://ir.citi.com/D%2F5GCKN6uoSvhbvCmUDS05SYsRaDvAykJpb5subGr7f1JMe8w2oX1bqpFm6RdjSRSpGzSaXhyXY%3D)

Their responses were translated into a ranking that predicts the extent of digital disruption by industry. The industries poised for greatest disruption are those in which the most digitization is occurring. Those on the periphery are less vulnerable to disruption, and may enjoy greater insularity. However, *all* industries – including those that have been more stable in recent years – will witness competitive upheaval as a result of digital disruption.

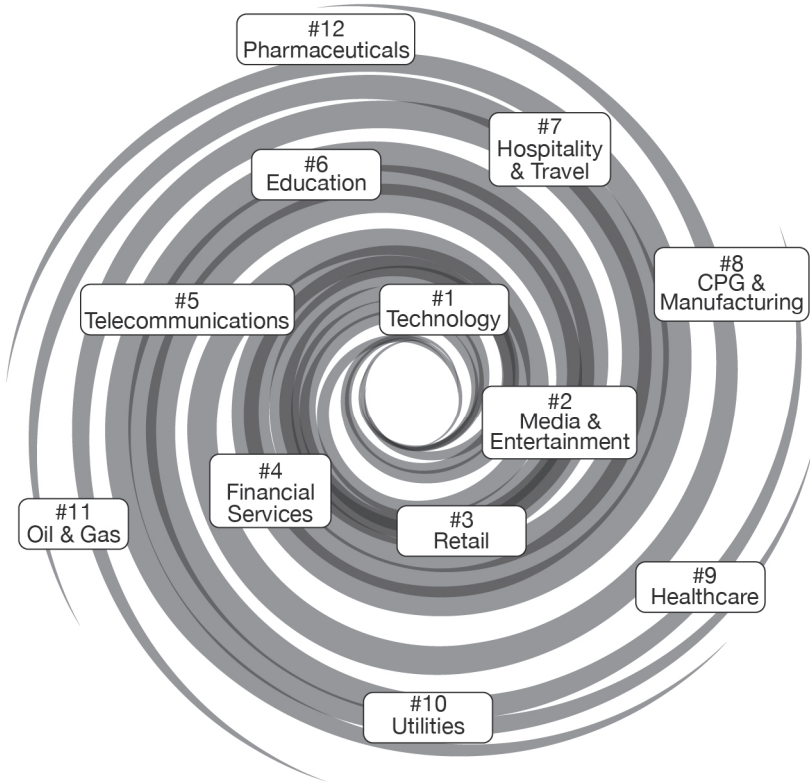


Figure 4: Digital Disruption by Industry  
Source: Global Center for Digital Business Transformation, 2015

As seen in Figure 4, the industry that will experience the most digital disruption between now and 2020 is technology products and services. This sector is unique because it supplies the technological foundations of all disruptions, and its proximity to the center reflects the extent of ongoing digital disruption. By contrast, pharmaceuticals will experience the least digital disruption. However, even this industry is vulnerable to digital disruption. Technology-fueled innovations such as personalized medicine,



gene sequencing, and cost arbitrage through digital marketplaces are putting pressure on pharmaceutical companies around the world.

The center of the Digital Vortex symbolizes a “new normal” – one characterized by rapid and constant change as industries become increasingly digital. Note: An industry’s position relative to the center of the Digital Vortex reflects the state of competition that firms in that industry will face, not the strength of their digital capabilities. Moreover, the center does not represent an end state in which markets stabilize around new competitive leadership for an extended period. Finally, proximity to the center doesn’t imply that an industry (or company) is headed “down the drain.”

## **Ripple Effects: The Autonomous Car**

Let’s consider an example of a digital innovation that can affect multiple industries at once. The automotive industry sits near the outer edge of the Digital Vortex, within the manufacturing sector. Compared, for example, with financial services and telecommunications that are situated close to the vortex’s center, the automotive industry occupies a position of at least relative safety. However, consider the industry’s prospects in light of the emergence of a key market disruption: autonomous cars. Recent forecasts project there will be 10 million self-driving vehicles by 2020,<sup>7</sup> with up to 15 percent of new cars sold being autonomous by 2030.<sup>8</sup> Indeed, semi-autonomous cars are already on the streets, driving themselves on highways and parking themselves. Google, Apple, and others are actively developing autonomous vehicles, and Tesla already offers many autonomous features in its range of electric cars. Let’s assume then that autonomous cars enter the mainstream of automobile use.

Which industries will be disrupted in a world where the roads are increasingly populated by autonomous cars? There are some obvious answers. Clearly, the automobile manufacturing sector itself will be affected. Extensive ride-sharing will almost certainly accompany a rise in autonomous cars, which will mean that fewer vehicles need to be produced, and that fewer people will need (or want) to own a car. The automotive repair industry will also be affected because autonomous cars will experience fewer accidents. It is no secret that most car accidents can be attributed to human error. McKinsey estimates autonomous vehicles could result in a 90 percent decrease in automobile crashes.<sup>9</sup> Public transportation is also an obvious area of impact. Autonomous cars can travel point-to-point, thus providing an advantage over trains and buses that travel pre-defined fixed routes. Fewer taxis, or at least

taxi drivers, will be required. In fact, all driving professions are likely to be negatively affected.

Other industries come to mind. Courier companies may face new competition from autonomous package delivery outfits, exemplified today by the drone-based delivery model of companies such as SF Express.<sup>10</sup> Hotels may be faced with more empty rooms as people sleep in autonomous cars on long journeys. Airlines may lose customers for the same reason. Insurance companies will have to rethink their underwriting of automotive policies, and they'll battle with lower demand and lower prices resulting from declining accident rates. The healthcare industry will have fewer injuries to deal with, and law enforcement will devote less time to writing tickets.

Other impacts are less obvious. For example, fewer cars constantly on the move will mean a reduced need for parking spaces. This will dampen the profitability of parking garages and affect government coffers. The additional space opened up by fewer parking spaces (one-third of space in many cities) could lead to urban renewal and spark a real estate boom (or a correction).<sup>11</sup> On the subject of space, autonomous cars can allow people to work as they drive, partially obviating the need to live close to work, and thus raising the attractiveness of rural living. With drivers freed from the responsibility of watching the road, autonomous cars could become media and entertainment hubs. Autonomous cars could deliver your food or shopping, thus affecting restaurants and retailers. The advent of autonomous cars is also widely seen as a boon for the prospects of combating climate change, because of reduced traffic congestion and decreased environmental footprints arising from a total decline in the number of vehicles produced.<sup>12</sup>

Upon consideration, it is easy to see how autonomous cars are bound to impact huge swaths of the economy. In fact, by our reckoning, all the industries in Figure 4 will be affected, some positively and some negatively.

## **The Encumbered Incumbent**

Our survey asked when (if ever) executives expected digital disruption to affect their industry. The average time to disruption (meaning a “substantial change” in market share among incumbents) was approximately 36 months, which represents a clear escalation in the rate of competitive change compared with historical levels.

Incumbents now face the so-called “innovator’s dilemma.” As Clayton Christensen of Harvard Business School observed, “The reason it is so difficult for existing firms to capitalize on disruptive innovations is that their processes and their business model, [which] make them good at the existing business,

actually make them bad at competing for the disruption.”<sup>13</sup> Despite this, incumbents *do* have cards to play, even though many are constrained by a predilection for doing things the way they’ve always been done, as well as shareholder expectations, unwieldy cost structures, and other factors.

Most of the executives surveyed believed “insiders” would be the most likely disruptors, meaning both incumbents and startups from their own industries (see Figure 5). Executives from several industries with long histories of producing innovative startups – media and entertainment, telecommunications, and retail – believed startups would continue to drive disruption. None of this means, however, that companies from other industries don’t constitute a threat. As we shall see, “outsiders” can use disruption to strike incumbents seemingly out of nowhere. Whether disruption comes from inside or outside an industry, the momentum toward the center of the Digital Vortex will continue.

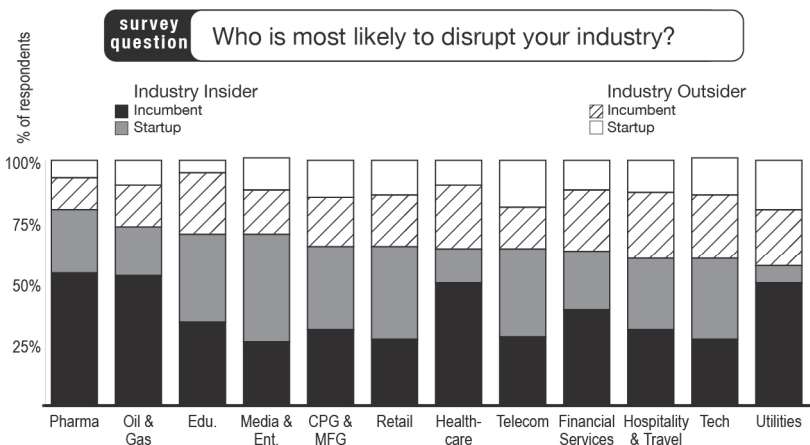


Figure 5: Inside Job vs. Break-in

Source: Global Center for Digital Business Transformation, 2015

Let’s look at the role of startups in driving disruption in one of the most traditional industries: higher education. While most education leaders in our survey pointed to incumbents as the primary source of disruption, 41 percent of education leaders also feared the rise of “ed-tech” startups. So-called massive open online courses (MOOCs), such as Coursera and Udacity, are proving that online university-level education can thrive in a low-cost model by combining highly scalable expert knowledge with a community of learners. Pluralsight, the only education unicorn as of mid-2016, used a number of

acquisitions to increase its capabilities while seeking to dominate the growing market for “hard” computer science and IT skills.<sup>14</sup> Given the stratospheric costs of higher education in many countries, the value provided by traditional institutions of higher learning is being questioned. Scores of universities, including some of the world’s most prestigious, are now compelled to offer competing services at low or no cost.

According to the executives surveyed, startups have a clear set of advantages as they attempt to grow their businesses and unseat incumbents. Although leaders such as Elon Musk are rightly praised for their vision, executives in our survey believe that the real advantage of smaller digital players comes not from a grand plan, but from the following capabilities (see Figure 6):

- Fast innovation
- Agility
- A culture of experimentation and risk-taking

Clearly, the ability to develop new innovations, and to change quickly as conditions dictate, is a critical advantage – and generally a more important one than any specific innovation a startup may bring to market. (We will explore this concept of organizational agility in detail in Chapter 5).

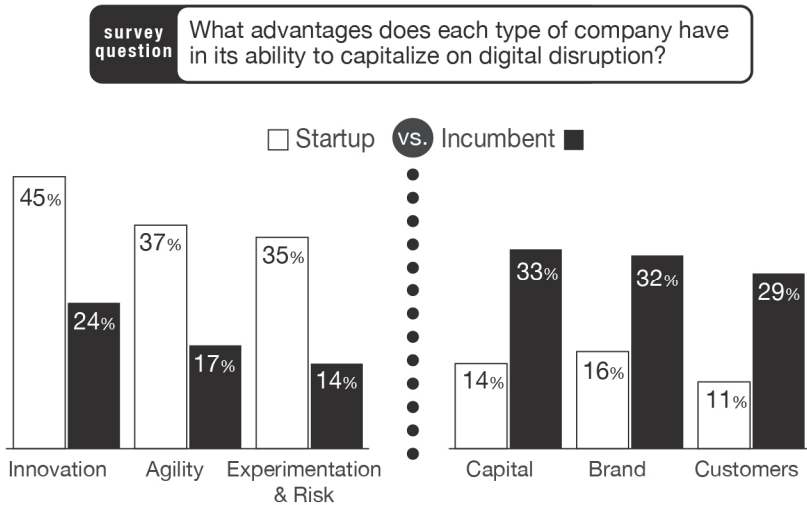


Figure 6: Fortune Favors the Bold  
Source: Global Center for Digital Business Transformation, 2015

By contrast, the incumbent advantages cited by executives stem directly from their established market positions:

- Access to capital
- Strong brand
- Large customer base

To be sure, large companies can issue new shares, access corporate debt at historically low rates, and leverage their substantial cash flows in the face of competitive turmoil. Many incumbents have also spent decades promoting and burnishing their brands, many of which are worth billions (according to Interbrand, Apple's brand was valued at \$170 billion in 2015).<sup>15</sup> And, by definition, incumbents have large customer bases.

However, many of these incumbent advantages hinge on scale, which is fast becoming a fleeting and commoditized asset. Consider Wells Fargo, the second-largest bank by deposits in the United States.<sup>16</sup> Wells Fargo first offered online banking services in 1995,<sup>17</sup> and now boasts about 25 million<sup>18</sup> active online banking users and 14.1 million<sup>19</sup> mobile banking users. Compared with Wells Fargo's painstaking customer acquisition efforts, MyFitnessPal, a mobile app used with wearable devices (such as Fitbit) for diet and exercise tracking, has amassed more than 80 million users.<sup>20\*</sup>

Meanwhile, Snapchat, a unicorn in the mobile image and video messaging space, is rumored to have more than 200 million active monthly users,<sup>21</sup> roughly the size of Brazil's entire population. In May 2015, Snapchat raised \$537 million in capital, valuing the company in excess of \$16 billion.<sup>22</sup>

These examples demonstrate that the first lines of defense that have insulated incumbents from previous upstarts can be surmounted with growing ease. This is because, to use terms from the organizational theorist Geoffrey Moore, the "late majority" has now "crossed the chasm"<sup>23</sup> and is exhibiting digital behaviors – e.g., a comfort level with smart mobile devices and apps – that were once the preserve of innovators and early adopters. As seen with WhatsApp, a large customer base is now a sufficient condition to create disruptive business models that can cross another kind of chasm: the divide that has historically separated one industry from another.

---

\* Fitness apparel maker Under Armour acquired MyFitnessPal in 2015 as part of a digital strategy that may soon offer sensor-based clothing to track movement and biorhythms. "Under Armour Turns Ambitions to Electronic Apparel Monitoring Apps," *Wall Street Journal*, February 27, 2015, [wsj.com/articles/under-armour-looks-to-get-you-wired-with-its-apparel-1425061081](http://wsj.com/articles/under-armour-looks-to-get-you-wired-with-its-apparel-1425061081)

## **It's the Value, Not the Value Chain**

As noted, the trajectory of an object circling in a vortex is highly unpredictable. It can be close to the periphery one moment, and drawn directly into the center the next. Executives in industries now on the outer edges of the Digital Vortex, such as pharmaceuticals, may be tempted to take solace in the idea that their sector is relatively less prone to disruption. While this may be true today, they should also consider the cautionary tale of another industry. Five years ago, few firms seemed less vulnerable to digital disruption than taxi companies. Today their value is under siege. They have been rapidly and forcefully pulled into the digital center, now obliged to compete with digital competitors such as Uber and Lyft.

Let's also look at the utilities industry, recalling that our analysis ranked this sector at No. 10 out of 12 on the list of industries – making it, in our analysis, one of the least susceptible to disruption. Utilities require major capital investment to generate and distribute electricity. However, the ultimate value provided to their customers is power, and significant disruption has already occurred in the area of renewable energy. For example, Germany obtains 26 percent of its electricity from renewable resources (22 percent from solar power),<sup>24</sup> and Scotland gets more than half.<sup>25</sup> The fluctuations and logistical challenges inherent in producing energy from solar, however, in addition to the flexibility required to integrate power from user-generated solar panels, requires an enabling digital technology: a “smart” grid.

Tesla has emerged as a household name and a poster child for digital disruption. Until recently, the primary industry Tesla disrupted was the automotive sector. The company's ability to upgrade the capabilities of electric vehicles via software downloads makes its cars more valuable to their owners over time, presenting a disruptive challenge to mainstream automakers. In May 2015, however, Tesla unveiled inexpensive batteries for the home and business markets, batteries that could store energy generated by solar panels and pull power from the energy grid during cheaper off-peak hours.<sup>26</sup>

The technology that has made Tesla such a formidable threat to automakers – its batteries and software – is highly transferable to power generation and storage. Examples of such disruptions, in particular their applicability to multiple industries and business models, should strike fear in the hearts of incumbents. A single innovation or platform can be used to redefine markets that, on the surface, have little in common. For this reason, it can be difficult for executives to know who their most fearsome opponents will be, and from which industry they will emerge. Thus, executives who feel

insulated from attack by outsiders may fall victim to their own lack of imagination.

We also see this dynamic in the way financial technology (FinTech) startups are disrupting banks by unbundling their products and services – seizing a share of their most profitable business, while avoiding the entry barriers associated with being a full-service bank. These startups use a combination of technologies and business models, including analytics and automation, to digitize their offerings, and they may disrupt more than one profitable business at a time while fulfilling unmet needs in the market.

Digitization of products, services, and business processes allows disruptive players to deliver the same value as a traditional competitor, and even augment it, without having to reproduce the conventional value chain. In fact, this is the fundamental objective of digital disruptors: to provide superior value to the end customer while avoiding the capital investments, regulatory requirements, and other such impediments of “encumbered incumbents.” For disruptors, it’s the new and improved value created for the end customer that matters, not the value chain that produces products or services. We will unpack and explore different forms of customer value in the following chapter.

The perceived sense of protection we detected among executives largely depends on the built-in defenses they ascribe to their industries. Of those surveyed, 25 percent believed there were “high” barriers to digital disruption in their industries, with oil and gas (37 percent) and financial services (36 percent) at the top of the list (see Figure 7). These barriers included capital costs, regulatory roadblocks, and the complexity of business processes. Most disruptive players, however, have little interest in competing on these terms.

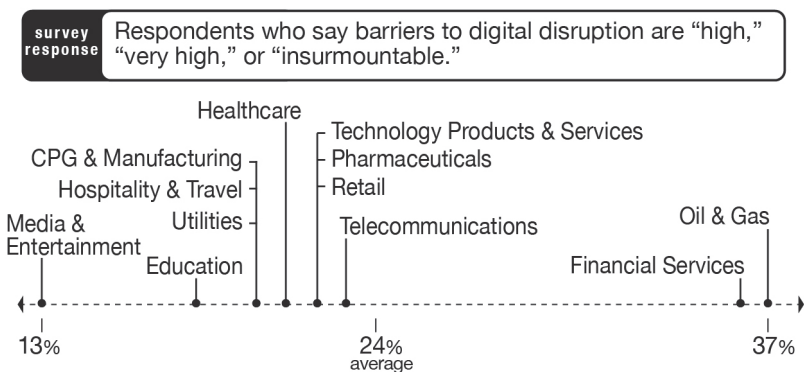


Figure 7: Safety Not Guaranteed

Source: Global Center for Digital Business Transformation, 2015

## Implications

Digital disruption is affecting most sectors of the economy and many facets of our lives. In this age of digital disruption, multiple technology transitions (cloud, mobile, social, big data) are converging. What happens when one exponential force collides with another? Is there a doubling of their effects? Or an order of magnitude increase? Do they change direction? Or do they become something completely new?

As they move toward the center of the Digital Vortex, industries frequently collide, decoupling sources of value, and then merging and creating new competitive forms. As the level of digitization increases, industries are unbundling and recombining, so much so that the very notion of “industries” may become meaningless. Competing on the basis of membership in a club of companies that identify as “banks” or “utilities” may seem quaint in the decades ahead. To which industry does Tesla, or Apple, belong?

The 44 percent of surveyed executives who dismissed the threat of digital disruption should ask themselves, “Why will we be spared such a change? When does confidence become complacency?” Exponential change looks remarkably like linear change until it reaches what futurist Ray Kurzweil calls the “knee of the curve” – by which time it is too late to prepare.<sup>27</sup>

Disruptive innovators are digitizing ever more granular pieces of the value chain in virtually all industries. As a result, value is atomizing, and many of the traditional profit pools on which incumbents depend have sprung leaks. Our research reveals executives believe a significant number – as much as 40 percent – of incumbents may be left wounded, perhaps mortally, by digital disruption in the next five years. Nevertheless, all is not lost for incumbents. As we will demonstrate in this book, those that can harness digital technologies and business models can prevail.

However, our survey also highlighted factors that question incumbents’ readiness to battle their new digital rivals. What is sometimes called “premature abandonment of the core”<sup>28</sup> (i.e., when successful companies unwisely chase growth in new markets, thereby undermining their principal sources of revenue and profit) has been the road to ruin for many a market leader. Most mature organizations still have considerable value that they can, and should, extract from digitizing their operations and key internal processes. With corporate profits at record highs, moreover, defensive strategies for incumbents actually may seem perfectly appropriate, and often are.<sup>29</sup> We will explore the range of response strategies open to incumbents when confronting digital disruption in Chapter 4.



Sometimes, though, the best defense is a good offense. After a prolonged period of revenue stagnation, the International Monetary Fund now forecasts a return to stable global GDP growth<sup>30</sup> approaching 4 percent per year through 2020.\* Yet a recent analysis from McKinsey paints a very different picture. After observing enormous gains in corporate profits over the past two decades, McKinsey projects corporate margins will decline some 15 percent through 2025.<sup>31</sup> They attribute this decline to both emerging-economy competitors and digital disruptors, noting, “High-tech companies are introducing new business models and striking into new sectors. And the tech giants themselves are not the only threat. Powerful digital platforms such as Alibaba and Amazon serve as launching pads for thousands of small and midsize enterprises, giving them the reach and resources to challenge larger companies.”<sup>32</sup> Thus the Digital Vortex presents a clear exacerbation of margin pressure that may demand more disruptive strategies from incumbents.

“Disrupting yourself” does not mean discarding what has made you successful. Nor does it require you to mimic in-vogue digital tactics. Instead, it begins with challenging the assumptions that have underpinned past success, and stress-testing the ways in which you deliver value to customers.

---

\* Not all observers are so sanguine about the prospects for returning to growth. See, for example, Robert J. Gordon, *The Rise and Fall of American Growth: The U.S. Standard of Living Since the Civil War*, (Princeton: Princeton University Press, 2016).