accenture

consulting | technology | outsourcing

Remaking Customer Markets

Unlocking growth with digital

High performance. Delivered.

Contents

Foreword

Mark Spelman

Managing Director
Accenture

As business leaders identify post-recession growth opportunities, three things are becoming increasingly clear. First, the reliability of these growth opportunities is only as strong as companies' ability to contribute to problem solving for customers and citizens. Second, internally focused management approaches that provided much-needed agility during the crisis now need to be complemented by a more proactive approach beyond the walls of the enterprise. And third, almost all new business is enabled by fundamentally digital approaches to insight or marketing or delivery.

In my conversations with business leaders I am repeatedly struck by the fact that their priorities seldom revolve around the traditional categories of value creation—whether industry, product, application, or cost. More than ever, the customer experience is what matters most. Yet this is only part of today's business reality. The arena in which new competitive dynamics are playing out (where, as our analysis shows, there are higher rates of growth) is a world of digitally contestable markets. "Digitally contestable" thanks to the ability of today's technology to dissolve traditional industrial or economic boundaries and to spark sudden and lasting shifts in what customers come to expect. And "markets" that are being created for customers' overt or latent needs and wants for learning, for staying healthy, for traveling. In this environment, companies' success will be measured by their ability to contribute dynamically to solving the problems that stand in the way—an entirely new way—of how the world might live and work.

Which markets does your company inhabit? What is your company's competitive essence? How agile are you? What skills and processes are needed to anchor sustained differentiation?

These are some of the stark questions that a world of digitally contestable markets throws into sharp relief. In this report we suggest some guiding principles and questions that can enable enterprises to set the right course. The challenge is perhaps particularly acute for long-established businesses that seek to marry market centricity and external agility to their existing industrial and organizational disciplines.

Companies that succeed will emerge as a class of digitally competitive companies, well positioned for growth and high performance in the years ahead. We hope that this report will stimulate dialogue and debate that proves useful in meeting the challenge.

Executive summary

From downturn to digital

As companies look beyond the economic recession to a tentative recovery, they face the double pressure of managing both uncertain macroeconomic conditions and digital disruption.

- Accenture surveyed 500 C-level executives from 10 economies (both developed and emerging) about the key influence on their corporate strategy over the next five years. Sixty percent identified macro-economic conditions (such as slowing economic growth) as the most significant influence, whereas 38 percent of respondents see structural change (such as the impact of technology on consumer behavior) as most significant.
- The ability of technology and innovation to reshape industry norms and boundaries was most commonly cited as the most important structural shift that businesses will face over the next five years.

Unconventional growth

Although 64 percent of companies plan growth within their existing business model in the next five years, a larger share—80 percent—are planning growth via new business models.

- Sixty percent plan to pursue growth in, or in collaboration with, other industries. For example, Verizon recently acquired an automotive telematics company to expand its presence in the car market.
- One third intends to pursue non-traditional growth in, or in collaboration with, the public sector and/or the non-profit sector. P&G and Walmart have both created online education courses with edX, a platform developed by Harvard and Massachusetts Institute of Technology (MIT).
- More than one quarter plans to expand into new areas by harnessing the changing roles of stakeholders, such as consumer coproduction, open innovation, and crowdfunding. Google recently invested US$125 million in LendingClub, a system that enables peer-to-peer lending.

Companies intend to pursue these new business models by using flexible partnerships, rather than mergers and acquisitions (M&A).

- Seventy-eight percent of survey respondents plan to pursue growth in new areas by using flexible organizational forms of collaboration, such as strategic alliances (63 percent) and joint ventures (46 percent). A smaller share (39 percent) plan to use M&A.

While digital capabilities are key enablers of unconventional growth, business leaders see "analog" capabilities such as personal networks as the most important.

- Seventy-one percent of respondents cited at least one digital capability as critical to enable growth, including data analytics (50 percent), mobile computing (48 percent), social media (46 percent), eCommerce (38 percent).
- However, the most important enabler of growth is seen to be personal networks and relationships, identified by 58 percent of business leaders.

The emergence of digitally contestable markets

Businesses' growth plans are increasingly taking them into markets populated by players from different industries that collaborate and compete to address evolving customer needs—all fueled by digital technology. Accenture has identified six digitally contestable markets where traditional industries are being reshaped by new entrants from different industries.

1. **Staying healthy:** the increase in availability and cost effectiveness of healthcare provision from using big data and open-source technology.
2. **Paying:** the use of social and mobile technologies to enhance payment options for customers.
3. **Shopping:** the tailoring of retail experiences built upon a wealth of data on individual preferences, delivered by players from a diverse set of industry origins.
4. **Learning:** the massive personalization and democratization of education.
5. **Producing:** the use of new manufacturing technologies to reinvent industry value chains.
6. **Traveling:** the use of data and machine-to-machine communications in smart, connected transportation systems and their substitutes.

Accenture analysis in collaboration with Oxford Economics shows that digitally contestable markets are set to realize higher rates of growth than that which is seen in their core sectors:

- In Germany, while we forecast that financial services will grow by 1.9 percent per year over the period 2012 to 2018, our assessment of all the relevant growth in the sectors serving the paying market points to a growth forecast of 2.5 percent.
- In the United Kingdom, the healthcare sector is forecast to grow at 1.0 percent from 2012 to 2018, versus a market view of 1.6 percent per year.
- In the United States, the retail industry is set to grow by 2.7 percent per year over the period 2012 to 2018, while we estimate a growth forecast of 3.8 percent.

As well as higher growth rates, digitally contestable markets also represent significant revenue opportunities. We estimate that in 2018 the total revenues (gross output) realized by these digitally contestable markets will amount to:

- €747.4 billion in Germany—€154.3 billion or 26 percent higher than in the core sector in 2012.
- £519.2 billion in the United Kingdom—£111.8 billion or 27.4 percent higher than in the core sector in 2012.
- US$5963.7 billion in the United States—US$1684.5 billion or 39.4 percent higher than in the core sector in 2012.

Leading from the front

Business capabilities needed to perform in a world of digitally contestable markets are three-fold:

1. **Market sensing:** the ability to anticipate and integrate fast-changing customer needs as well as wider trends in other industries. Eighty percent of high performers said they are well positioned to understand trends outside their traditional industry compared with 52 percent of low performers.
2. **Organizational realignment:** the ability to redirect the organization quickly to respond to changing threats and opportunities. Ninety-one percent of high performers said they became more agile during the recession; only 48 percent of low performers did so.
3. **Ecosystem orchestration:** the ability to marshal a wider array of potential providers and collaborators in service or take on different ecosystem roles at the same time. Eighty-four percent of high performers believe they are well positioned to build external networks in their ecosystems—only 39 percent of low performers agree.

Leading companies that aspire to be "customer market makers" are addressing these capabilities by enhancing "analog" skills with digital capabilities. For example:

Harness employees as part of the 'corporate antennae.' Companies can find new ways to capture what is going on at the edge of the firm and turn it into strategic insight for decision makers. Often, these platforms combine digital infrastructure with human judgment. For example, consumer goods giant P&G has developed a system called 'Consumer Pulse' which collates all the comments from employees, customers and stakeholders on social media sites, categorizes them by individual brand and puts them on the screen of the relevant P&G individual.

Augment human skills. Companies can augment the impact of employees' abilities through digital tools. Moorfields Eye Hospital in London has trained eye specialists to provide remote diagnostics through digital applications. The hospital now manages workload across departments much more efficiently even at times of high demand or shortage of staff.

Create a culture of open collaboration. Thanks to crowdsourcing platforms and social networks, businesses can now tap the intelligence of a much wider "extended" workforce made up of partners, their employees and, of course, customers themselves. For example, GE partnered with the Defense Advanced Research Projects Agency and MIT to develop a crowdsourcing platform to attract new ideas around the design and manufacturing of defense machinery.

Industry at the limit?

Our analysis calls into question traditional concepts of industry, pointing to a digitally enabled future in which approaches to business strategy and regulation will need to evolve. It asks fundamental questions of both policymakers and business leaders.

For policymakers:

- How can policy interventions further dismantle barriers to entry, particularly in industry sectors that may traditionally have been protected?
- How can increased investment in digital infrastructure and skills be channeled to those sectors that will likely reap greatest economy-wide reward?
- How can existing approaches to industry regulation be upgraded to reflect the increased blurring of existing boundaries that digital technology has catalyzed?

For business leaders:

- To what extent do you conceive of your business as providing customer experiences versus products and services?
- How do you maintain active relationships with businesses outside your immediate value chain?
- How are you deploying digital technology to proactively disrupt your industry?

1 From downturn to digital

A lot can happen in five years. When Lehman Brothers went bankrupt in September 2008, igniting the start of the global financial and economic crisis, 11 million iPhones had been sold; now, the figure is nearly 400 million. Android apps had yet to be launched; now, nearly 1 million are on the market. Airbnb was one month old, Spotify did not exist, printers printed in two dimensions, and a MOOC (massive open online course) might have been more likely to feature in a Harry Potter story than the pages of *The Economist*.

It is, undeniably, a digital world. Social media brought together networks of individuals—today the industrial internet is joining together machines through real-time data transfer and communication. The rate of this data explosion has been staggering: 90 percent of the world's data has been generated over the last two years.[1] The speed and scale of the digital revolution has been matched only by customers' embrace of it. How we live, how we work, how we learn: Barely any aspect of life today is untouched by the power of digital technologies encompassing social media, mobile computing, data analytics and the cloud.

Managing on all fronts

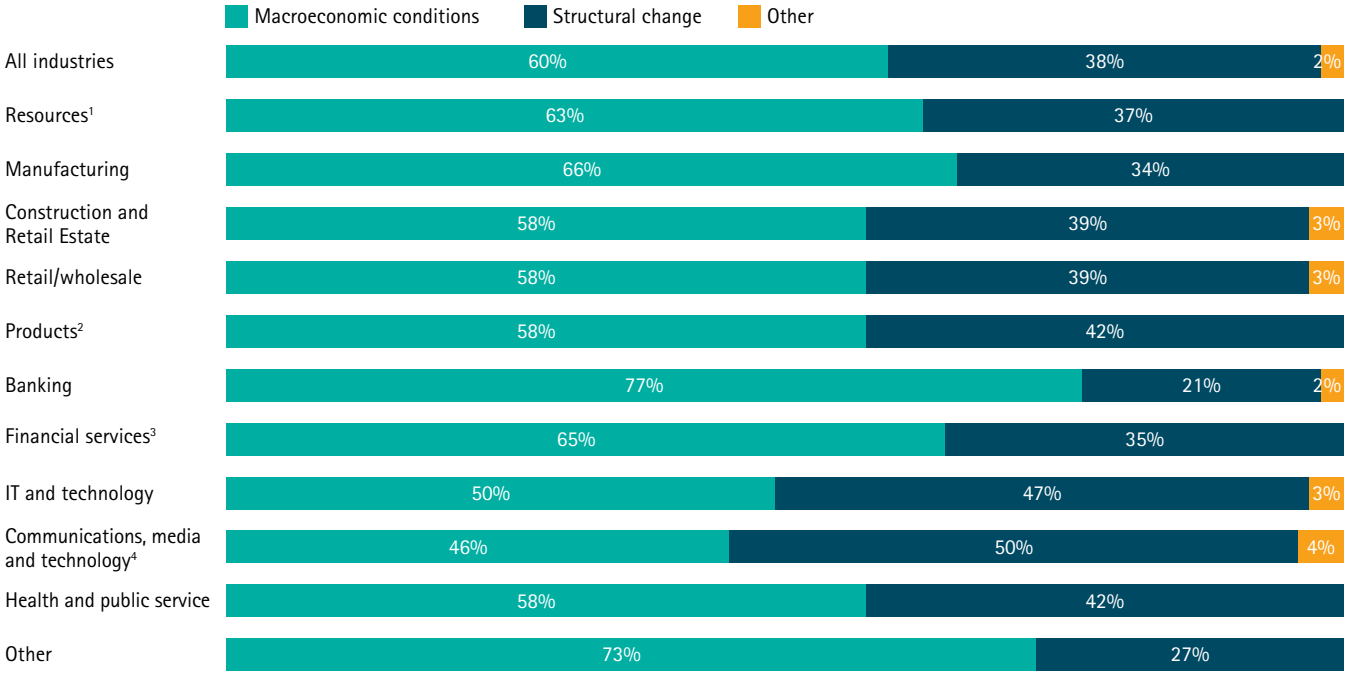
Against this backdrop, heightened levels of uncertainty and volatility in the global economy have meant a period of consolidation for many businesses, with cost efficiencies being pursued alongside cash generation. Indeed, cash reserves held by S&P 500 companies hit a peak in the first quarter of 2012—record levels of cash have been reported in 18 of the last 20 quarters.[2] While there are signs of recovery around the world, it nevertheless appears that the scars of the downturn run deep. When we asked 500 C-level executives from 10 economies (both developed and emerging) about the likely key influence on their corporate strategy over the next five years, 60 percent identified macroeconomic conditions (such as slowing economic growth) as most significant (see Figure 1). The banking sector in particular is especially focused on the state of the wider economy, with 77 percent of respondents highlighting macroeconomic conditions. Businesses in economies that fared badly during the recession share this sentiment—for example, 80 percent of respondents based in Spain also point to macroeconomic conditions as the key influence on their strategy.

By contrast, 38 percent of respondents see structural change (such as the impact of technology on consumer behavior) as the main influence on their company's strategy over the next five years. Looking across industry groups, companies from the communications, media and information technology industries rate these forces especially high, reflecting the extent to which technology shapes their core value proposition.

Managing and balancing these influences is hardly optional. Both macroeconomic conditions and structural change require simultaneous attention as businesses navigate a period of economic recovery punctuated by digital disruption. As the impact of digital technology becomes even more widespread beyond tech-heavy sectors, business leaders need to guard against the risk of becoming excessively focused on responding to economic conditions relative to structural change affecting their industry. Unless a period of waiting for macroeconomic conditions to improve is judged to be an adequate strategy, anticipating and adapting to structural shifts will need to feature on the road ahead. But what structural shifts are business leaders seeing?

Figure 1. Businesses continue to focus on macroeconomic conditions in setting their future strategy

Looking ahead to the next five years, do you think that your company's strategy will be influenced mainly by...



[1] Resources = agriculture and agribusiness, chemicals, energy, utilities, natural resources
[2] Products = automotive, industrial equipment, consumer goods and services, logistics and distribution, tourism, transportation
[3] Financial services = insurance, financial services
[4] Communications, media and technology = entertainment, telecommunications, consultancy services

Source: Accenture global business leader survey 2013

Grappling with structural change

The most important structural shift identified by business leaders is "the ability of technology and innovation to reshape industry norms and boundaries" (see Figure 2 for industry breakdown). Company leaders recognize that digital technology is having as profound an impact on business as on any other walk of life.

Traditional industry structures have been shaken. Incumbents find themselves assailed by technology startups, freelancers and other innovative niche players who are able to enter their market with apparent ease and seize market share based on an ability to deliver superior customer experiences. For example, in transportation (Hailo and Uber versus car service companies), education (Coursera and edX versus universities) and finance (Square versus acquiring banks), established players are being forced to compete with companies who would not even have appeared on their radar five years ago.

But the insurgent activity is not limited to startups. Incumbents are also discovering how existing strengths can be used to identify and participate in new market space. For example, Bharti Airtel, an Indian telecommunications giant, entered the financial services industry with Airtel Money, a mobile wallet service. The Airtel Money service allows its users to load cash on their mobile devices and spend it to pay utility bills, shop at more than 7,000 merchant outlets, transact online, and carry out instant money transfers with other users.[3] As digital reshapes industry structures, no-one is exempt—and all must respond.

It is notable that tech-heavy sectors, such as information technology and communications and media, appear to be less concerned about the impact of technology on industry boundaries and norms. The most likely explanation is that, to a large extent, they are already experiencing technology's capacity to erode industry boundaries and open up markets to new levels of competition.

Similarly, when looked at through a geographic lens, executives in emerging economies are generally most concerned with the impact of technology and innovation—in developed economies, the most disruptive shift is seen as "greater levels of industry and company regulation". This perhaps also reflects the extent to which executives in developed markets are already experiencing digital disruption, to the extent that their primary concerns have moved on.

By pursuing digital innovation opportunities, incumbents and startups alike are seeking to tap into a latent reservoir of customer demand for better experiences, almost regardless of who provides it. And in the process of pursuing the growth opportunities that digital technology makes possible, businesses are often deviating further and further from their original industry and market focus. Successfully navigating this journey requires new strategies and capabilities that, for many companies, represent a departure from the norm.

Figure 2. The disruptive power of technology and innovation is the most significant structural shift

Looking ahead five years, which of the following structural shifts do you think will be most disruptive to your company? (Rank up to five in total—top three most popular shown)

	Resources[1]	Manufacturing	Construction	Retail	Products[2]	Banking	Financial services[3]	IT & Techology	Communications, media and technology[4]	Health and public service	Other
The ability of technology and innovation to reshape industry norms and boundaries	1	1	1	2	2=	3	2	3=	1=	2=	
Blurring boundaries between producers, consumers, and investors	2=		2	1	3		3			1=	
Greater levels of industry and company regulation	2=		3	3=	2=	1	1	2	1=	1=	
Heightened expectations from consumers and governments of ethical behavior from business		3				2		3=			1=
Increasing scope for businesses to be more involved in the delivery of public services/creation of wider social benefit		2					3=				
Liberalization/ deregulation of markets							3=				3
Globalization and increasing levels of competition				3=				1	1=	2=	1=

See key under Figure 1, page 8 for detail of industry categories.
Source: Accenture global business leader survey 2013

2 Unconventional growth

Even the most seasoned observer of the business world would have been surprised by recent headlines. The telecommunications company, Telefónica investing in healthcare and pursuing opportunities in mobile health. Or companies, such as Google, appearing to do almost everything. Every week sees new stories of unconventional deals, partnerships and developments whereby industry incumbents are making forays into new, sometimes apparently unrelated territories. What is going on?

Accenture asked 500 business leaders from across the globe where their growth plans lay for the next five years (see Figure 3). While 64 percent plan to grow their existing business, a greater share—80 percent—are planning to pursue non-traditional growth, in large part by venturing into or with other industries (60 percent). This is the type of approach taken by Verizon, an American telecommunications company, which recently acquired a firm specializing in automotive telematics to expand its presence in the car market.[4] Companies based in emerging economies are also particularly focused on cross-industry expansion, with 87 percent of executives based in China planning on this type of growth, versus 53 percent in both the United Kingdom and United States.

To new industries and beyond

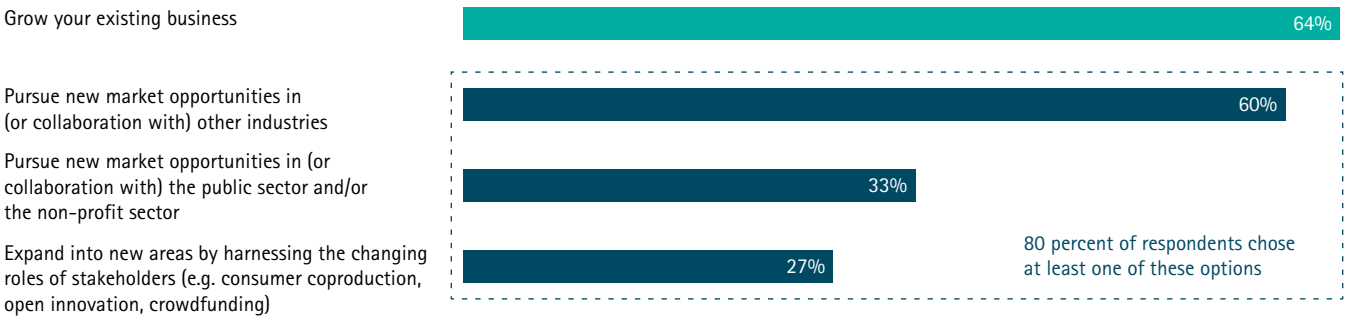
Businesses are not only making deals to acquire and then integrate companies in other industries, but also they are exploring market opportunities in other sectors of the economy and with a wider network of stakeholders. One-third of businesses are planning to pursue new market opportunities in, or in collaboration with, the public sector and/or the non-profit sector. For example, P&G and Walmart have both created online education courses with edX, a platform jointly developed by Harvard and MIT.[5] In addition, more than one quarter of businesses are planning to expand into new areas by harnessing the changing roles of stakeholders, such as consumer co-production, open innovation, and crowdfunding. Google, for example, recently invested US$125 million in LendingClub, a system that facilitates peer-to-peer lending and borrowing.

Non-technology drivers

Businesses' appetite for pursuing non-traditional growth opportunities by diversifying into new industries, sectors and stakeholder relationships may be explained not only by the enabling power of technology, but also by a number of other factors. For example, fiscal austerity programs in many economies are creating greater opportunities for the private sector (and non-profits) to compete for the right to provide services typically undertaken by governments. And an emerging alignment around a doctrine of "shared value" (the combination of financial and social benefit) is causing many businesses to explore opportunities with wider stakeholders, particularly with the non-profit sector, as a source of competitive advantage. Practice Fusion, a startup founded in 2006, offers a free, digital platform for electronic medical records to doctors, their practices and patients. The platform allows users to compare doctor reviews and provides a tool that helps patients better understand and manage their health spending.[6] This has increased transparency between patients and their providers while attracting US$70 million of investment in 2013.

Figure 3. Companies are planning to pursue growth opportunities outside their own industry

Thinking about your company's growth aspirations for the next five years, which of the following options are you intending to pursue? (% of all respondents)



Source: Accenture global business leader survey 2013

Collaborating as well as competing

Executing these growth plans will not be easy. The very act of stepping into the relative unknown of new industries and sectors of the economy means businesses may be cautious and experimental. Here again, technological and non-technological factors are combining to set the preferred course.

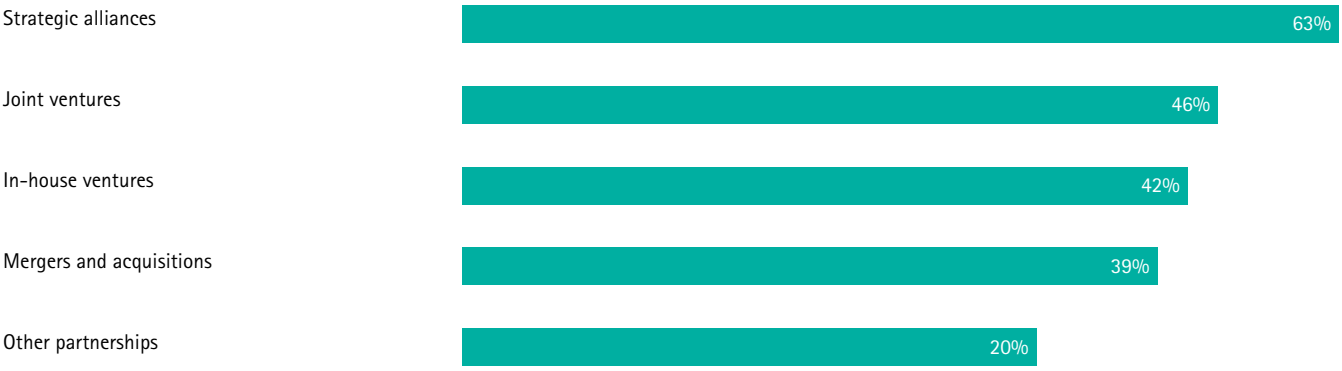
The result? It seems that businesses are just as keen to share elements of the value chain as own them. While 39 percent plan to grow through acquisition, 78 percent intend to use more flexible or contingent forms of partnership and collaboration. These include strategic alliances (63 percent) and joint ventures (46 percent). For example, GE partnered with startup Quirky, a company that utilizes crowdsourcing to generate innovative ideas on new products. The partnership allows GE to access 20,000 inventors involved in Quirky's platform. In turn, this crowd of inventors is able to access thousands of patents from GE's patent library.[7] Six months after the partnership was announced, the two companies had already produced five co-branded smart home appliance products, all Wi-Fi enabled and running on an iOS and Android app.

Indirect approaches to collaboration are also emerging as a feature on the digital landscape. Many companies are realizing that they are able to turbocharge growth in other industries by either selling or sharing their data openly. For example, in China, Taobao, the country's largest peer-to-peer eCommerce platform has started providing small vendors with free analytics to help them introduce more tailored offerings to shoppers. The company estimates that this way it will attract more vendors, expanding its base to 1 million small merchants that could contribute as much as 1 million yuan (US$164,000) each in annual sales by 2014.[8]

In navigating the increasingly crowded boundaries that exist between industries, sectors and stakeholders, flexibility appears to be the key. However, this also raises questions about the capabilities required to achieve such growth—and the extent to which flexibility must be complemented by clear principles and responsibilities that maintain the business's culture and purpose. Which capabilities do business leaders see as most important?

Figure 4. Businesses are looking to grow through flexible partnerships

In terms of developing your business into new areas, how do you expect to achieve this? (% of all respondents)



Source: Accenture global business leader survey 2013

Digital is the enabler—but personal networks are key

In pursuing growth opportunities that tap into new customer markets, both digital technologies and "analog" (personal) networks are considered to be critical. Figure 5 shows how business executives have moved beyond traditional eCommerce channels to embrace mobile computing, social media and data analytics as key elements of their growth strategies. Indeed, 71 percent of business executives chose at least one digital capability as important. For example, ASOS, a UK online fashion retailer, launched its 2013 summer sale by showcasing a preview of its collection on Facebook which attracted one million views.[9]

However, business executives see "personal networks and relationships" as the most important single capability, with 58 percent identifying them as critical to achieving their growth plans.

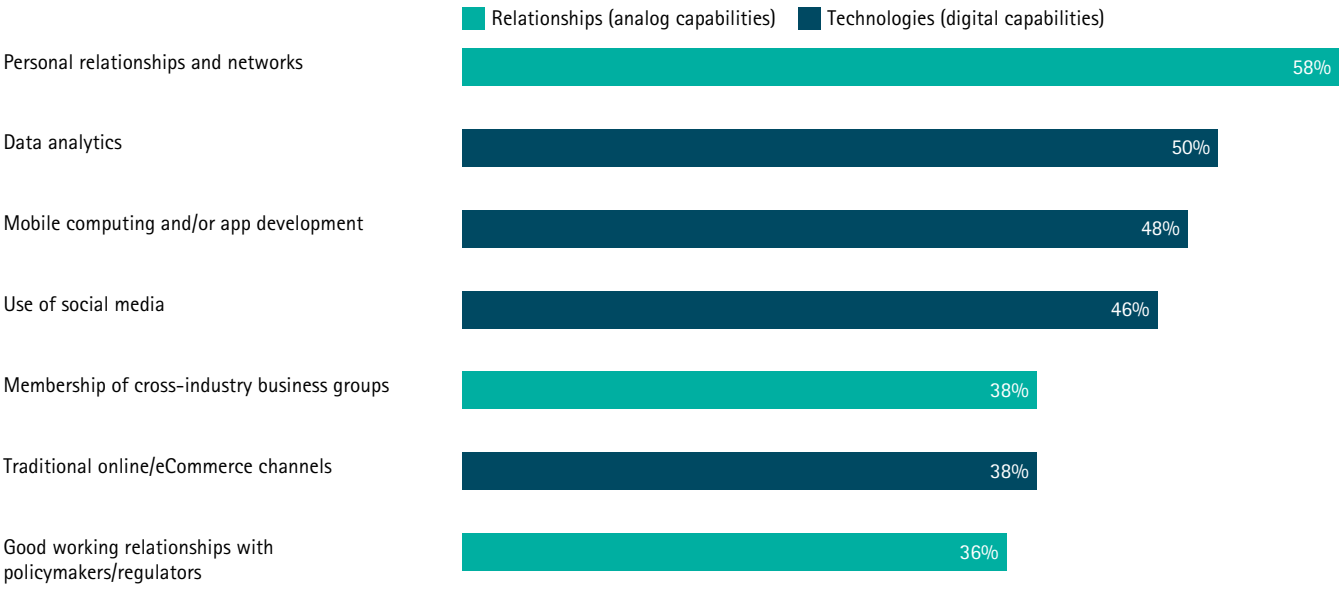
In large part, this reflects the fact that digital and personal forms of interaction are no longer seen as separate—digital technology provides a channel through which personal relationships can be cultivated and is now so mature that "how you use it" matters more than it did in the past.

ASOS attracted high volumes of traffic to its Facebook page and it was here that the company was able to interact, engage and spur discussion among its customers. Similarly, the online review and search site, Yelp, has nurtured personal networks across the world to grow its business in a different way to most digitally focused review companies. Yelp hires full-time, locally based community managers in more than a hundred markets who foster a real-life community of people sharing their local favorites and connecting with one another, including at offline events.[10] The medium may be digital, but the analog skills of networking and relationship development remain critical.

New plans, new capabilities and new strategies. The digital world is punctuated by examples of companies looking for new avenues to growth, enabled by technology. This emerging trend is challenging traditional notions of industry as businesses straddle multiple boundaries simultaneously. Indeed, we appear to be seeing the signs of more complex customer markets where digital technology is enabling a wider network of organizations to participate. Where is this happening—and how?

Figure 5. Growth depends on both digital and "analog" capabilities

Which tools and capabilities will be most important to enable growth (in new areas)? (% of all respondents)



Source: Accenture global business leader survey 2013

Building on BRIC?

Executives based in the high-growth BRIC economies believe that, across many dimensions of digital disruption, their companies have a head start compared with those in the developed world. This is the headline finding based on the survey responses of 120 C-level executives in Brazil, China, India and Russia.

- **Head start on multi-industry:** Eighty-five percent believe they are well positioned to harness the ability of technology and innovation to reshape industry norms and boundaries, compared with 75 percent in developed markets. For example, Bharti Airtel, an Indian telecommunications giant, entered the digitally contestable market for Paying with Airtel Money, a mobile wallet service. The Airtel Money service allows its users to load cash on their mobile devices and spend it to pay utility bills, shop at more than 7,000 outlets, transact online, and carry out instant money-transfers with other users.[11]
- **Head start on multi-sector:** Seventy-one percent of executives based in emerging markets think they are well positioned to become more involved in the delivery of public services or the creation of wider social benefit, versus 44 percent in developed markets. Novartis, a global pharmaceutical and healthcare company, is collaborating with a major medical equipment manufacturer and a big public-sector bank to bring healthcare infrastructure closer to Indian villages through rural doctors.
- **Head start on multi-stakeholder:** Nearly three quarters (74 percent) of emerging-market executives believe that their company is well positioned to respond to the blurring boundaries between producers, consumers and investors, compared with 62 percent in developed markets. For example, in 2010, automotive company Fiat relied on crowdsourcing in Brazil by inviting visitors to a website to submit their ideas and suggestions for the perfect town car. More than 17,000 people from more than 40 countries took up the invitation and submitted upwards of 10,000 suggestions. The result was the Fiat Mio, a car that won numerous design awards.[12]

Experience: required

Why are executives in BRIC markets more bullish about their companies' prospects for tapping these new opportunities? There may be fewer incumbents and regulations to crowd the competitive landscape; businesses may be more used to working alongside governments; and consumers in BRIC markets are relatively fast movers when it comes to adopting digital technologies. Businesses and policymakers in the developed world would do well to look to these economies for examples of where these business models have worked, and learn the lessons.

3 The emergence of digitally contestable markets

Businesses increasingly operate in markets that transcend traditional industry boundaries and classification. Accenture has identified six digitally contestable markets where technology is opening up traditional industries to new businesses:

Staying healthy: the increase in availability and cost effectiveness of **healthcare** provision from using big data and open-source technology.

Paying: the use of digital technologies to enhance payment and **financial service** options for customers.

Shopping: the tailoring of **retail** experiences built upon a wealth of data on individual preferences, delivered by players from a diverse set of industry origins.

Learning: the massive personalization and democratization of **education**.

Producing: the reinvention of industry value chains through new **manufacturing** technologies.

Traveling: the use of data and machine-to-machine communications in smart, connected **transportation** systems and their substitutes.

Why "digitally contestable"? To reflect the fact that digital technology is opening up traditional industries to new levels of competition, often from entirely new industries (see Figure 6).

Figure 6. Six digitally contestable markets: Core and selected halo sectors

Understanding the economics of digital contestability

Digital market participation—fewer hurdles

Digital technology and the increasing convergence of technological functions and platforms are reducing barriers to entering new markets in two ways.

First, the costs of entering (and exiting) new markets are significantly reduced. Thanks to eCommerce platforms, anyone can set up an online retail business in just 30 minutes. BigCommerce, started in 2009, has already processed 17 million orders for as many as 35,000 clients.[13] Technologies such as cloud computing have also made it easier for companies to achieve scale organically, without the normal hurdle costs associated with going from startup to a mid-size firm. Salesforce.com is one provider of cloud services, and has grown to become a US$3 billion business.[14]

Second, entrants face fewer technological disadvantages, so that their products and services may be just as good as the incumbents'. By launching its own tablet (Hudl), a retailer like Tesco suddenly became a competitor of technology giants such as Apple or Samsung, over and above disrupting its core sector (retail) by providing a new channel for shopping.

Digital costs—lower and more variable

Moore's Law—the prediction that the number of transistors on integrated circuits (a rough proxy for processing power) will double every two years—is the central theory behind much of what is making technology cheaper. "Exponential" technologies—such as processing power, data storage, and memory—promise repeated doublings in improvement of both price and performance over relatively short intervals.[15]

These technologies dramatically reduce the cost of core components, leading to a more general reduction in development costs. The cost of a gigahertz of processing power, for example, was US$45 in 2008—that had fallen to just US$5 in 2013.[16] As the costs of the core technologies fall, innovation becomes more widespread. In the United Kingdom, the average cost of starting a small business is £41,458 (US$67,039).[17] At the far end of the spectrum of digitally enabled businesses, online freelancers reported their startup costs to be just US$525 (£325).[18] But all entrepreneurs are able to harness digital technology and business models to gain efficiency and scaling potential in aspects such as office space, hiring skilled employees, marketing, managing inventory, and product delivery.

Digital information—more and better

Digital technologies have helped to increase the volume of data in circulation to unprecedented levels. From user-generated and peer review platforms to cloud-based enterprise solutions, the global volume of online information per person is rising by more than 40 percent each year, from 20 gigabytes per person in 2005 to 5,128 gigabytes in 2020.[19] Not only does this make customers better informed and more demanding, but also it aggregates demand from otherwise unconnected individuals to create new markets. On the supply side, businesses have clearer and more real-time data that allows them to adapt more quickly to shifting customer preferences. In this respect, digital technology acts as a facilitator in more efficiently matching supply and demand.

While digitally contestable markets vary in terms of the level of digital disruption that each has so far undergone, nevertheless they share three key characteristics:

1 They encompass multiple industries

Digital technology makes it easier for companies from other industries—and of practically any size and maturity—to enter and contest the market, whether in a customer-facing role or further up the value chain. We refer to those new sectors that are increasingly participating in a new industry as "halo sectors." For example, UK-based global retailer Tesco may have its legacy in the grocery industry, but in recent years it has branched out into financial services, consumer electronics, telecommunications and Internet services, providing new competition to those sectors.

Of course, it is not just large companies that populate digitally contestable markets. Startups often steal a march over incumbents in terms of innovation and the ability to move quickly to provide superior services, whether directly to customers or to other businesses. Square, founded in 2009, is providing simple low-cost payment solutions to small retailers, rather than one of the giants of the payment world. The need for incumbents to upgrade their innovative capacity is, in turn, giving a greater role to technology and Internet firms, who provide platforms to host or develop incumbents' capabilities. Google, Facebook and Microsoft have formed partnerships with various automotive original equipment manufacturers (OEMs) to provide services ranging from in-car entertainment to car-grid communication.

2 They connect multiple stakeholders

Thanks to digital technology, wider and more disparate networks of stakeholders can be connected, whether directly or indirectly, to serve changing customer needs. This makes it easier for new participants to enter a new market and meet a customer need. For example, the reticence of formal financial services institutions to loan money to entrepreneurs has led to numerous crowdfunding websites springing up to address an unmet need.

3 They organize around improving user outcomes

Digitally contestable markets have the customer experience at the center. Digital technology makes it easier both to identify and to deliver customer outcomes, rather than just improving each step of the production chain.

Different companies and organizations are coming together to improve user outcomes, shoring up gaps on the supply side to tap into latent demand. In the markets for learning, big businesses such as Google and AT&T provide input for MOOCs, helping meet booming demand for education while enhancing the skills of potential future employees. In the staying healthy market, traditional healthcare providers have teamed up with software developers to develop applications that enable the collection of glaucoma patients' data through electronic tablets, paving the way for remote diagnosis.

Sizing the digital prize

Digitally contestable markets are made possible by the impact of digital technology on existing industry economics. Barriers to entry are reduced; cost structures are eroded; and information flows are better both in quality and volume (see sidebar on p.17). Evidently, these factors are helping to drive top-line growth at the company level, helping companies gain new market share more rapidly, opening up new revenue streams and enhancing customer loyalty.

But how large are these new markets? And are they growing faster than the core, legacy industries from which they have sprung? To answer these questions, Accenture worked in collaboration with Oxford Economics. Our analysis draws on data in three major economies (Germany, the United Kingdom and the United States) and focuses on three key markets: shopping (retail), paying (financial services) and staying healthy (healthcare). A more detailed explanation of our methodology is included in the technical appendix.

Growth rates are higher in digitally contestable markets

The key headline from our analysis is that digitally contestable markets are set to realize higher rates of growth than that which is seen in their core sectors:

- In Germany, while we forecast that financial services will grow by 1.9 percent per year over the period 2012 to 2018, our assessment of all the relevant growth in the industries serving the paying market points to a growth forecast of 2.5 percent per year.
- In the United Kingdom, the healthcare industry is forecast to grow at 1.0 percent from 2012 to 2018, versus a market view of 1.6 percent per year.
- In the United States, the retail industry is set to grow by 2.7 percent per year over the period 2012 to 2018, while we estimate a growth forecast of 3.8 percent per year for the shopping market (see Figure 7).

This is based upon the application of a range of scenarios that replicate the likely impact of digital technology on both the core industry as well as the new sectors that are playing in that market.

The first scenario, digital foundation, shows an outlook for digital technology adoption based on a continuation of the penetration rates witnessed over the last five years. The second scenario, digital disruption, shows more pronounced adoption of digital technology and is based on annual growth forecasts of various digital enablement sectors such as analytics or eCommerce platforms from market research organizations. The third scenario, digital acceleration, shows a greater-than-predicted adoption of digital technologies on the basis that forecasts often underestimate the eventual uptake of digital technologies. Cloud computing, for example, has grown much faster than market estimates over the last five years.

Figure 7. Gross output in core sectors versus digitally contestable markets, 2012 to 2018, real terms annual growth (percent)

	Growth in core sector			Growth in digitally contestable markets								
				Digital foundation			Digital disruption			Digital acceleration		
	Germany	UK	US	Germany	UK	US	Germany	UK	US	Germany	UK	US
Shopping (Core sector: Retail)	1.6	3.2	2.7	1.6	3.2	2.8	2.6	4.0	3.8	3.5	4.7	4.8
Paying (Core sector: Financial services)	1.9	2.0	3.2	1.9	2.0	3.2	2.5	2.9	4.0	3.1	3.8	4.8
Staying healthy (Core sector: Healthcare provision)	1.3	1.0	2.5	1.4	1.0	2.6	2.3	1.6	3.3	3.1	2.2	4.0

Source: Accenture and Oxford Economics analysis.

The revenue opportunity is big

The market space that digital technology is opening up around the retail, financial services and healthcare industries is significant. Based on our analysis, we estimate that in 2018 the total revenues or gross output realized by these digitally contestable markets will amount to:

- €747.4 billion in Germany—€154.3 billion or 26 percent higher than in the core sector in 2012.
- £519.2 billion in the United Kingdom—£111.8 billion or 27.4 percent higher than in the core sector in 2012.
- US$5963.7 billion in the United States—US$1684.5 billion or 39.4 percent higher than in the core sector in 2012.

For business leaders, this analysis underlines the need to assess market opportunities beyond the traditional confines of industry; those new markets that are emerging at the intersections of industry are significant potential sources of revenue in their own right. They may be in their relative infancy today, but their projected size means that they will need to become a central concern of all businesses that are serious about harnessing digital technology to their advantage.

Policy implications

At its heart, our analysis calls for a reassessment of how policymakers—and others—conceive of the economy on an industry-by-industry basis. If industry is no longer in itself a sufficient unit of examination, additional mindsets are needed by those shaping economic and regulatory policy in a digital world.

The fact that higher growth rates occur where traditional industry boundaries have been usurped by digitally enabled startups and incumbents have clear implications for policymakers, who may wish to consider the following questions:

- How can policy interventions further dismantle barriers to entry, particularly in industry sectors that may traditionally have been protected?
- How can increased investment in digital infrastructure and skills be channeled to those sectors that will likely reap greatest economy-wide reward?
- How can existing approaches to industry regulation be improved to reflect the increased blurring of existing boundaries that digital technology has catalyzed?
- How can the skills of those charged with industry regulation become more multi-disciplinary to reflect the fact that, for example, financial services are increasingly provided by companies from other industry sectors?
- How can public procurement act as a lever towards enhanced deployment of digital technologies for example in key sectors such as healthcare?

4 Back to the future: six case studies

Digitally contestable markets will be economically significant, both in terms of their overall size as well as the speed at which they will grow. But what will the journey toward this future look like? How are businesses—both incumbents and new entrants—shaping this future? And what will it feel like for customers? To address these questions, we present six case studies of digitally contestable markets. Each one articulates the key trends that are reshaping an industry toward a wider, more contested market; identifies the business strategies that leading companies are already pursuing to explore this new potential; and casts forward to imagine what a world of even greater digital maturity will look like through the eyes of the customer. Three of these case studies (staying healthy, paying and shopping) contain further results from our economic modeling.

Staying healthy

Key trends reshaping the healthcare industry

1 Devices are generating new levels of data

Medical technology is increasingly becoming connected to a wide range of other devices that allow medical professionals greater insight into diseases and patient treatment. Medical devices are starting to generate large volumes of data about the treatment of individual patients, allowing for personalized and more effective treatment of symptoms as well as an opportunity for healthcare organizations to differentiate themselves. Worldwide sales of smart clothes (wearable textiles that have integrated electronic devices) are predicted to jump to more than US$600 million by 2014—up 34.5 percent from 2011.[20]

2 Cloud-based platforms are enhancing patient transparency

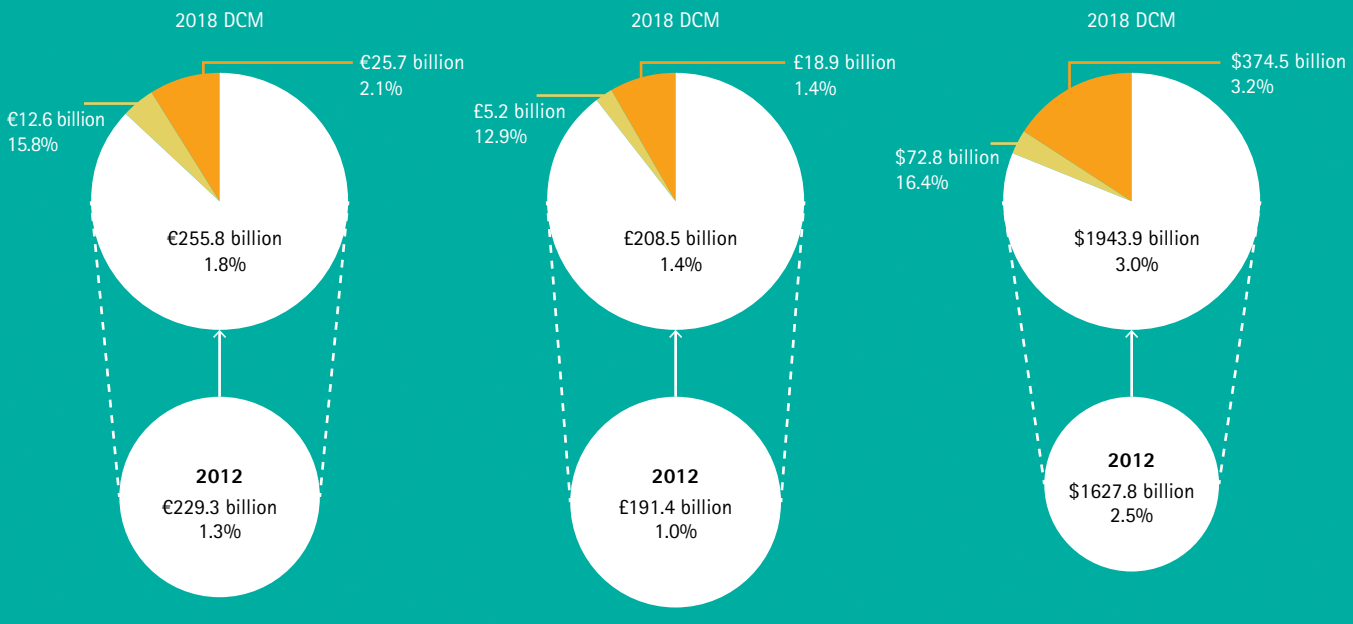
The explosion of data will continue as consumers demand to be better informed about their healthcare choices, costs and short- and long-term outcomes. At present, the information they receive is largely unregulated, of varying quality and accuracy, often difficult to find, and flows one way only. A recent survey found that seven out of 10 low-income patients in California are not happy with the current healthcare information they are able to access.[21] Integration of insurance payments and healthcare providers into one digital cloud platform can give greater patient choice and transparency. In 2012, nine percent of respondents of an annual survey targeted at healthcare leaders said that they used digital cloud computing platforms in their organizations. By 2013, that same survey reported that this proportion had risen to 30 percent.[22]

3 Remote diagnostics are spreading

Integrated data from app-based wearable tracking/monitoring devices allows for personalized doctors' analysis. In 2012 the US Food and Drug Administration cleared Proteus Digital Health's Ingestible Event Marker (IEM) sensor as a medical device.[23] The IEM can be integrated into an inert pill or other pharmaceutical products and is powered by contact with stomach fluid. It communicates via a sensor worn on the body to a smartphone and analyzes real time data to monitor medication. Other innovations such as virtual surgery, remote consultancy, and wearable tech will allow greater flexibility for patients, improved outlooks and reduced overheads for healthcare providers. In 2012 United States hospitals used robot-assisted surgery in more than 350,000 operations—a 60 percent increase from 2010.[24]

Figure 8. Growth in the healthcare sector and its digitally contestable market (2012 to 2018)

	Germany	United Kingdom	United States
2018 DCM total value:	€294.1 billion	£232.6 billion	$2391.2 billion
2012 to 2018 DCM annual growth rate:	2.3%	1.6%	3.3%



Source: Accenture and Oxford Economics analysis. Constant 2005 prices.

What strategies are incumbents pursuing?

Empowering patients to manage their own health

Digital technology is a key enabler for incumbents, allowing greater flexibility for patients in managing their own health. For example, the United Kingdom's National Health Service has recently introduced robots to the homes of people with dementia as part of a pilot scheme to help them continue to live independently. A relative or caregiver can operate the machine remotely and engage in conversation through a two-way video-call system.[25] Aetna, a US-based health insurance provider, created its "CarePass"[26] portal in 2013; it allows consumers to specify a health goal and then receive personalized suggestions for how to go about achieving it. It can also integrate data from wearable technology such as heartbeat sensors.

Collaborating rather than competing

Incumbents are finding that, in some contexts, it is better to pool resources with competitors, rather than trying to go it alone. For example, in 2013, a group of 10 leading pharmaceutical multinationals formed a research and development coalition to share R&D costs and improve time to market by standardizing drug development cycles, from early trials to commercialization.[27]

Merging analog and digital to offer a better healthcare facilities

Incumbents are teaming up with digital service providers to increase their agility and provide a better standard of healthcare. For example, Philips and Accenture have collaborated to create a proof-of-concept demonstration that uses a Google Glass™ head-mounted display to research ways of improving surgical procedures. This potentially provides physicians with hands-free access to critical clinical information without having to look away from a patient to monitors and other displays. The system could also facilitate remote monitoring of a patient's vital signs.[28]

What strategies are new entrants pursuing?

Undercutting incumbents through lower barriers to entry

New entrants face lower barriers to entry, thanks to the increasing availability of platforms, aided by easy development and reach of apps. Practice Fusion, a startup from 2006, offers a free, digital platform for Electronic Medical Records to doctors, their practices and patients. The platform allows users to compare doctor reviews and provides a tool that helps patients better understand and manage their health spending. This has increased transparency between patients and their providers and has attracted US$70m investment in 2013 and more than 100,000 doctors and 4 million patients to the cloud platform.[29]

Expanding the horizons of healthcare

Digital technology is opening healthcare to providers from new industries. Electronics giant Samsung, for example, has partnered with Independa, a care provider for the elderly, to develop its Angela platform. The partnership consists of a communications and entertainment platform integrated on Samsung tablets for elderly people, allowing them to maintain a vital link to caregivers and family. LG has also partnered with Independa to develop smart TVs with embedded eldercare services.[30]

Improving offerings through partnerships

New entrants are collaborating with incumbents to access advanced IT infrastructure and customer databases. For example, two digital startups, (Charing Systems and Black Pear Software) have teamed up with NHS Moorfields Eye Hospital in London to develop a prototype informatics application for the remote collection of glaucoma patients' data through iPads. Data will be analyzed remotely by specialists working at the hospital.[31] "Virtual clinics" will make use of the tablet software in peripheral centers.

This integration of the virtual and physical environments should enhance the patient experience while enabling greater levels of cost control.

What does the future hold?

The market for staying healthy is changing swiftly from provider-centric to patient-centric, with incumbents as well as new challengers providing a variety of new offerings centered on the individual. Meanwhile, other digital trends and applications will continue to reshape the traditional healthcare industry:

- Cloud platforms for healthcare will enable patients to have a single point of access for all of their healthcare provider and insurer information. In 2010 the global cloud computing market that will be crucial to underpinning digital healthcare platforms healthcare was sized at US$40.7 billion and is expected to be worth US$241 billion in 2020.[32]
- Digitally enabled healthcare will improve productivity across the industry and allow healthcare professionals to become more efficient and informed, maximizing face time with patients and enhancing the quality of care. The global healthcare analytics market is estimated to be US$3.7 billion in 2012 and is set to reach almost $11 billion in 2018 at an annual growth rate of 23.7 percent (2012 to 2018).[33]

So, what could a typical day in the life of a customer in such a world look like?

Staying healthy: A future day in the life

Behind the scenes

A leading healthcare provider has expanded into insurance and wellness (by opening a chain of gyms). It is able to offer performance-based coverage.

07:30 am

I wake up and go downstairs for my breakfast. My nutrition tracking app that balances my recommended daily allowance in line with my age and weight gives me various options based on my diet over the past week.

Tags: healthcare apps

Behind the scenes

A startup has harvested social network data to provide the consumer with alternative products. This is based on how well the functional foods performed according to a variety of apps.

09:00 am

I go to the gym on my way to work. My watch has an embedded heart rate monitor that reads my pulse rate and blood pressure. It communicates with my smartphone to suggest the best exercise routine for me based on my activity over the past week.

After an hour in the gym I have completed my monthly exercise target. This triggers a reduction in my health insurance premium and the gym rewards me with a month's free membership.

Tags: bespoke health insurance

01:00 pm

At lunchtime I have my quarterly check-up with my doctor. I go to a virtual clinic near my office. There, a machine communicates with ant-sized sensors inside me that analyze how well my heart-disease medication is working (I swallow my sensors along with my medicine). A remote consultant then surveys the data and adjusts my dosage.

On my way back to the office I get an e-mail telling me whether the appointment would have been cheaper with a different provider.

Tags: remote diagnosis

04:00 pm

A technology company has used an open-source disease transmission model to provide schools with advance warnings about when a pupil might be starting to develop a contagious disease. The model also recommends an affiliated medicine and dosage instructions. On acceptance, the prescription is dispensed by the nearest supermarket and is delivered to your household.

Midway through the afternoon I get an automated message from my daughter's school telling me that I need to pick her up. Her smart watch has picked up early signs of flu from an elevated temperature and heart rate.

My smartphone then gives me suggestions for personalized medicine for my daughter based on her age, weight and current symptoms. I place the order through the biometric reader on my device and it is delivered to my house within an hour.

Tags: wearable medical technology

Paying

Key trends reshaping the financial services industry

1 Digital networks are changing the lending landscape

The increasing prevalence of peer-to-peer platforms means that customers looking for a loan can now access a much wider range of options. According to a study conducted by the Bank of England and the Open Data Institute, the current size of the market for peer-to-peer lending is GBP£700 million, and it is expected to grow to GBP£1 billion by 2014.[34]

2 Digital banking is enhancing accessibility

Digital banking platforms now allow consumers to access services via their mobile devices, from any place and at any time. According to a survey by the Federal Reserve, the number of mobile phone users that used mobile banking services in the United States increased from 18 percent in 2011 to 29 percent in 2012.[35]

3 Phones are turning into wallets

Thanks to near field communication technology, mobile devices can become "digital wallets" and be used to pay for anything from a coffee to a cab ride. Point-of-sale technologies are also enabling merchants to use their mobile devices to make safe digital transactions "on the move." In the United States, as much as US$12.8 billion was paid via mobile devices in 2012.[36]

4 Digital currencies are providing cheaper ways of transferring money

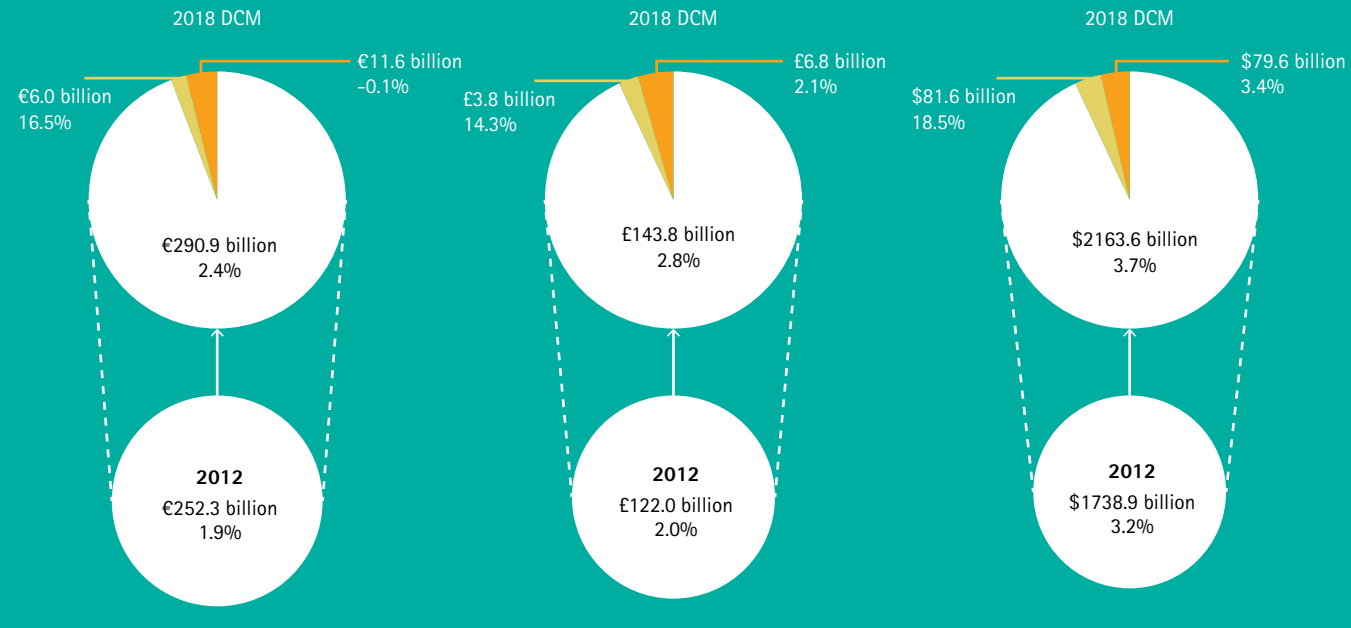
Digital currencies offer anonymous, mobile and cheap ways of purchasing goods and transferring money with low inflation risks. In November 2013 it was estimated that digital currencies had a money-supply value worth more than US$10 billion and can be used to pay for everything from property in Shanghai to flights to space. Bitcoin, a digital crypto-currency created by an open-source algorithm, currently counts 12 million "coins" worth US$12 billion in total.[37]

5 Higher volumes of data are driving service personalization

New entrants are tapping their large reservoirs of consumer data to come up with solutions tailored to each individual's financial needs. Kreditech, a startup based in Germany, uses up to 8,000 data points when assessing an application for a loan. This way it can come up with a detailed profile of each applicant and provide them with the best solution. As of December 2013, the company reported monthly growth of 65 percent.[38]

Figure 9. Growth in the financial services sector and its digitally contestable market (2012 to 2018)

	Germany	United Kingdom	United States
2018 DCM total value:	€308.5 billion	£154.4 billion	$2324.8 billion
2012 to 2018 DCM annual growth rate:	2.5%	2.9%	4.0%



Source: Accenture and Oxford Economics analysis. Constant 2005 prices.

What strategies are incumbents pursuing?

Delivering a seamless user experience through cross-industry partnerships

Leading companies are teaming up with organizations that sit outside their industries to get the capabilities they need to improve the customer's experience. For example, American Express customers can now use their loyalty points to pay for taxi rides in New York thanks to a partnership between the credit-card company and VeriFone, a provider of point-of-sale technology. In Belgium, BNP Paribas joined forces with Belgacom—a telecommunications company—to pilot a digital wallet application—Sixdots—that will allow customers to use their phone to make bank payments, get virtual tickets and coupons and store retailers' loyalty points.[39]

Embracing digital disruption to meet customer expectations

Forward-thinking incumbents are responding to digital disruption by embedding the latest innovation into their own business model. For example, as QR codes started to become a popular mode of payments, PayPal announced that its customers will be able complete payments by scanning a QR code on their smartphone or by receiving a four-digit sequence from a merchant.[40] In response to the viral spread of Bitcoin, companies and governments are taking steps to recognize its legal use (something the German Finance Ministry did in August 2013).[41] Reddit, OkCupid and WordPress.com are some of the highest traffic websites in 2013 that accept the digital crypto-currency[42]—and can avoid payment fees on transactions.[43]

What strategies are new entrants pursuing?

Augmenting traditional services

New players can break into the digitally contestable market for paying by focusing on how to use digital technology to provide traditional services more efficiently and cheaply. Lending Club, a United States peer-to-peer investment and borrowing platform, is able to offer cheaper rates than traditional banks because it operates online, automates loans for the most part, and has much lower operating costs. For example, it provides refinancing rates that are often at least 5 to 7 percent lower than standard credit card rates of 17 to 30 percent.[44] Investors on the platform can also get interest rates of 7 to 24 percent[45] higher than those offered by traditional investment companies. The company has already processed more than US$2.6 billion of loans and has attracted financing from large companies, including Google.[46]

Creating new markets to serve untapped demand

New entrants are also using digital technologies to create novel markets that serve the unmet needs of financial services users. TransferWise, launched in 2011, provides a digital money transfer service, helping people make international cross-currency transfers at a lower rate to that of banks. The mobile messaging and mobile payments provider, Infobip, has launched a virtual-currency service aimed at local and international content providers who want to enter the growing Japanese digital content market, while complying with current regulations that require a local presence before launching a paid-content or mobile-payment service.[47] Coin, a startup, allows users to combine all their payment cards—credit, debit, loyalty—into a single card connected to their smartphones.[48]

What does the future hold?

Instead of being restricted to established financial service providers and "analog" bank branches, customers can increasingly choose from a much wider plethora of vendors that offer digitally-enabled solutions that are both more efficient and less costly than traditional ones. Given the rapid pace of technology innovation in this sphere, the digitally contestable market for paying is likely to further expand its reach in the future:

- Mobile payments will become the new normal expected by consumers. It is estimated that global mobile payments will reach US$1.3 trillion in 2017.[49]
- Digital banks will become widespread. A 2013 Accenture study estimates that traditional banks operating in North America could lose as much as 35 percent of their market share to digital ones, while as much as 25 percent of United States bricks-and-mortar banks may go out of business by the same date.[50]
- Digital money transfer will become the standard way to make international transfers. Estimates indicate that by 2018 as many as 400 million people will use mobile phones to transfer money.[51]
- Peer-to-peer networks will become a leading source of funding. The World Bank estimates that, by 2025, the Chinese market for crowdfunding will reach US$50 billion.[52]

So, what could a typical day in the life of a customer in such a world look like?

Paying: A future day in the life

Behind the scenes

07:30 am

Behind the scenes

09:00 am

On my way to the railway station to go to work I stop to buy breakfast and I pay through my smartphone app payment profile. I collect my order by saying my name and the cashier cross-checks my profile photo with my appearance. The payment is then authorized electronically through the app.

Tags: mobile payment

A startup has developed an application that allows any smartphone to be used as a mobile point-of-sale. This application is free to use but the startup takes a very small commission for each transaction.

Customer-centric production and development enables new, disruptive and innovative products that avoid the creative restraints that can hamper larger incumbent producers.

In the lobby of my office I notice a house for sale advertisement. As I'm looking to buy my first home I scan the QR code on the advertisement and after authenticating with my biometric reader on my smartphone it links securely to my bank account. Based on my current savings, my spending behavior and my referrals on my professional social network, the finance platform provided by my bank shows me a variety of personalized mortgage options.

Tags: personalized finance

01:00 pm

At lunchtime I meet a friend who is looking to launch a new product—a solar-paneled smart-watch made from bicycle parts. I agree to help crowdfund his product in return for a percentage return on my investment.

Tags: crowdsourced finance

A crowdfunding platform developed by a startup offers customers lower intermediation costs as well as a more fun, engaging relationship with investment and financing.

04:00 pm

An online retailer also advertizes that I could spend my GBP£25 on an online gift card. It provides a discount of around 5 to 10 percent and also eliminates the transaction and currency fees faced by spending traditional currencies abroad.

In the afternoon I send my brother his birthday present of GBP£25... the same as every year. As he is currently working in Beijing, I decide to send him the money through a digital-currency system to avoid large money-transfer fees and other transaction costs.

Tags: digital currency

07:00 pm

Arriving at the station platform for my commute home my smartphone automatically checks in with the train operator. Due to snow my train is delayed. Once I have got to my destination my smartphone checks out and a fare is automatically taken from my bank account. It is reduced by 20 percent because of the delays to my journey.

Tags: mobile payment platforms

A transport company has worked alongside a bank using cloud-based financial platforms to give the consumer flexibility and transparency of data and payment information.

Shopping

Key trends reshaping the retail industry

1 Analytics are enhancing understanding of buyer needs

Disruptors and incumbents alike can now count on more detailed data on shoppers' behavior, which they can use to tailor their offerings. According to a survey on customer analytics, 51 per of companies rank "improved customer satisfaction" as the primary reason for adopting analytics.[53]

2 Online platforms are lowering entry barriers

E-commerce platforms are reducing barriers to entry by providing cheap infrastructure to new entrants. BigCommerce now allows anyone to set up an online store in less than 30 minutes. Since its establishment in 2009, it has already processed 17 million orders for as many as 35,000 clients.[54]

3 Near field communication is enabling the spread of mobile payments

Shopping via mobile phones increased by as much as 75 percent in the 14 months from April 2012 to June 2013. Adyne, the world's largest mobile payment platform, processed US$10 billion in 2012. Recent predictions indicate that as many as 245.2 million people will make mobile payments globally in 2013—a 22 percent increase from 2012.[55]

4 The shared economy is opening up new markets for collective consumption

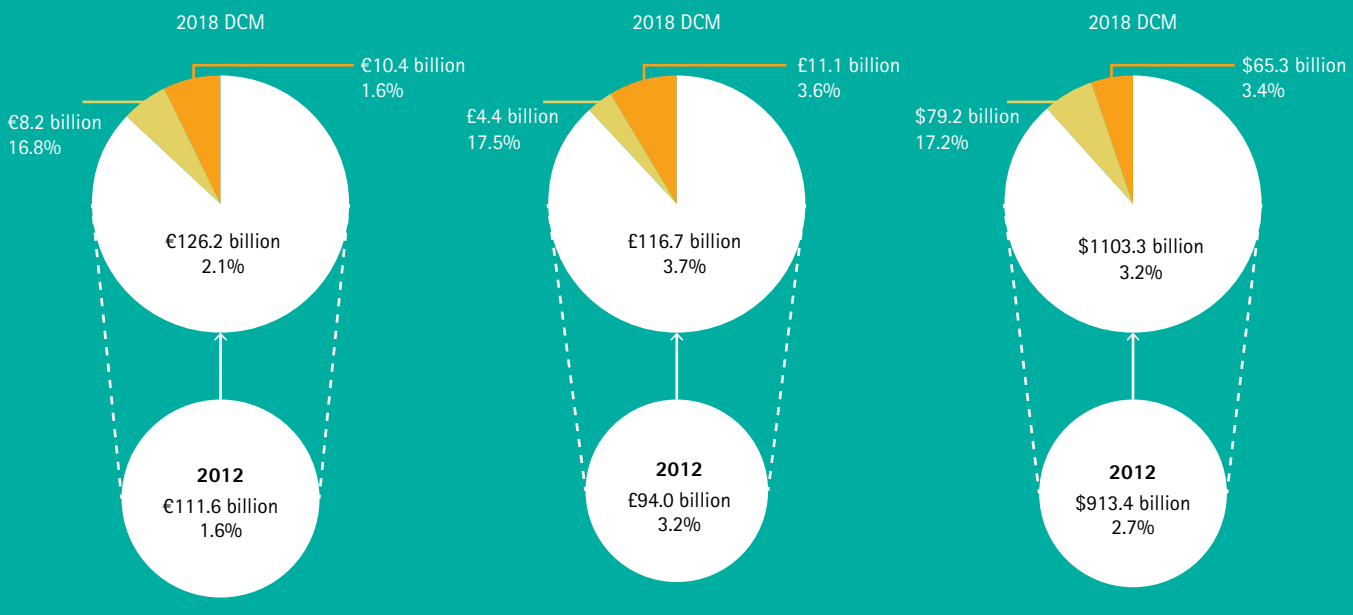
Consumers can increasingly find new ways to sell, share or barter items or services. According to a 2013 survey based in the United States, 52 percent of people have "rented, borrowed, or leased the kinds of items that people usually own in the past two years" and 83 percent said that they would share more "if it was easier."

5 Augmented reality (AR) technology is deepening the customer experience

Traditional shopping services are now being augmented by digital technology. For example, Ikea launched a furniture catalog which allows users to visualize augmented reality projections of items through their mobile phones. According to Creation Application, an app developer, more than 2.5 billion mobile AR applications will be downloaded annually by 2017.[56]

Figure 10. Growth in the retail sector and its digitally contestable market (2012 to 2018)

	Germany	United Kingdom	United States
2018 DCM total value:	€144.8 billion	£132.2 billion	$1247.7 billion
2012 to 2018 DCM annual growth rate:	2.6%	4%	3.8%



Core sector (retail) | Digital enablement sectors | Halo sectors modeled (non-residential construction, transport and financial services)

Source: Accenture and Oxford Economics analysis. Constant 2005 prices.

What strategies are incumbents pursuing?

Harnessing customer insight to unlock latent needs

Incumbents are combining the loyalty engendered by a strong brand with excellence in customer insight and analytics to tap into underserved customer needs. Alibaba, the world's largest eCommerce platform, used data on its customers to venture into new markets. It realized that most merchants trading on its platforms were small and medium-sized businesses that can find it hard to access traditional lenders. In 2012 the company started offering merchants small loans, using data on their activities to help them make financial decisions.[57] By the end of 2013, its loan book reached US$2 billion, up from US$600 million in 2012.[58]

Merging analog and digital to offer a seamless shopping experience

Incumbents are increasingly finding ways to integrate in-store experiences with online capabilities to improve the overall customer experience. For example, eBay has partnered with United Kingdom retailer Argos to allow customers to pick up items at Argos stores through its Click and Collect program. This kind of convenience is already proving popular with online shoppers: it was estimated that in 2012 as many as 40 percent of United Kingdom shoppers used click and collect programs for their Christmas shopping.[59] Meanwhile, luxury retailer Burberry uses an in-memory storage solution to provide real-time access to customers' histories when they walk into a store, allowing sales associates to identify opportunities to better serve them and match products to their individual tastes.[60]

Partnering or buying innovative capabilities

Successful incumbents are reacting to the latest wave of disruption by integrating it into their business models—and providing an improved buying experience as a result. In 2011, Walmart acquired social media startup Kosmix and turned it into its own in-house social-media research arm, @WalmartLabs.[61] Today, the retailer counts 31 million Facebook fans and 386,000 Twitter followers,[62] while its estimated "marketing equivalent" return-on-investment for social media is ten times that of its other advertising channels.[63] Brooks Brothers, the oldest United States men's clothes store, was receiving complaints about lack of in-store availability of a popular kind of suit. Thanks to the software provided by analytics firm eCommera, it was able to better synchronize inventories, online items visualization and clearance lists to prevent popular items from running out of stock too quickly.[64]

What strategies are new entrants pursuing?

Exploiting niche expertise

Powered by granular data on buyer behavior, analytics startups are taking retail competition to the next frontier. Qubit, a United Kingdom startup, uses visitor analytics to help companies convert browsers into buyers. For example, it helped farfetch.com—an online fashion store—to understand the relationship between visitors' buying behavior and the content that they browsed. This way, farfetch.com changed the order in which content was displayed and improved conversion rates for parts of its website by as much as 17 percent.[65]

Undercutting incumbents through new business models

Even long-established market leaders can see their market share contested by startups that can now offer products and services at lower price thanks to low cost digital infrastructure. 800razors.com disrupted incumbents such as Gillette by pricing razors at half their usual market price via a wholly online business model.[66]

Expanding the share of the pie through the shared economy

A growing number of startups are now turning digitally enabled communities into a source of solutions to people's daily needs—from moving (Sydney-based MeeMeep connects people who need to move large items with drivers who have spare capacity)[67] to doing your laundry (Fagor's "Hello" washing machine comes with an app that connects machine owners with community peers who need to do their laundry but do not own a washing machine.) Estimates suggest that total revenues from shared economy startups could increase to US$3.5 billion by 2014, with annual growth exceeding 25 percent.[68]

What does the future hold?

Digital technology is already fueling a revolution in the way people shop, select and pay for their purchases. In future, other digital applications will continue to reshape the traditional retail industry:

- Augmented reality (AR) applications will become mainstream. The market for AR applications is expected to grow up to GBP£3.2 billion by 2016 from just GBP£112.8 million in 2013.[69]
- Developments in biometrics will provide data on shoppers' biological features, enabling customers to pay using their fingerprints or through retina scans.
- Machine-to-machine connectivity will create networks of smart and connected tools, so manufacturers could increasingly behave like retailers and sell spare parts or services directly to the end user.
- Improvements in analytics will take price optimization down to the individual level thanks to a more granular understanding of each customer's purchasing behavior.

So, what could a typical day in the life of a customer in such a world look like?

Shopping: A future day in the life

Behind the scenes

A household appliance manufacturer has partnered with a hi-tech firm to embed software in its products.

Food retailers have embedded chips in their packages that detect end of use dates.

A general goods retailer has acquired a mobile gaming developer to engage customers through "gamified" apps.

07:30 am

At 7.30 my smartphone alarm goes off and automatically notifies my smart fridge, which starts to detect items that need to be re-stocked. By the time I get to it, its in-built screen has come up with a shopping list. I scroll down quickly and press "accept" which then sends my order to my supermarket.

Tag: Internet of things, mobile

01:00 pm

During my lunch break, I head into the office foyer and look at the book wall for new arrivals. I find a novel that my sister recommended. I buy a copy through the eye-scan-payment tool. Within seconds, the book gets stored in my personal cloud and I can flick through it using my smart glasses.

Tags: augmented reality, biometrics

10:00 pm

Back at home I take a picture of my living room on my smartphone and play with it on my interior design app. It works like a video game. I can move things around and buy new furniture with virtual coins. I find a sofa that I really like and switch to "shopping mode" to browse "real" sofa offers.

Tags: social gaming, "active" consumption, virtual currency

09:30 am

As I make my way to work, I stop by the shoppable windows down the road. I see a coat I really like and place my order via touch-screen. It will be delivered to my home or personal locker near the office within an hour.

Tags: everything everywhere, digital/physical partnerships

06:30 pm

As I make my way back home, I scroll my smartphone for holiday plans. An application comes up with suggested destinations, based on my personal research history, my monthly schedule and local weather patterns. One airline is giving good deals for customers who already use its hotel-booking service. I save this option into my cloud-based agenda.

Tags: behavior-based price optimization

Behind the scenes

An eCommerce company has started offering customers the option of picking up items at local stores thanks to its partnerships with a leading bricks-and-mortar retailer.

A large online travel agent has acquired a predictive analytics startup and can now anticipate users' choices based on their past patterns.

A travel agency has just started offering an online service for bespoke eco-travel and has been able to put up its online payment system in less than 30 minutes through an eCommerce platform.

Learning

Key trends reshaping the education industry

1 Demand for education is outpacing supply

As the world's population grows, so too does the number of prospective students who enter tertiary education each year. The number of university students will increase to 263 million by 2025, up from 165 million in 2011.[70] Providing education to such a large number of learners using traditional delivery mechanisms would require building as many as four new 30,000-place universities per week over the next 15 years.[71] At the same time, demand for new skills and knowledge will also increase.[72] It was estimated that in the United States, the number of students in the 25 to 34 age group will be 21 percent higher in 2020 than in 2009, while the number of students over 35 will expand by 16 percent.[73] Innovative solutions to the increasing demand for education across multiple markets will need to be found.

2 Massive open online courses are making education more accessible

Advanced digital platforms are providing a comprehensive learning experience—including videos, one-on-one tutorials, interactive discussion platforms and games—that can be accessed by anyone anywhere.[74] As a result, education technology companies such as Udacity or Coursera have been able to revolutionize the world of learning with the introduction of massive open online courses (MOOCs) that suddenly erase cost, distance and immigration barriers to high quality education. Udacity, started in 2011, has 160,000 registered users from 190 countries[75] while Coursera, created in 2012, already has five million students.[76]

3 Learning analytics are allowing for bespoke learning experience

Thanks to insights from data on course enrolments, graduation rates, grades and feedback, education providers can now develop a much more in-depth understanding of each student—and make changes to their learning techniques accordingly. For example, publishing giant Pearson has recently acquired a learning analytics startup (Learning Catalytics) to strengthen its personalized learning offerings.[77]

What strategies are incumbents pursuing?

Exploiting digital platforms to acquire or share knowledge and skills

Leading companies are already making the most of the latest digital tools to propagate, share or acquire knowledge. For example, Bank of America recently partnered up with Khan Academy, a not-for-profit provider of online education videos, to provide online learning for personal finance.[78] The United States Navy has partnered with the Institute for the Future—a think tank—to launch a massive online gaming tool ("Massive Multiplayer Online War Game") that will help them craft strategies to fight piracy.[79]

Partnering with education technology providers to upgrade employee skills

In addition to creating new avenues to share and gain knowledge, digital platforms are also giving businesses the opportunity to address their talent needs. Google, AT&T, Cloudera, Autodesk, Cadence and Nvidia[80] have all collaborated with Udacity to form the Open Education Alliance program, which allows students to complete free, certified courses, partly built on these companies' specifications.[81] Yahoo has started reimbursing employees who acquire new skills through the fee-based certified MOOCs offered by Coursera.[82]

Adopting an ecosystem approach to skills development

Thanks to digital innovation, businesses now have better tools to steer skills-building efforts of ecosystem partners into the same direction. For example, software giant SAP has invested €3 million to launch an open education platform ("Academy Cube") aimed at providing students with the IT skills required to fill job vacancies in that industry.[83] The initiative is supported by 30 other industry leaders including Microsoft, LinkedIn and Bosch[84] and is expected to train 250 students in its first year (2013).[85]

What strategies are new entrants pursuing?

Harnessing incumbents' networks and brand strength

New entrants in the learning world can count on a strong competitive advantage based on low cost and wide accessibility. However, they can further improve their position by partnering with long-established elite universities. For example, Coursera had signed partnerships with as many as 83 universities by mid-2013, including Princeton, Stanford and Yale.[86]

Filling niche gaps in the market

Digital platforms allow new entrants to easily tweak content and format to meet customer needs. For example, Thinkful provides tailored one-to-one education solutions to adults that want to refresh their skills or switch careers.[87] Eduson.tv, a Russian startup, has launched a MOOC in business in 2013 especially designed for Brazil, Russia, India and China.[88]

Improving accessibility and accreditation

Newcomers are already teaming up with partners across sectors to gain new abilities. Khan Academy partners with Facebook, hosting many of its services on a dedicated page on the social-networking site. Udacity announced a partnership with Pearson VUE, a provider of education testing services, to offer students enrolled in a MOOC the option to get a certified credential upon completing their studies.[89]

What does the future hold?

Digital technology is disrupting the world of traditional curricula and bricks-and-mortar institutions, as in principle students can now access education from anywhere and at any time. Further technological developments will continue to change the face of education:

- Developments in Service-oriented Architecture technology will enable students to access all their learning services from a single, easy to navigate, digital learning environment.
- Thanks to the diffusion of computation skills, innovation in learning tools will likely come directly from students themselves. Some primary schools in the United Kingdom and the United States already include computer programming as part of their curricula.
- The increasing spread of peer-to-peer platforms will enable students to connect with a global network of fellow learners to get academic support.

So, what could a typical day in the life of a customer in such a world look like?

Learning: A future day in the life

Behind the scenes

07.30 am

Behind the scenes

A US-based university now offers its courses to a much wider pool of students without the need for international travel.

Last summer, I tried to apply for university in the United States but was refused a place owing to visa problems. I could have tried again but was put off by recent fee increases that made tuition unaffordable on my local scholarship. I therefore decided to enrol in a MOOC.

Tags: MOOC

09:00 am

A gaming startup has created a format for personalized learning that can improve students' average score by as much as 20 percent.

Today, I access my MOOC (massive open online course) in chemical engineering via my tablet. I check the language settings to make sure my mother tongue is selected and then move on to resume my tutorial on thermodynamics. I enjoy it as it partly involves a game.

Tags: gamification, MOOC

11:00 am

After finishing my tutorial, I check my curriculum to find the right lecture among the hundreds of videos stored on the cloud. I see a notification window popping up: my nano-technology module has now been updated in light of a new development from a leading university in this field. I touch the notification on my screen and get re-directed to its research lab page.

Tags: curriculum co-creation

02:00 pm

A university that carries out pioneering research has now a stronger case for funding thanks to the close link between research and its application outside the laboratory walls.

A group of leading businesses from the IT industry have been helping universities to create curricula that reflect the industry's needs.

My course editor sends me an instant message. He tells me about an internship opportunity that leading chemical companies are offering to students who score enough points in the next mock exam.

Tags: employer-student linkages, on-demand

04:00 pm

Although I am still following year-1 classes, I realize that to score well in the exam, I would need to know some year-2 modules, such as the principles of fluid mechanics. I search for the relevant module and take the tutorial. I take the mock exam straight afterwards, my mind still fresh from studying the material.

Tags: MOOC, self-paced learning

06:00 pm

Thanks to online platforms connecting students from all around the world, a university spin-off has been able to recruit employees from outside its home country.

I have scored well on the test and later in the day I get an automated reply with proposed time-slots for my internship interview.

Tags: employer-student linkages

Producing

Key trends reshaping the manufacturing industry

1 Additive manufacturing is changing how things are made

Additive manufacturing devices such as 3D printers are becoming more widespread and accessible. It is also accelerating research and development cycles and the efficiency of products from prosthetic limbs to fuel nozzles for turbofan engines. In 2012 the global market for additive manufacturing reached US$1.7 billion, a 29.4 percent increase on 2011 levels.[90]

2 Crowdsourcing is driving customer integration

Customer preferences are rapidly becoming integrated into the manufacturing process through crowdsourced platforms. Such platforms are disrupting the traditional R&D process by enabling anyone to become an inventor or coproducer. Recent estimates indicate that in 2013 the majority of consumer goods manufacturers will obtain as much as 75 percent of their innovation and R&D input from crowdsourcing.[91]

3 Data is making supply chains leaner

The increasing volume of data at every stage of the supply chain is allowing manufacturers to develop more efficient and dynamic supply chains. This is allowing manufacturers to get products to market faster, cheaper and with a reduced environmental impact. It was estimated that the use of cloud solutions to manage supply chains increased by 40 percent in 2012 compared with 2011 levels.[92]

What strategies are incumbents pursuing?

Integrating the customer into the production process

Incumbents are focusing on how they can enhance customer experiences at every stage of product or service development. In 2010 Fiat used crowdsourcing in Brazil to invite visitors to submit their ideas and suggestions for the perfect town car. More than 17,000 people from more than 40 countries took up the invitation and submitted upwards of 10,000 suggestions. The result was the Fiat Mio,[93] a car that won numerous design awards.

Harnessing the disruptors

While a more democratized world of manufacturing capability presents challenges in terms of the increased preponderance of competitors, it also gives incumbent businesses an opportunity to harness this creative force on their own terms. For example, GE has just launched two global "additive manufacturing quests" that challenge innovators to design a lightweight bracket and hangers for a jet engine that are 30 percent lighter than the existing parts. In doing so, the company is able to enhance its own innovative capacity and market leadership at lower cost.

Deploying standardized technology platforms

Rather than putting up defenses against a tide of new entrants, innovation and niche players, incumbent companies are recognizing that greater openness can help enhance the long-term competiveness of their market. For example, Freescale Semiconductor and Oracle agreed in September 2013 to a wide-ranging technological collaboration to help rapidly evolve manufacturing processes and supply chains. The key to this is the provision of "one box" that acts as a gateway design of software to absorb data from multiple operators, machines and sensors into one platform.[94] In this way, manufacturing technologies and processes can be increasingly standardized, which will help to lower the barriers to entry and foster further collaboration.

What strategies are new entrants pursuing?

Improving offerings through partnerships

New entrants are finding new visibility and credibility as well as growth opportunities if they are able to collaborate with larger, incumbent players. Quirky, a crowdsourced innovation and product development platform has partnered with GE in 2013 to tap the crowd for innovative co-branded "connected home devices" such as "smart" trays or adjustable power cords.[95] Quirky will benefit from GE's scale and GE will benefit from Quirky's speed.

Accelerating time to market through standardized platforms

New entrants are benefiting from cross-industry standards which will allow them to rapidly evolve and innovate. They are also introducing new technology (3D printers, autonomous robots, open-source platforms) and disrupting incumbents through rapid and cost-effective prototyping, reducing the barriers to R&D and speeding up time to market. Baxter, an industrial robot developed by the startup Rethink Robots in September 2012, costs just US$22,000, which is about ten times cheaper than usual industrial robots.[96] Baxter runs on an open-source operating system which allows other companies and academic institutions to collaborate through an open-source research platform and enhance the software.

What does the future hold?

Digital technology is not only changing the way we make products; it is also redefining value. High-volume, low-value approaches to manufacturing are being disrupted by vast new pools of consumer data, technologies such as 3D printing and the emergence of collaborative crowdsourcing platforms. Further technology disruption on the horizon suggests that the way manufacturers and consumers interact is likely to further transform manufacturing into a digitally enabled coproduction system:

- Digital manufacturing will become widespread. Digital manufacturing was estimated to enable market-earned revenues of US$704 million in 2012 in relevant industries, such as automotive, aerospace, defense, hi-tech and electronics and industrial machinery. These revenues are forecast to increase to US$928 million in 2016.[97]
- The Internet of things (IoT) will enable smart value chains that can be monitored and managed in real time. By 2020 there will be an estimated 24 billion connected devices.[98] This gives manufacturers the opportunity to shape IoT networks that connect the whole plethora of players that revolve around product development, from inventors to distributors.
- 3D printing and crowd platforms will further abate time and space barriers between producers and consumers. The market for 3D printing is expected to grow by 23 percent CAGR between 2013 and 2020, reaching US$8.41 billion in 2020.[99]

So, what could a typical day in the life of a customer in such a world look like?

Producing: A future day in the life

Behind the scenes

Customer-centric production and development allows for new disruptive and innovative products that avoid the creative restraints that can be a pitfall for large incumbent producers.

09:00 am

I notice that sales are down across all my kitchen-utensil product lines. I upload several new kitchen utensil ideas on a crowdsourcing-innovation platform targeted to my customer demographic asking for their feedback and creative input. The most successful input from customers will be rewarded with some of my other products.

Tags: crowdsourced innovation

04:00 pm

Toward the end of the day I decide on the personalized bottle opener and upload it to a crowdsourced academic research platform. With my intellectual property secured in the cloud I consult with experts to see which materials and manufacturing process would get the best results.

Tags: cross-sector collaboration

07:00 pm

For the bottle opener, it turns out that home sintering (3D printing) is an equally viable option for customers who can't make it to my store. Once the prototype has been finalized I upload the blueprints onlne for single-use purchase so consumers with a 3D printer can print at home.

Tags: 3D printing

07:30 am

Before my shop opens I read the computer-generated analysis of sales from the store yesterday as well as online orders and see how they compare to the week before, the month before and also to how my other branches have performed.

Tags: real-time analytics

01:00 pm

Voting and customer feedback on my virtual products closes after lunch and I select my favorite three items, an ergonomic potato masher, a bottle opener individually modeled on a person's face and a pop-out colander and then use my 3D printer to print off prototypes and see how they feel. I also display them in-store and ask customers to offer their feedback in person.

Tags: rapid research and development

05:00 pm

Once the technologies have been chosen I search online to see who would be the most environmentally friendly manufacturer and provider of supply chain infrastructure for my new product. Provenance is important to my customers and I can easily compare providers through their real-time data feed from the Internet connected infrastructure in the factory.

Tags: intelligent supply chains

Behind the scenes

Instant analysis of buying data allows large manufacturers to change their product lines quickly in response to customer needs.

Widely available, localized and cost-effective 3D printing technology challenges the existing reliance on large manufacturers for modeling and simulation processes.

Through machine-to-machine communication, industry data standardization and open-source data platforms, large manufacturers can demonstrate that their environmental credentials align with a retailer's corporate social responsibility program and/or provide market differentiation.

Traveling

Key trends reshaping the transport industry

1 Developments in smart sensors are enabling new strategies to address urban challenges

The rapid growth of urbanization globally is putting pressure on infrastructure. It was estimated, for example, that traffic jams would cost the Brazilian city of São Paulo US$20 billion just in 2013.[100] Advanced sensor technology is now providing us with new tools to address urban problems—from traffic congestion to water management. A research project currently undertaken by a team at the University of California, Berkeley, is developing the world's largest networks of smart sensors that will track groundwater use and allow policymakers to better understand how to manage water efficiently. These kinds of "smart" sustainability strategies are likely to become more and more common as smart sensors become more widespread: it was estimated that by 2018 the sales of intelligent sensors will rise by 10 percent each year, reaching US$6.9 billion in 2018.[101]

2 The diffusion of smart mobile devices is opening doors to new transport solutions

Vehicle-sharing companies like Zipcar or ScootNetworks now allow smartphone-enabled urban populations to get the benefit of driving a car or a scooter without the liabilities of ownership (such as maintenance, year-round insurance, and parking). By the end of 2012, ten top-tier automakers provided in-house car sharing services or produced vehicles factory-equipped for sharing purposes.[102] Mobile apps such as Uber or Halo use smartphones' GPS tracking to provide users with smartphones timely on-demand taxi services. Uber, launched in 2009, has now expanded into 22 countries and 60 cities.[103] Liftshare, the United Kingdom's largest carpooling website, has doubled its members since 2003, now counting as many as 400,000 participants.[104]

3 Machine-to-machine connectivity is enabling safer and smarter vehicles

Developments in telematics, wireless sensors and smart devices are enabling machine-to-machine (M2M) connectivity, making vehicles safer and smarter. As a result, drivers can better manage hazard warnings and traffic congestion and enjoy more efficient and reliable remote assistance in case of car theft or damage. It is estimated that, by 2016, as many as 90 million vehicles circulating on the road will be connected to smartphones thanks to M2M connectivity.[105]

What strategies are incumbents pursuing?

Partnering to enhance the customer experience

Many leading automotive companies are joining forces with technology providers to acquire new digital capabilities. Ford joined forces with Google to harness the technology giant's pattern matching capability (Google Predictive API) to understand driving habits and recommend optimal driving routes accordingly. United States telecommunications provider Verizon acquired Hughes Telematics in 2012 to offer a telematics service through M2M connectivity.[106] And General Motors partnered with Telefónica to equip vehicles sold outside North America with M2M-enabled smartphone connectivity.[107]

Harnessing existing customer insight

Sharing data on customers with partners from other industries can help unlock new markets as well as enhance customer experiences. For example, companies from the telecommunications and insurance industries entered the travel and transport market when Telefónica partnered with Italian insurer Generali to launch a "pay as I drive" offer that enables high premium drivers, such as young people, save up to 40 percent compared with traditional insurance.[108]

Embedding digital disruption into existing or new products and services

Incumbents can turn digital disruption into growth opportunities by developing new business models alongside their existing offerings. Daimler and BMW have both responded to the growing popularity of car-sharing services by developing their own in-house car rental services (car2go and DriveNow).

What strategies are new entrants pursuing?

Creating new digitally enabled markets for traveling

Startups are finding fertile territory for growth in the digitally contestable market for traveling by offering travelers cheaper digital alternatives to traditional services. For example, BlaBlaCar, a French startup, allows users on selected train routes to opt for a paid lift on a shared car instead. Travelers can register their profile online—including security information such as personal address and banking details—and find a fellow user willing to sell a spare seat usually priced at a tenth of the train ticket equivalent. The company, started in 2009, currently carries as many as one million passengers across Europe each month.[109]

Providing users with integrated digital solutions to meet their needs

Thanks to digital platforms, startups can be integrators of multiple traveling solutions. For example, Trafi, a Lithuanian startup, offers users a catch-all journey planner by syncing real-time traffic data with public transport, walking, cycling and taxi routes. Trafi is already used by as many as 300,000 users in Lithuania and the company now plans to expand its services to densely populated cities such as Moscow, São Paulo and Mexico City.[110] Apps such as Hailo and Uber have changed the way taxis operate, making sure that clients get the nearest available car, all at the touch of a screen. And it is not only a developed-world phenomenon. There are currently an estimated 30 taxi apps available in China with Didi-Dache, the most popular one, already registering five million downloads since its launch in 2012.[111]

Aligning strategy with digital capabilities

Startups can find growth by aligning their strategies with optimal use of their "digital competitive essence." For example, Local Motion started up in California as a manufacturer of small vehicles connected to electronic devices through wireless sensors. However, it soon realized that its competitive advantage lay in its connectivity systems and not the vehicles themselves. Today it sells services, providing companies that have large car fleets with access to integrated connectivity systems and analytics to help them manage their fleets more efficiently and thus provide a better service to their users.[112]

What does the future hold?

Digital technology is changing the way we live in and travel around cities. As technology evolves and is diffused even further, we will increasingly move to a world of smart, hyperconnected transport systems:

- Smart sensors will be widely diffused, enabling a more efficient use of resources and more integrated "smart" urban services. The market for sensors integrated with processors is expected to grow from 65 million devices in 2013 to 2.8 trillion by 2019.[113]
- M2M technology and the advent of the Internet of things will turn millions of individual products into a single connected system of smart products—including vehicles. The share of connected cars as a percentage of the world fleet is set to rise to almost 15 percent by 2020.[114]
- Eventually, developments in M2M connectivity could lead us to the era of the driverless car. Google and Audi have already tested cars that do not need drivers thanks to integrated smart systems made up of laser sensors, radar and cameras.[115] General Motors, Volkswagen and BMW are also working toward increasingly automated driving systems[116] while Daimler and Nissan have disclosed plans to sell self-driving cars by 2020.[117]

So, what could a typical day in the life of a customer in such a world look like?

Traveling: A future day in the life

Behind the scenes

A city has developed a smart traffic system through thousands of embedded sensors in major roads that automatically notify vehicles which routes are most congested.

07:40 am

I get into my car and its in-built software automatically provides me with my most frequent routes. I select "home to work." Thanks to real-time traffic data and predictive analytics, I can select the route with less traffic.

Tags: real-time analytics

09:00 am

A car manufacturer has partnered with a telecommunications company and can now get real-time information on its vehicles when they are on the road.

My on-board computer automatically logs the damage and sends the data to my car manufacturer so it can order replacement parts.

Tags: hyperconnected vehicles

10:00 am

Leaving my car behind, I get into a driverless courtesy car that takes me to work. Thanks to its in-vehicle cloud system, I can access my files and do some work on my way to the office.

Tags: self-driving vehicles

07:30 am

As I get into my car I see a notification from the municipal government popping up on my in-built tablet. They are advising me to take extra care when driving as many roads have frozen due to cold temperatures overnight.

Tags: smart city infrastrucutre

08:45 am

As I make my way to work, I nearly hit a car that had jumped a red light. I manage to avoid a collision—my distance detector alerted me in good time, but I damage my tires by braking suddenly.

Tags: driver assist

09:45 am

My on-board computer also notifies my local emergency services and insurance company, which sends a breakdown team to take my car to the nearest local mechanic.

Tags: integrated service providers

Behind the scenes

A car manufacturer has developed an integrated, real-time security communications system thanks to as partnership with local authorities and telecommunications companies.

A startup has created an app that provides citizens with a list of nearest emergency services based on their smartphones' location.

5 Leading from the front

Across a number of industries—many more than we have been able to portray in this report—barriers are shifting and digitally contestable markets are emerging. Both incumbents and new entrants are embracing digital technology as a means of exploiting their potential, often in collaboration with one another. But the competitive terrain remains threatening. For every success story, there is a business that has been supplanted or made obsolete by the ability of others to deliver superior customer experiences more quickly and effectively.

Navigating this terrain requires a willingness to understand the scale of the response needed. Fortunately, while each digitally contestable market varies in its specific nature and dynamics, there are a number of common implications suggested by the six case studies presented in chapter 4. For business leaders, understanding these is the first step to mounting a suitable response.

Ten implications of digitally contestable markets

1 Companies will need to develop capabilities that are best-in-class not just in their own industry, but cross-industry

Innovative incumbents and technology startups can come from nowhere to threaten established businesses overnight: The day Google announced Google Maps Navigation, the share price of traditional navigation device makers fell by more than 15 percent.[118] Increased competition can also come from established players in different industries that are acting on insights from customer data. Hertz, a car rental company, has had to deal with threats from car share startups such as Zipcar, as well as OEMs looking to develop their own offerings, as General Motors has done with RelayRides. The competitive outlook of most companies is insufficient for this new reality. A wider net must be cast if businesses are to anticipate and counter new threats.

2 Customer understanding will become an ever more critical differentiator

The "ratchet effect" explains why customers expect best-in-class experiences, regardless of who is providing the product or service. This ambivalence means that businesses will have to redouble efforts to improve their proximity to customers. If they fail to do so, customers will prove increasingly intolerant. A recent Accenture survey found that 84 percent of customers are likely to switch providers when promises that companies make are not fulfilled, while 80 percent reevaluate their purchasing decisions each year.[119]

3 Companies will win by offering personalized solutions for problems

More data about customer preferences, that is processed better and quicker, will result in the ability (and expectation) to provide more tailored solutions to individual needs or problems. Solving problems—even in new markets—will differentiate forward-thinking companies from others. Google has turned its hand to disaster response, using the scale of its Internet presence to provide information on missing persons after floods. The company's wealth of search data has also proven a remarkably accurate predictor of flu transmission.

4 Businesses from different industries will become more similar "under the hood"

As the building blocks of technology become cheaper and more effective, technology has become more ubiquitous within firms. This has helped to erode distinctions between companies from different industries, allowing them to compete more effectively across boundaries. Netflix, among other companies in the broadcast industry, has dismantled traditional distribution channels by offering content-on-demand over the Internet. Its origin (mail-order DVD rentals) is far away from the companies it is now competing with (content developers and distributors), but technology developments have allowed it to encroach without recourse to expensive infrastructure investments. It even used its subscription customers as a test bed for piloting its first wave of original content, only making those shows that it knew would be successful in the market.

5 Analog capabilities will be a source of competitive advantage

As digital technology becomes increasingly accessible to incumbents and new entrants alike, leading businesses will be able to separate themselves from the rest in the way that they combine technological excellence with human capital and organizational capabilities. This will mean a willingness to use technology as a tool for fundamentally reshaping existing work processes and organizational boundaries.

6 Data is the lifeblood of the new competitive reality

The sheer volume of data that will circulate through companies and economies will place a premium on the ability to use that data as the basis for better decision-making. As with high-speed trading, data velocity is critical—there is little use getting quarterly updates of stock levels if your company is competing against fast fashion retailers with a fully automated supply chain. Putting data in the hands of decision makers at the soonest possible moment, and having the back-end processes to support speedy execution, will become ever more critical.

7 Market leadership will mean leading on innovation as well as execution

The emergence of low-cost providers for back office services means that incumbent companies are no longer able to draw upon the scale advantages of the past. A startup or mid-size firm can rapidly add servers, say, without having to build its own data center. Some of the companies that provide these vanilla solutions have grown rapidly—in 2012, Red Hat became the first billion-dollar open source company[120]—and Salesforce.com is the most innovative company in the United States, according to Forbes.[121] These providers create a more level playing field in cost terms—and businesses looking to gain an edge over the competition will be better served aiming to generate additional revenues. This means investment in innovation to deliver compelling customer experiences, rather than just straining to remove cost.

8 Businesses based on market anomalies will be most vulnerable

While technology has the capacity to break down industry silos, regulation often has the power to either accelerate or delay the inevitable. Disruptive businesses like Airbnb and Uber, which threaten mature industries, have often been met with regulatory challenges. However, Uber has been able to mobilize a vocal army of loyal customers who use social networks, blogs, and other online media to garner support when regulatory threats appear. Where regulation seeks to protect the status quo, customers will vote with their feet. Businesses on the wrong side of customer opinion will lose out in the long run.

9 Businesses will have to become better at cross-sector working

Organizing around customer needs will mean that businesses have to work with a number of unfamiliar players—customers themselves, regulators, government agencies, competitors—in developing solutions. This is because the problems they tackle are not confined to one industry or another. Philips Electronics launched a program called "The '+' Project" in Indonesia, that aims to elicit new ideas and solutions from the public on how to solve modern health and well-being challenges across the archipelago. The best ideas will become real projects, led by the company and run in cooperation with other organizations.[122]

10 Incumbents will have to act more like startups

As the new competitive reality plays itself out, companies wedded to traditional business models risk diminishing returns. As customers become more comfortable renting and sharing rather than buying outright, for example, economic rents in value chains will drift away from the producers towards the aggregators. For example, as video-on-demand becomes the staple of content consumption, more companies are offering their own on-demand platforms, often in consortia with traditional competitors. YouView in the United Kingdom brings together three telecommunications operators and four broadcasters to do precisely this. In this sense, imitation may prove not only the sincerest form of flattery but also the most secure route to sustained competitive advantage.

Becoming a "customer market maker"

Managing these implications may seem to present business leaders with a number of unpalatable conundrums. Growing into new markets instead of protecting the core offering, for example. Or collaborating with competitors, not competing with them. Or using digital channels to understand changing consumer preferences rather than a face-to-face, in-store presence. Across many dimensions, businesses appear to be drawn into making difficult trade-offs. However, to fall into this binary trap is to underestimate the scale of the response needed. It is no longer sufficient in this context to choose between two opposing options—both are required to remain competitive.

Managing digital disruption requires businesses to embrace disruption. Rather than being passive players within a turbulent market environment, leading businesses will create disruption on their own terms to become "customer market makers." Competing in an environment of digitally contestable markets will require a constant process of reinvention. Businesses will need to get comfortable with balancing the need to execute on today's business plan with the need to explore tomorrow's game-changer.

How can businesses set about becoming the customer market makers of tomorrow? Adapting to the new competitive reality requires companies to develop a virtuous circle between customer insight, organizational realignment and their external relationships and networks. In doing so, they can enhance their ability to match demand (customer needs and preferences) with supply (both in terms of the company and its wider ecosystem). In a world where the customer is increasingly loyal to function rather than form, businesses will need to compete on these terms. Mastering an environment of digitally contestable markets requires businesses to get better at three core capabilities.

1 Market sensing

In markets where new threats and opportunities emerge from unexpected sources, businesses' understanding of their external environment has perhaps never been more important. How effective are businesses at doing this today? We looked at two dimensions; first, cross-industry awareness. Most businesses—and particularly those operating in emerging markets—recognize the need to increase familiarity with trends and developments beyond their own industry. Ninety-four percent of survey respondents operating in India identified this attribute as important, versus 70 percent in the United Kingdom. However, when it comes to current levels of understanding, businesses are less confident. The distinction between high and low performers is particularly revealing: in terms of the proportions assessing themselves as well positioned to understand these trends, high performers score 80 percent, compared with 52 percent for low performers (see Figure 11).[123]

Figure 11. High performers are better positioned to understand developments in other industries

To what extent do you agree or disagree it is important to increase levels of familiarity with developments, trends and innovations outside of your own industry? And how well positioned do you feel in this respect today? (% agree and strongly agree)

Source: Accenture global business leader survey 2013

Second, we sought to understand how well companies understand the dynamics of multiple stakeholders, encompassing trends such as coproduction and crowdsourcing. In this regard, it seems clear that many companies may find themselves wanting. Indeed, when focusing on the changing relationship between consumers and producers, the gap between the current positioning of high performers and low performers is similarly significant (71 and 38 percent, respectively—see Figure 12).

Gaps are also apparent between economies. While 80 percent of businesses operating in India believe they are well placed to respond to this trend, only 39 percent of United States businesses agree. Given the significance of understanding changing consumer needs and preferences in a digital era—and the shift from traditional methods of customer data gathering, such as focus groups and market research, to big data analytics and real-time product and service testing—many businesses will need to step up their activity in this area to match the best-in-class standards. For example, Qubit, a United Kingdom analytics startup, allows retailers to adjust their offerings based on real-time data: sports retailers, for instance, can sell the merchandise of a particular football team on the day of a match.[124]

Market sensing: Leading business practices

Leading companies realize that digital technology provides a critical channel through which they can get close to the customer. But they also realize that digital technology is most effective when it is used to amplify rather than replace personal interactions and experiences. This often means putting technology in the hands of those employees closest to the end user. For those in positions of management, it will require them to get comfortable with greater levels of autonomy on the frontline. For example:

Harness employees as part of the "corporate antennae"

Leading companies are already finding ways to turn employees into "corporate antennae" who capture what is going on at the edge of the firm and turn it into strategic insight for decision-makers. Often, these platforms combine digital infrastructure with human judgment.

Consumer goods giant P&G has developed a system called 'Consumer Pulse' which collates all the comments from employees, customers and stakeholders on social media sites, categorizes them by individual brand and puts them on the screen of the relevant P&G individual. The system combines data from social media, suppliers and sales departments to enable a comprehensive view of preferences.[125] It allows for a real-time view of the marketplace and enables P&G to be agile in their new product development, reacting immediately to comments from employees, customers and other stakeholders as appropriate.

Deploy rapid prototyping

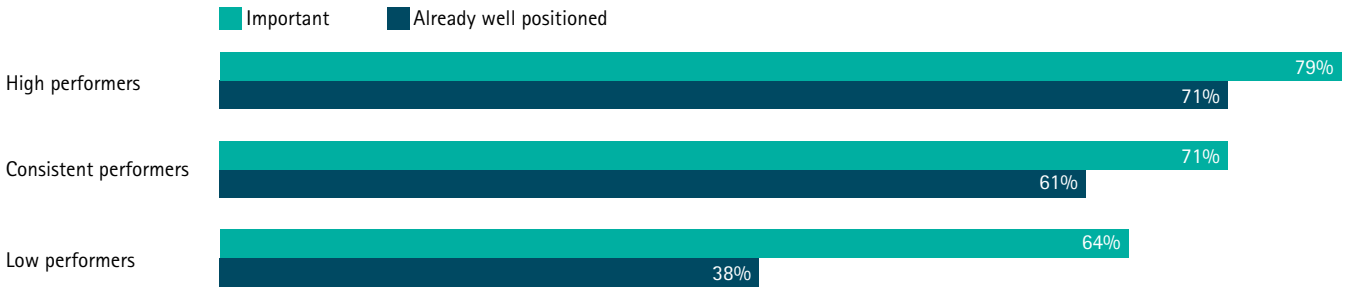
Digital technology allows companies to test new products more quickly and at lower cost with their customers. In the automotive industry, for example, Audi's Virtual Labs use advanced data-management technology to accelerate prototyping. Consumers can choose product features that are still in the labs and therefore only exist virtually. The automated system analyzes customer responses in real time and guides the product development team even before the prototype phase. The entire process requires more immediate and intense cooperation among marketing, engineering and R&D.

Appeal to customers' (human) needs and aspirations

Addressing customer beliefs and convictions can help companies as they make a transition into new product and service lines. For example, in an effort to meet the growing demand for and interest in sustainable living, Chipotle, a popular Mexican restaurant franchise in the United States and elsewhere, is turning into more than just a food company: It is developing an identity as a sustainable lifestyle brand.[126] It now makes its own line of organic clothes and accessories as well as promoting local and sustainable food festivals and sponsoring a video series on the dangers of industrial farming.[127] By identifying its own brand with qualities to which customers aspire, it has been able to ease the shift to wider offerings.

Figure 12. High performers are better positioned to understand the changing relationship between consumers and producers

To what extent do you agree or disagree that it is important to understand the ways in which the traditional relationship between consumers and producers is changing? And how well positioned do you feel in this respect today? (% agree and strongly agree)



Source: Accenture global business leader survey 2013

2 Organizational realignment

In any ecosystem—natural, industrial or digital—the ability to respond quickly to new threats and opportunities is a fundamental survival skill. The speed with which businesses adapt to changing circumstances is often the difference between the winners and the also-rans. As digital technology opens up markets to new players, the need for agility is intensified. However, many businesses are unprepared to react with requisite speed. As Figure 13 shows, while 91 percent of high performers said that they got more agile during the recession, only 48 percent of low performers did so (consistent performers scored 74 percent). Geographically, it also appears that emerging-market businesses are more agile, more readily than their developed-market counterparts. Ninety percent of executives in Brazil reported that they had become quicker at managing new threats and opportunities, versus 69 percent in the United Kingdom.

Why this discrepancy? A look at businesses' responses to the downturn is instructive. For recent high (and consistent) performers, the most common response to the downturn was to reallocate resources—such as people and capital—to increase efficiency (the top choice in our executive survey) or adjusting customer pricing (the second most popular choice). See Figure 14. By contrast, the response of those who have not fared well since the recession was, at the time, to cut or freeze resources—whether headcount (top choice) or investment (second choice). In managing the immediate demands of the recession, it appears that their longer-term ability to respond effectively to new challenges was badly compromised.

Organizational realignment: Leading business practices

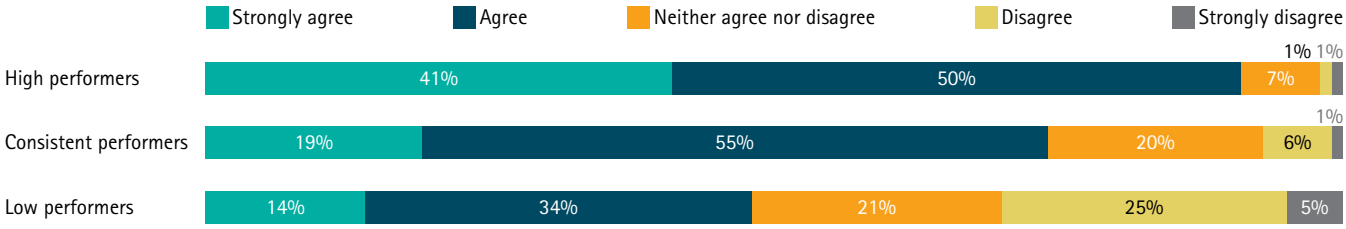
Digital technology can help companies react to changing circumstances with greater speed and flexibility. Processes can be automated; higher levels of insight integrated into routine work tasks; resources can be marshaled more effectively. Realizing these benefits, however, will require deep integration of technology into the operating model as well as the marrying of digital capabilities with analog skills. For example:

Increase efficiency by augmenting human skills

Digital technologies provide businesses with the ability to make their employees more productive and ensure a smoother allocation of tasks, even across periods of bumpy demand. For example, in the healthcare industry, NHS Moorfields Eye Hospital in the United Kingdom has trained eye specialists who provide remote diagnostics through the use of digital applications. The intertwining of digital capabilities with analog skills has enhanced the hospital's capabilities and generated cost efficiencies with minimal organizational disruption.[128]

Figure 13. High performers got more agile in the recession

To what extent do you agree or disagree with the following statement: "The economic downturn of 2008 to 2010 led my company to become better at adapting quickly to new threats and opportunities."



Source: Accenture global business leader survey 2013

Figure 14. High performers managed the recession by optimizing resources; low performers did so by cutting them

What steps did your company take in response to the economic downturn? (Rank up to five in total—top three most popular shown)

	Total	High Recent	Consistent Recent	Low Recent	High Future	Consistent Future	Low Future
We reallocated resources (e.g. people and capital) internally to increase efficiency	1	1	1	3	1	1	3
We optimized pricing for customers	2	2	2		2	2	
We paused or cut investment				2			2
We reduced existing headcount and/or froze recruitment				1		3	1
We managed our supply chain more tightly		3			3		
We looked for new business opportunities in different industries	3		3				

Source: Accenture global business leader survey 2013

Speed up decision-making

Increasing volumes of performance data mean a larger dashboard for companies to monitor. But rather than being overwhelmed by such a wealth of information, companies are finding ways to make decisions more quickly by using technology to get the right information to the right people at the right time.

For example, P&G is investing in virtual, "instant on" war rooms where professionals meet in person or over video to examine continuous streams of fresh and relevant data. The right experts are invited into the rooms as soon as a problem surfaces. As a result, decisions can be taken quicker and on the basis of more timely information, enhancing the overall levels of business agility.

Increase organizational efficiency in real time

The increasing prevalence of machine-to-machine technology means that entire processes and product inventories are now able to provide a huge amount of real-time performance data. Used properly, businesses can enhance their existing operations in real time, making them leaner and more responsive but with limited management attention needed.

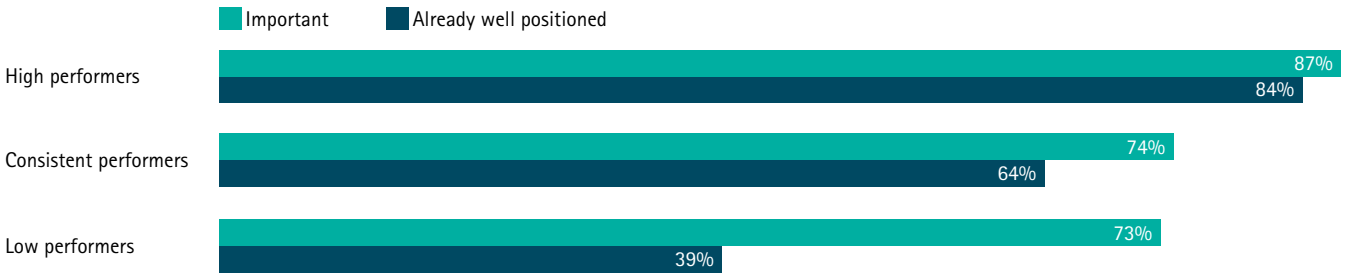
For example, Viking Yachts recognized it needed a quick and effective design and manufacturing system. So it partnered with Autodesk, a software company, to make yachts' prototypes through 3D printing, facilitating a faster design review.[129] Using Autodesk's Alias software, Viking Yachts is able to make changes to surfaces up to 40 times faster, speeding up time to market.[130] Similarly, Alitalia has been collaborating with GE to use aircraft data to improve fuel efficiency. However, the company did not expect big data and analytics alone to deliver cost savings. It consolidated the acquisition of these capabilities with parallel investment in supporting processes (flight planning and ground operations) and talent development (training pilots in efficient flight procedures). This way, GE helped Alitalia identify 1.5 percent savings in fuel costs within the first year—a saving of US$15 million. Alitalia has gone on to save a total of US$46 million since the program began.[131]

3 Ecosystem orchestration

The essence of an ecosystem lies in its interconnectedness—the ability to provide essential sustenance to other organisms; to operate as a team to hunt new prey; or to collaborate with competitors to ward off a potentially more destructive threat. While the importance of building networks and relationships is clear from each digitally contestable market profiled in chapter 4, our survey shows that this form of agility is an unevenly distributed capability. Eighty-four percent of high performers believe they are well positioned to build external networks; only 39 percent of low performers feel similarly (see Figure 15).

Figure 15. Building relationships outside the boundaries of the firm is an important ingredient of success

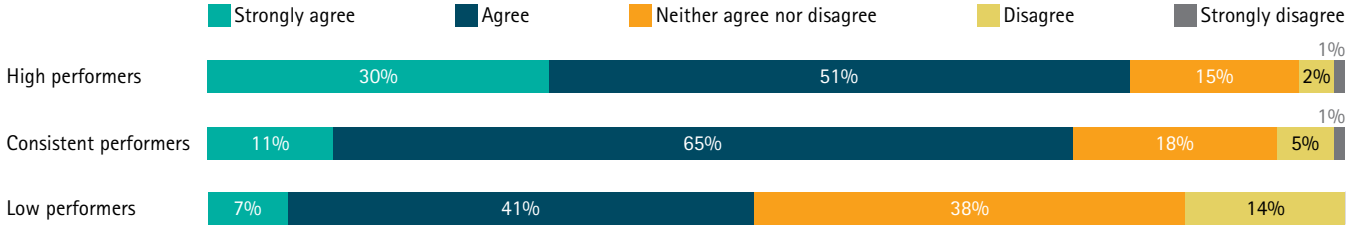
To what extent do you agree or disagree that it is important to build relationships and networks outside your company's boundaries? And to what extent do you agree that your company is already well positioned in this respect? (% agree and strongly agree)



Source: Accenture global business leader survey 2013

Figure 16. Most high performers believe that their external relations capabilities are fit for purpose

To what extent do you agree or disagree with the following statement: "My company's approach to external relations (i.e. the way it manages relationships with governments, charities and communities, for example) is fit for purpose"



Source: Accenture global business leader survey 2013

In large part, the ability to manage these kinds of networks has traditionally fallen to a company's external relations function, which may encompass corporate social responsibility departments, as well as media, government and investor relations. High performers see their capabilities in this area as fit for purpose (81 percent agree). The same cannot be said for low performers (48 percent). See Figure 16. As the environment in which businesses operate becomes more complex, this finding underlines the need for teams and business units across the company to own and manage their external relationships and networks, rather than relying on discrete corporate functions.

Ecosystem orchestration: Leading business practices

Digital technology enables companies to connect to and collaborate with a wider network of stakeholders than perhaps ever before. However, reaping the potential benefits of a more open mindset requires a shift in culture as well as working practices. Employees need to be at the heart of this. With the right programs and incentives in place, businesses can help become more proactive in the way they explore opportunities within their wider ecosystem. For example:

Create a culture of open collaboration

Thanks to crowdsourcing platforms and social networks, businesses can now tap the intelligence of a much wider "extended" workforce made up of partners, their employees and, of course, customers themselves. For example, in the United States, GE partnered with the Defense Advanced Research Projects Agency and MIT to develop a crowdsourcing platform to attract new ideas around the design and manufacturing of defense equipment.

Develop tri-sector leaders

Navigating new partnerships and relationships across the economy requires businesses to upgrade their understanding of the government and non-profit sectors in particular. To understand the kind of capabilities and skills that tri-sector leaders should show, Unilever reached out to a wide audience of outsiders—from external leadership experts to young leaders—in an effort to create leaders qualified to solve global problems. The company then launched the Unilever Leadership Development Programme which aims to help leaders understand their personal values and to be suitably matched to achieving the goals of the company's sustainability strategy. This way the company aims to deliver its ambitious "compass" strategy (Unilever Sustainability Living Plan) which focuses on increasing positive social change and halving environmental impact while at the same time doubling the size of the business.[132]

Free up employees

As with customers, employees are often one of the most powerful interfaces a business has with its external environment. However, harnessing that power is not straightforward. As management expert Gary Hamel told us, the challenge is to find the right balance between routine task execution and explorative endeavors: "How do you set up incentives that maintain the right tension between executing routines on one hand and exploring opportunities on the other? You still want employees to make that call to the sales department but also to talk to that NGO they have heard of … Companies need to set incentives for both activities."

On an internal basis, there are many examples of promoting collaboration beyond the immediate demands of employees' roles. But externally? The ability to develop truly social networks—and harness them for the business—is a skill that most companies today lack. But it is one that will surely stand businesses in good stead for the demands of marshaling a complex ecosystem of highly varied entities.

Fit for the future

Whether getting closer to the customer, ensuring deeper use of technology within the organization, or going broader in terms of external relationships and networks, the key to becoming a customer market maker is understanding that action is needed on all fronts. At each stage of the journey, business leaders will need to make careful judgments and calibrations. Pursuing new market opportunities will need to be balanced with a focus on executing core offerings. Developing a more open culture will place a premium on identifying and protecting the competitive essence of the company. Harnessing the full potential of employees will require management to be more relaxed about higher levels of frontline risk-taking and innovation.

Just as industry boundaries are shifting, so, too, are the boundaries of the firm. Companies that are outward-looking, internally flexible and able to work with others will be those best placed to occupy the new competitive terrain.

6 Industry at the limit?

When seen in the context of digitally contestable markets, the standard definition of an industry—a group of firms that produce goods and services that are close substitutes, and who supply a common group of buyers—no longer seems adequate for understanding value creation.

There are a number of reasons for this. Companies have long participated in multiple industries, forming conglomerates, for example. However, today, digital technology makes that participation easier, cheaper and faster. Also, as new sources of value are created, they will—by definition—sit outside the existing structure previously imposed. For example, by the year 2000, digital cameras had been launched by companies from 20 different industry groups.[133] Last, a narrow conception of industry neglects the role of different stakeholders in value creation. Companies are working more often in parallel with organizations from other parts of the economy (such as government agencies and non-profits) and different market players (customers and investors) in the pursuit of common objectives.

The implications of this analysis are far-reaching for business leaders and policymakers alike. Not only will new capabilities need to be built, bought or borrowed, but business leaders will also need to ask fundamental questions about the market they serve and the assumptions upon which they are planning for the future. Businesses that are proactive in reassessing their place in a world where customer markets are being reshaped by digital technology will be able to lead from the front, turning disruption to their advantage. The future is there for the taking.

Checklist
10 questions for business executives

1. How are you deploying digital technology to proactively disrupt your industry?
2. How are you keeping track of the "ratchet effect" customers have when interacting with businesses, both online and offline? Do you know not only what's best-in-class, but also what is best-in-any-class?
3. How differently do your customers experience your company online versus offline?
4. How do you assess your company's competitive essence and how it may be shifting?
5. How often and how closely do you assess the potential value of your data aggregates to companies outside your industry?
6. How well do you understand governments' policy intentions—including latent policy intent that may emerge when new technology permits new interventions?
7. How well can you manage relationships with multiple organizations from different parts of the economy simultaneously, even if they sit outside your immediate value chain?
8. How will your decision-making processes cope with the volume of customer data digital technology can provide? As part of this, how comfortable are your managers with granting greater levels of autonomy to frontline employees?
9. How do you assess competitive threats from beyond your own industry?
10. How do you maintain a strong corporate culture when growing into entirely new markets?

Technical appendix

Economic analysis methodology

Phase 1

Market selection

To understand how digital technology is disrupting industry dynamics, we drew on the findings of a survey of business leaders from around the world, bespoke analysis from 10EQS (a research consultancy), and additional secondary research.

From this initial horizon scan, we identified six digitally contestable markets that exemplify—to varying levels of maturity—different manifestations of digital disruption. For econometric forecasting we selected three digitally contestable markets (staying healthy, paying, and shopping) and three countries (Germany, United Kingdom and the United States).

Phase 2

Sector identification

To enable econometric forecasting, we built a model of each digitally contestable market for each country. Each model comprises:

1. A "core sector" that has traditionally served the market in question. These are healthcare (in the case of staying healthy), financial services (in the case of paying), and retail (in the case of shopping). We assume that the entire core sector is amenable to digital disruption; 100 percent of the core sector is therefore included.

2. "Digital enablement sectors" that encompass hi-tech activities, products and services that enable digital contestability. These include providers of eCommerce and analytics platforms. We include a proportion of the aggregate digital enablement sectors that is equivalent to the core sector's share in GDP.

3. A number of "halo sectors" distinct from the core sector that, owing to digital technology, are now able to participate in the digitally contestable market. An example, in the case of learning, would be research and development. We include a proportion of each halo sector that is equivalent to the core sector's share in GDP.

The detail is set out on pp. 52-53 (Modeling digitally contestable markets: sectoral composition). We worked with standard industry classifications at the two- and three-digit NACE level. For some sectors, the Oxford Economics global model was employed. In others customized data series were built.

Phase 3

Econometric modeling

Each model generated forecasts of gross value added and gross output terms for each year from 2013 to 2018. This is the central forecast cited in the report; in some tables it is referred to as the "digital disruption" scenario. It assumes that the emergence of digitally contestable markets causes both the core sector and the digital enablement sectors to grow at rates faster than they would otherwise experience.

Phase 4

Scenario analysis

Recognizing the uncertainty surrounding the growth rate of digital technologies and their multiplier effects, we also created, for each model:

a A "digital foundation" scenario, in which the core sector and the digital enablement sectors grow no faster than they would in the absence of digitally contestable markets; and

b A "digital acceleration" scenario, in which the emergence of digitally contestable markets causes both the core sector and the digital enablement sectors to grow at rates faster than expected under "digital disruption."

Modeling digitally contestable markets: sectoral composition

Staying healthy

		Reason for inclusion	Methodology notes
Core sector	Healthcare services	Core sector.	Oxford Economics global model.
Digital enablement sectors	Electronic engineering	Digital enablement sectors (infrastructure, data services, and content).	Total sector size allocated to digitally contestable market based on share of core sector in GDP (6.9% in United States, 7.5% in United Kingdom, 6.6% in Germany).
	Hi-tech players: eCommerce, platforms, cloud and data storage		
	Telecommunications		
Halo sectors	Food and beverage companies	As democratized healthcare leads to better informed decisions about eating habits, there will be impacts on how and what food and beverage companies supply.	Sector allocated as above.
	University healthcare spinoffs	University medical and other research spills over into health via patents, startups and technology transfer.	Custom estimates of the economic impact of health-related university startups. Data only exist for the United Kingdom and United States; for Germany, the sector is not included in the market. Allocated 100% to health market.
	Retail component of sector activity	Captures the scope for eCommerce specifically targeted at health-related services.	Portion of total retail output ascribable to health services (based on share of consumer spending on health and medicine).

Paying

		Reason for inclusion	Methodology notes
Core sector	Financial services (banking and insurance)	Core sector.	Oxford Economics global model.
Digital enablement sectors	Electronic engineering	Digital enablement sectors (infrastructure, data services, and content).	Total sector size allocated to digitally contestable market based on share of core sector in GDP (6.3% in United States, 5.1% in United Kingdom, 4.2% in Germany).
	Hi-tech players: eCommerce, platforms, cloud and data storage		
	Telecommunications		
Halo sectors	Cash replacement "e-money" sector	Part of the revolution in finance is the potential for replacing small cash transactions with e-money (undercutting charges for debit/credit card purchases).	Oxford Economics estimate of the stock of "legal" (i.e. non-underground economy) cash based on currency in circulation, velocity of money, and assumption about size of underground economy.
	Retail component of sector activity	Captures the scope for eCommerce specifically targeted at purchase of financial services.	Portion of total retail output ascribable to financial services (based on share of consumer spending on insurance and financial services).

Shopping

		Reason for inclusion	Methodology notes
Core sector	Retail sales	Core sector.	To avoid double counting, this is total retail sales less retail sales allocated to other digitally contestable markets.
Digital enablement sectors	Electronic engineering	Digital enablement sectors (infrastructure, data services, and content).	Total sector size allocated to digitally contestable market based on share of core sector in GDP (4.3% in United States, 3.7% in United Kingdom, 2.8% in Germany).
	Hi-tech players: eCommerce, platforms, cloud and data storage		
	Telecommunications		
Halo sectors	Financial intermediation	Buying products requires financial intermediation, and new methods of payment are having an impact on the way in which people buy.	Sector allocated as above.
	Transport services	The ways in which physical goods are delivered from the producer to the consumer are changing (warehousing patterns, delivery demand, etc.)	Sector allocated as above.
	Non-residential construction	Changing retail means changing patterns of building for shopping malls, retail units, warehouses, etc.	Sector allocated as above.

Staying Healthy

Gross output at constant 2005 prices (billions)

Digital foundation:
Forecasts generated based on standard assumptions in Oxford Economics global dynamic stochastic general equilibrium model

	Germany € 2012	Germany € 2018	Germany % Annual Growth 2012 to 2018	UK £ 2012	UK £ 2018	UK % Annual Growth 2012 to 2018	US $ 2012	US $ 2018	US % Annual Growth 2012 to 2018
Core sector: Healthcare providers	229.3	248.1	1.3%	191.4	202.9	1.0%	1627.8	1887.2	2.5%
Digital enablement sectors: Hi-tech, Telecommunications and Publishing, Electronic engineering	5.2	6.3	3.2%	2.5	2.6	0.6%	29.2	36.4	3.7%
Halo sectors: Food and beverage, University spin offs, Retail	22.7	25.7	2.1%	17.4	18.9	1.4%	310.3	374.5	3.2%
Digitally contestable market total	257.2	280.1	1.4%	211.3	224.4	1.0%	1967.3	2298.1	2.6%

Digital disruption:
Core sectors grow 0.5% per annum faster than in digital foundation; digital enablement sectors twice as large as in digital foundation in each year 2013 to 2018

	Germany € 2012	Germany € 2018	Germany % Annual Growth 2012 to 2018	UK £ 2012	UK £ 2018	UK % Annual Growth 2012 to 2018	US $ 2012	US $ 2018	US % Annual Growth 2012 to 2018
Core sector: Healthcare providers	229.3	255.8	1.8%	191.4	208.5	1.4%	1627.8	1943.9	3.0%
Digital enablement sectors: Hi-tech, Telecommunications and Publishing, Electronic engineering	5.2	12.6	15.8%	2.5	5.2	12.9%	29.2	72.8	16.4%
Halo Sectors: Food and Beverage, University spin Offs, Retail	22.7	25.7	2.1%	17.4	18.9	1.4%	310.3	374.5	3.2%
Digitally contestable market total	257.2	294.1	2.3%	211.3	232.6	1.6%	1967.3	2391.2	3.3%

Digital acceleration:
Core sectors grow 1% per annum faster than in digital foundation; digital enablement sectors three times as large as in digital foundation in each year 2013 to 2018

	Germany € 2012	Germany € 2018	Germany % Annual Growth 2012 to 2018	UK £ 2012	UK £ 2018	UK % Annual Growth 2012 to 2018	US $ 2012	US $ 2018	US % Annual Growth 2012 to 2018
Core sector: Healthcare providers	229.3	263.7	2.4%	191.4	214.1	1.9%	1627.8	2000.5	3.5%
Digital enablement sectors: Hi-tech, Telecommunications and Publishing, Electronic engineering	5.2	18.8	23.9%	2.5	7.8	20.8%	29.2	109.2	24.6%
Halo sectors: Food and beverage, University spin offs, Retail	22.7	25.7	2.1%	17.4	18.9	1.4%	310.3	374.5	3.2%
Digitally contestable market total	257.2	308.2	3.1%	211.3	240.8	2.2%	1967.3	2484.2	4.0%

Source: Accenture and Oxford Economics analysis.

Staying Healthy

Gross value added at constant 2005 prices (billions)

Digital foundation:
Forecasts generated based on standard assumptions in Oxford Economics global dynamic stochastic general equilibrium model

	Germany € 2012	Germany € 2018	Germany % Annual Growth 2012 to 2018	UK £ 2012	UK £ 2018	UK % Annual Growth 2012 to 2018	US $ 2012	US $ 2018	US % Annual Growth 2012 to 2018
Core sector: Healthcare providers	163.4	176.8	1.3%	99.2	105.1	1.0%	976.7	1132.6	2.5%
Digital enablement sectors: Hi-tech, Telecommunications Telecoms and Publishing, Electronic engineering	2.7	3.26	3.2%	1.5	1.5	0.0%	16.8	21.1	3.9%
Halo sectors: Food and beverage, University spin offs, Retail	9.3	10.0	1.2%	9.8	11.1	2.1%	187.5	228.6	3.4%
Digitally contestable market total	175.4	190.0	1.3%	110.5	117.7	1.1%	1181.0	1382.3	2.5%

Digital disruption:
Core sectors grow 0.5% per annum faster than in digital foundation; digital enablement sectors twice as large as in digital foundation in each year 2013 to 2018

	Germany € 2012	Germany € 2018	Germany % Annual Growth 2012 to 2018	UK £ 2012	UK £ 2018	UK % Annual Growth 2012 to 2018	US $ 2012	US $ 2018	US % Annual Growth 2012 to 2018
Core sector: Healthcare providers	163.4	182.1	1.8%	99.2	108	1.5%	976.7	1166.5	3.0%
Digital enablement sectors: Hi-tech, Telecommunications and Publishing, Electronic engineering	2.7	6.5	15.8%	1.5	3.0	12.2%	16.8	42.2	16.6%
Halo Sectors: Food and Beverage, University spin Offs, Retail	9.3	10.0	1.2%	9.8	11.1	2.1%	310.3	228.6	3.4%
Digitally contestable market total	175.4	198.6	2.1%	110.5	122.4	1.7%	1967.3	1437.3	3.3%

Digital acceleration:
Core sectors grow 1% per annum faster than in digital foundation; digital enablement sectors three times as large as in digital foundation in each year 2013 to 2018

	Germany € 2012	Germany € 2018	Germany % Annual Growth 2012 to 2018	UK £ 2012	UK £ 2018	UK % Annual Growth 2012 to 2018	US $ 2012	US $ 2018	US % Annual Growth 2012 to 2018
Core sector: Healthcare providers	163.4	187.4	2.3%	99.2	111.5	2.0%	976.7	1200.5	3.5%
Digital enablement sectors: Hi-tech, Telecommunications and Publishing, Electronic engineering	2.7	9.8	23.9%	1.5	4.5	20.1%	16.8	63.3	24.7%
Halo sectors: Food and beverage, University spin offs, Retail	9.3	10.0	1.2%	9.8	11.1	2.1%	310.3	228.6	3.4%
Digitally contestable market total	175.4	207.2	2.8%	110.5	127.1	2.4%	1967.3	1492.4	4.0%

Source: Accenture and Oxford Economics analysis.

Paying

Gross output at constant 2005 prices (billions)

Digital foundation:
Forecasts generated based on standard assumptions in Oxford Economics global dynamic stochastic general equilibrium model

	Germany € 2012	Germany € 2018	Germany % Annual Growth 2012 to 2018	UK £ 2012	UK £ 2018	UK % Annual Growth 2012 to 2018	US $ 2012	US $ 2018	US % Annual Growth 2012 to 2018
Core sector: Financial services	252.3	282.8	1.9%	122.0	137.5	2.0%	1738.9	2100.6	3.2%
Digital enablement sectors: Hi-tech, Telecommunications and publishing, Electronic engineering	2.4	3.0	3.8%	1.7	1.9	1.9%	29.5	40.8	5.6%
Halo sectors: Cash replacement sector, Retailers	11.7	11.6	-0.1%	6.0	6.8	2.1%	65.0	79.6	3.4%
Digitally contestable market total	266.4	297.4	1.9%	129.7	146.2	2.0%	1833.4	2221.0	3.2%

Digital disruption:
Core sectors grow 0.5% per annum faster than in digital foundation; digital enablement sectors twice as large as in digital foundation in each year 2013 to 2018

	Germany € 2012	Germany € 2018	Germany % Annual Growth 2012 to 2018	UK £ 2012	UK £ 2018	UK % Annual Growth 2012 to 2018	US $ 2012	US $ 2018	US % Annual Growth 2012 to 2018
Core sector: Financial services	252.3	290.9	2.4%	122.0	143.8	2.8%	1738.9	2163.6	3.7%
Digital enablement sectors: Hi-tech, Telecommunications and publishing, Electronic engineering	2.4	6.0	16.5%	1.7	3.8	14.3%	29.5	81.6	18.5%
Halo sectors: Cash replacement sector, Retailers	11.7	11.6	-0.1%	6.0	6.8	2.1%	65.0	79.6	3.4%
Digitally contestable market total	266.4	308.5	2.5%	129.7	154.4	2.9%	1833.4	2324.8	4.0%

Digital acceleration:
Core sectors grow 1% per annum faster than in digital foundation; digital enablement sectors three times as large as in digital foundation in each year 2013 to 2018

	Germany € 2012	Germany € 2018	Germany % Annual Growth 2012 to 2018	UK £ 2012	UK £ 2018	UK % Annual Growth 2012 to 2018	US $ 2012	US $ 2018	US % Annual Growth 2012 to 2018
Core sector: Financial services	252.3	299.1	2.9%	122.0	150.1	3.5%	1738.9	2226.7	4.2%
Digital enablement sectors: Hi-tech, Telecommunications and publishing, Electronic engineering	2.4	9.0	24.6%	1.7	5.7	22.3%	29.5	122.4	26.8%
Halo sectors: Cash replacement sector, Retailers	11.7	11.6	-0.1%	6.0	6.8	2.1%	65.0	79.6	3.4%
Digitally contestable market total	266.4	319.7	3.1%	129.7	162.6	3.8%	1833.4	2428.7	4.8%

Source: Accenture and Oxford Economics analysis.

Paying

Gross value added at constant 2005 prices (billions)

Digital foundation:
Forecasts generated based on standard assumptions in Oxford Economics global dynamic stochastic general equilibrium model

	Germany € 2012	Germany € 2018	Germany % Annual Growth 2012 to 2018	UK £ 2012	UK £ 2018	UK % Annual Growth 2012 to 2018	US $ 2012	US $ 2018	US % Annual Growth 2012 to 2018
Core sector: Financial services	103.3	115.9	1.9%	67.7	76.4	2.0%	901.5	1089.4	3.2%
Digital enablement sectors: Hi-tech, Telecommunications and publishing, Electronic engineering	1.2	1.6	4.9%	1.0	1.1	1.6%	17.0	23.7	5.7%
Halo sectors: Cash replacement sector, Retailers	5.7	5.86	0.5%	3.1	3.3	2.4%	41.5	44.2	1.1%
Digitally contestable market total	110.2	123.4	1.9%	71.8	80.8	2.0%	960.0	1157.3	3.2%

Digital disruption:
Core sectors grow 0.5% per annum faster than in digital foundation; digital enablement sectors twice as large as in digital foundation in each year 2013 to 2018

	Germany € 2012	Germany € 2018	Germany % Annual Growth 2012 to 2018	UK £ 2012	UK £ 2018	UK % Annual Growth 2012 to 2018	US $ 2012	US $ 2018	US % Annual Growth 2012 to 2018
Core sector: Financial services	103.3	119.4	2.4%	67.7	79	2.5%	901.5	1122.1	3.7%
Digital enablement sectors: Hi-tech, Telecommunications and publishing, Electronic engineering	1.2	3.2	17.8%	1.0	2.2	14.0%	17.0	47.4	18.6%
Halo sectors: Cash replacement sector, Retailers	5.7	5.86	0.5%	3.1	3.3	1.0%	41.5	44.2	1.1%
Digitally contestable market total	110.2	128.5	2.6%	71.8	84.2	2.7%	960.0	1213.7	4.0%

Digital acceleration:
Core sectors grow 1% per annum faster than in digital foundation; digital enablement sectors three times as large as in digital foundation in each year 2013 to 2018

	Germany € 2012	Germany € 2018	Germany % Annual Growth 2012 to 2018	UK £ 2012	UK £ 2018	UK % Annual Growth 2012 to 2018	US $ 2012	US $ 2018	US % Annual Growth 2012 to 2018
Core sector: Financial services	103.3	122.8	2.9%	67.7	81	3.0%	901.5	1154.8	4.2%
Digital enablement sectors: Hi-tech, Telecommunications and publishing, Electronic engineering	1.2	4.8	26.0%	1.0	3.3	22.0%	17.0	71.1	26.9%
Halo sectors: Cash replacement sector, Retailers	5.7	5.86	0.5%	3.1	3.3	1.0%	41.5	44.2	1.1%
Digitally contestable market total	110.2	133.5	3.2%	71.8	87.6	3.4%	960.0	1270.1	4.8%

Source: Accenture and Oxford Economics analysis.

Shopping

Gross output at constant 2005 prices (billions)

Digital foundation:
Forecasts generated based on standard assumptions in Oxford Economics global dynamic stochastic general equilibrium model

	Germany € 2012	Germany € 2018	Germany % Annual Growth 2012 to 2018	UK £ 2012	UK £ 2018	UK % Annual Growth 2012 to 2018	US $ 2012	US $ 2018	US % Annual Growth 2012 to 2018
Core sector: Retail	111.6	122.5	1.6%	94.0	113.2	3.2%	913.4	1071.1	2.7%
Digital enablement sectors: Hi-tech, Telecommunications and publishing, Electronic engineering	3.2	4.1	4.1%	1.7	2.2	4.7%	30.5	39.6	4.4%
Halo sectors: Transport, Non residential construction and Financial services	9.4	10.4	1.6%	9.0	11.1	3.6%	53.3	65.3	3.4%
Digitally contestable market total	124.3	136.9	1.6%	104.7	126.6	3.2%	997.2	1176.0	2.8%

Digital disruption:
Core sectors grow 0.5% per annum faster than in digital foundation; digital enablement sectors twice as large as in digital foundation in each year 2013 to 2018

	Germany € 2012	Germany € 2018	Germany % Annual Growth 2012 to 2018	UK £ 2012	UK £ 2018	UK % Annual Growth 2012 to 2018	US $ 2012	US $ 2018	US % Annual Growth 2012 to 2018
Core sector: Retail	111.6	126.2	2.1%	94.0	116.7	3.7%	913.4	1103.3	3.2%
Digital enablement sectors: Hi-tech, Telecommunications and publishing, Electronic engineering	3.2	8.2	16.8%	1.7	4.4	17.5%	30.5	79.2	17.2%
Halo sectors: Transport, Non residential construction and Financial services	9.4	10.4	1.6%	9.0	11.1	3.6%	53.3	65.3	3.4%
Digitally contestable market total	124.3	144.8	2.6%	104.7	132.2	4.0%	997.2	1247.7	3.8%

Digital acceleration:
Core sectors grow 1% per annum faster than in digital foundation; digital enablement sectors three times as large as in digital foundation in each year 2013 to 2018

	Germany € 2012	Germany € 2018	Germany % Annual Growth 2012 to 2018	UK £ 2012	UK £ 2018	UK % Annual Growth 2012 to 2018	US $ 2012	US $ 2018	US % Annual Growth 2012 to 2018
Core sector: Retail	111.6	129.9	2.6%	94.0	120.1	4.2%	913.4	1135.4	3.7%
Digital enablement sectors: Hi-tech, Telecommunications and publishing, Electronic engineering	3.2	12.3	25.0%	1.67	6.6	25.8%	30.5	118.8	25.4%
Halo sectors: Transport, Non residential construction and Financial services	9.4	10.4	1.6%	9.01	11.1	3.6%	53.3	65.3	3.4%
Digitally contestable market total	124.3	152.6	3.5%	104.7	137.9	4.7%	997.2	1319.5	4.8%

Source: Accenture and Oxford Economics analysis.

Shopping

Gross value added at constant 2005 prices (billions)

Digital foundation:
Forecasts generated based on standard assumptions in Oxford Economics global dynamic stochastic general equilibrium model

	Germany € 2012	Germany € 2018	Germany % Annual Growth 2012 to 2018	UK £ 2012	UK £ 2018	UK % Annual Growth 2012 to 2018	US $ 2012	US $ 2018	US % Annual Growth 2012 to 2018
Core sector: Retail	68.3	75.1	1.6%	49.3	59.5	3.2%	609.2	715.0	2.7%
Digital enablement sectors: Hi-tech, Telecommunications and publishing, Electronic engineering	1.65	2.3	5.7%	1.0	1.3	5.2%	17.6	24.0	5.3%
Halo sectors: Transport, Non residential construction and Financial services	3.6	4.3	3.0%	3.8	4.9	4.3%	29.3	38.0	4.4%
Digitally contestable market total	73.6	81.7	1.8%	54.0	65.7	3.3%	656.0	777.0	2.9%

Digital disruption:
Core sectors grow 0.5% per annum faster than in digital foundation; digital enablement sectors twice as large as in digital foundation in each year 2013 to 2018

	Germany € 2012	Germany € 2018	Germany % Annual Growth 2012 to 2018	UK £ 2012	UK £ 2018	UK % Annual Growth 2012 to 2018	US $ 2012	US $ 2018	US % Annual Growth 2012 to 2018
Core sector: Retail	68.3	77.4	2.1%	49.3	61	3.7%	609.2	736.2	3.2%
Digital enablement sectors: Hi-tech, Telecommunications and publishing, Electronic engineering	1.65	4.6	18.6%	1.0	2.6	18.1%	17.6	48.0	18.2%
Halo sectors: Transport, Non residential construction and Financial services	3.6	4.3	3.0%	3.8	4.9	4.3%	29.3	38.0	4.4%
Digitally contestable market total	73.6	86.3	2.7%	54.0	68.8	4.1%	656.0	822.2	3.8%

Digital acceleration:
Core sectors grow 1% per annum faster than in digital foundation; digital enablement sectors three times as large as in digital foundation in each year 2013 to 2018

	Germany € 2012	Germany € 2018	Germany % Annual Growth 2012 to 2018	UK £ 2012	UK £ 2018	UK % Annual Growth 2012 to 2018	US $ 2012	US $ 2018	US % Annual Growth 2012 to 2018
Core sector: Retail	68.3	79.6	2.6%	49.3	63	4.2%	609.2	757.7	3.7%
Digital enablement sectors: Hi-tech, Telecommunications and publishing, Electronic engineering	1.65	6.9	26.9%	1.0	3.9	26.3%	17.59	72.0	26.5%
Halo sectors: Transport, Non residential construction and Financial services	3.6	4.3	3.0%	3.8	4.9	4.3%	29.3	38.0	4.4%
Digitally contestable market total	73.6	90.8	3.6%	54.0	71.8	4.8%	656.0	867.7	4.8%

Source: Accenture and Oxford Economics analysis.

References

1 "Big Data, for Better or Worse: 90% of World's Data Generated over Last Two Years," *Science Daily*, May 22nd 2013.

2 Pisani, B, "Companies Sitting on Cash Pile of over $1 Trillion," CNBC, 26th July 2013.

3 Bharti Airtel corporate website.

4 Verizon corporate website.

5 Belkin, D and Porter, C "Job Market Embraces Massive Online Courses", *Wall Street Journal*, 26th September 2013.

6 Empson, R, "Practice Fusion Lands a Whopping $70m to Bring a Big Data Cure to the Healthcare Crisis" *Tech Crunch*, 24th September 2013.

7 Aguilar, M, "GE is Freeing Up 'Thousands' of Patents to Fuel Your Imagination," *Gizmodo*, 4th October 2013.

8 Yu, Eileen, "Taobao Offers Free Analytics to Small Merchants," *ZDnet*, 26th November 2013.

9 Macmillan, G, "Facebook Launches 5 Steps to Social Media Retail Success" *The Wall*, 14th January 2013.

10 Dredge, S, "Yelp CEO Talks Mobile Growth, Global Expansion and Doner Kebabs," *The Guardian*, 5th June 2013.

11 Bharti Airtel corporate website.

12 Ideaconnection corporate website.

13 Rao, L, "Bigcommerce Raises $40m from Steve Case's Revolution Growth to Help SMBs Manage E-commerce" *Tech Crunch*, 25th July 2013.

14 "Salesforce Expects to Cross $3bn Threshold this Year," *TechWeek Europe*, November 21st 2012.

15 Nunes, P, Downes, L, "Big Bang Disruption – The Innovator's Disaster," *Accenture Outlook*, June 2013.

16 Ibid.

17 Ibid.

18 Lobel, B, "Rise in Number of Businesses Set Up from Bedrooms," *Small Business UK*, 28th May 2013.

19 Accenture analysis of IDC and United Nations Population Division data.

20 Docketerman, E, "This T-Shirt Will Save Your Life," *Time*, 11th November 2013.

21 "7 in 10 Low-Income Patients Want More Information from Their Providers," *Hit Consultant*, 24th October 2013.

22 Eastwood, B, "Healthcare Finally Warming to Cloud Technology," *CIO*, 18th November 2013.

23 Proteus Digital Health corporate website.

24 Langreth, R, "Robot Surgery Damaging Patients Rises with Marketing," *Bloomberg*, 8th October 2013.

25 "Robots to Help People with Dementia in Western Isles" *BBC News*, 5th July 2013.

26 Carepass corporate website.

27 Howard, C, "The World's Most Powerful Women 2013," *Forbes*, 22nd May 2013.

28 Accenture corporate website.

29 Empson, R, "Practice Fusion Lands a Whopping $70m to Bring a Big Data Cure to the Healthcare Crisis" *TechCrunch*, 24th September 2013.

30 Versel, N, "Independa Widens LG Partnership, Puts Angela on Samsung Galaxy Tabs," *Mobi Health News*, 14th January 2013.

31 NHS Moorfields Eye Hospital corporate website.

32 CloudTweaks corporate website.

33 "Medical Analytics Market: 23.7% CAGR for Healthcare Data Analytics Market to 2017," *PR Newswire*, 29th November 2012.

34 Moore, E, "Digital Finance Lending Set to Hit £1bn," *Financial Times*, 15th July 2013.

35 Federal Reserve corporate website.

36 Linkett corporate website.

37 Couts, A, "Bitcoin Goes Nuts, Jumps Over $1,000 per Bitcoin," *Digital Trends*, 27th November 2013.

38 Kreditech corporate website.

39 Biseul, X, "BNP Paribas Parie sur le Paiement Mobile" *01 Business*, 21st November 2013.

40 Wasserman, T, "PayPal Lets You Pay with QR Codes" *Mashable*, 8th October 2013.

41 The Bitcoin Trader corporate website.

42 Ibid.

43 Koetsier, J, "Bitcoin Black Friday: 250 Retailers Band Together to Accept Bitcoin (and Fight Payment Fees)," *Venture Beat*, 27th November 2013.

44 Geron, T, "With IPO in Sight, Lending Club Looks to Upend Banking Industry," *Forbes*, 10th October 2013.

45 Lending Club corporate website.

46 "Google, Other Investors Put $125 million into Lending Club," *Reuters*, 2nd May 2013.

47 "Infobip Says Virtual Currency Will Help Developers Crack Japanese Mobile Content Market" *Mobile Payments Today*, 20th September 2013.

48 Coin corporate website.

49 Linkett corporate website.

50 Accenture corporate website.

51 GeoActive Group corporate website.

52 "Crowdfunding's Potential for the Developing World," *World Bank*, October 2013.

53 Forrester corporate website.

54 Rao, L, "Bigcommerce Raises $40m from Steve Case's Revolution Growth to Help SMBs Manage E-commerce" *Tech Crunch*, 25th July 2013.

55 Gartner.

56 Visual.ly corporate website.

57 "The World's Greatest Bazaar," *The Economist*, 21st March 2013.

58 Ibid.

59 Smithers, R, "Argos and eBay Join Forces for Click-and-Collect Service," *The Guardian*, 24th September 2013.

60 Goldberg, M, "SAS Partners with SAP to Build In-Memory Analytics for HANA Platform," *Data Informed*, 24th October 2013.

61 Nicholson, C, "Wal-Mart Buys Social Media Firm Kosmix," *The New York Times*, 19th April 2011.

62 Heine, C, "Walmart's Social Is Getting 10X ROI and Tens of Thousands of Daily Interactions," *Adweek*, 4th October 2013.

63 Ibid.

64 Ravindranath, M, "Brooks Brothers, National Retailers Analyze "Big Data" from Sales to Adjust Marketing," *The Washington Post*, 22nd September 2013.

65 Qubit corporate website.

66 "Digital Disruption: How 800Razors.com Took the Retail Battle with Gillette Online," *Commpro*, 15th October 2013.

67 Meemeep corporate website.

68 Davis, B, "The Sharing Economy: 40+ Peer-to-peer Start-ups" *Econsultancy*, 7th August 2013.

69 Markets and Markets corporate website.

70 Commonwealth of Learning corporate website.

71 Telecom Italia corporate website.

72 Heussner, K, "Udacity Teams Up with Google, AT&T and Other Tech Giants for Open Education Alliance," *Giaom*, 9th September 2013.

73 Noel-Levitz corporate website.

74 Kolowich, S, "'A MOOC? What's a MOOC?' Now You Can Look It Up" *The Chronicle of Higher Education*, 30th August 2013.

75 Udacity corporate website.

76 Coursera corporate website.

77 Pearson corporate website.

78 Bank of America corporate website.

79 Kendall, P, "Is the Digital Age Rewiring Us?" *The Telegraph*, 13th March 2013.

80 Ferenstein, G, "Tech Titans and Online Education Orgs Team Up With the Open Education Alliance," *Tech Crunch*, 9th September 2013.

81 Belkin, D and Porter, C, "Big Corporates Buy into MOOCs" *The Australian*, 1st October 2013.

82 Ibid.

83 ICEF Monitor corporate website.

84 Sayer, P, "Academy Cube Online Learning Platform Aims to Tackle IT Skills Shortage" *Computer World*, 5th March 2013.

85 SAP corporate website.

86 Massey University corporate website.

87 Heussner, K, "Can Skills Grouping Help Adults Learn Better Online? Startup Thinkful Gives it a Shot" *Gigaom*, 20th June 2013.

88 Di Meglio, F, "MOOC Newcomer Offers Online Business Courses Taught by Pros, Not Profs," *Business Week*, 16th August 2013.

89 Udacity corporate website.

90 Bregar, B, "Additive Manufacturing Market Hits $1.7 Billion," *Plastics News*, 6th June 2012.

91 eYeka corporate website.

92 Smart Data Collective corporate website.

93 Ideaconnection corporate website.

94 Freescale Semiconductor corporate website.

95 Quirky corporate website.

96 Gibbs, J, "Baxter the Worker Robot Puts in the Hours So You Don't Have To" *Tech Crunch*, 20th September 2012.

97 "Digital Manufacturing Market Poised for Global Growth," *Control Design*, 7th May 2013.

98 GSM Association corporate website.

99 "3D Printing Market Worth $8.41 Billion by 2020," *PR Newswire*, 11th November 2013.

100 Ericsson corporate website.

101 Kharif, O, "Trillions of Smart Sensors will Change Life" *Bloomberg*, 5th August 2013.

102 Shaheen, P and Cohen, A, "Innovative Mobility Carsharing Outlook," *University of Berkeley, California*, Summer 2013.

103 Roose, K, "Uber Might be more Valuable than Facebook Someday. Here's Why," *New York Magazine*, 16th June 2013.

104 "Single Lane" *The Economist*, 30th November 2013.

105 CE.org corporate site.

106 Verizon corporate website.

107 Telefonica corporate site.

108 Weiser, N, "What on Earth will Telefónica Digital do next?," *AMDOCS*, 15th May 2013.

109 Thomas, N, "Car Share Business BlaBlaCar Coming to Britain," *The Telegraph*, 16th November 2013.

110 Trafi corporate website.

111 Zeng, H, "China Transportation Briefing: The Boom and Ban of Taxi Apps," *The City Fix*, 30th July 2013.

112 Lowensohn, J, "Cloud Car Startup Snags $6m, ex-Microsoft Exec Sinofsky," *Cnet*, 28th August 2013.

113 Kharif, O, "Trillions of Smart Sensors will Change Life" *Bloomberg*, 5th August 2013.

114 Bosch corporate website.

115 Davies, A, "Audi is Now Testing its Self-Driving Cars on Nevada Roads," *Business Insider*, 8th January 2013.

116 Rosenbush, S, "Google Puts Connected Car Pressure on Ford, General Motors," *Wall Street Journal*, 12th July 2013.

117 Carrol, R, "Tesla Enters Race to Build Self-Driving Car," *Reuters*, 17th September 2013.

118 Nunes, P, Downes, L, Op. Cit.

119 Accenture corporate website.

120 Babcock, C, "Red Hat: First $1 Billion Open Source Company," *Information Week*, 28th February 2013.

121 Sharf, S, "The Ten Most Innovative Companies in America (2012)," *Forbes*, 9th June 2012.

122 Philips corporate website.

123 Survey respondents were asked to rate their company's performance versus their peers over the last five years. Those who rated their performance as above their industry peers have been classified as high performers.

124 Qubit corporate website.

125 Miller, M, "Is P&G the Next Digital Giant?", *PC Magazine*, 19th July 2011.

126 Hutchings, E, "Chipotle Sells Organic Hoodies in a Bid to Become a Lifestyle Brand," *PSFK*, 1st February 2013.

127 Ibid.

128 bigHand corporate website.

129 Autodesk corporate website.

130 Ibid.

131 GE corporate website.

132 Unilever corporate website.

133 Penning, J and Puranam, P, "Market Convergence & Firm Strategies: Towards a systematic analysis," University of Pennsylvania, February 2000.

About the research

Four pieces of primary research underpin this study. They were conducted between July 2013 and January 2014:

1 **Interviews** with practitioner experts in the dynamics of markets experiencing digital disruption. We commissioned 10EQS to conduct these interviews. This work was complemented by extensive secondary research and analysis by both 10EQS and Accenture.

2 An online **survey** of 500 business executives across a wide range of industries and 10 major economies: Brazil, China, France, Germany, India, Italy, Russia, Spain, the United Kingdom and the United States. We commissioned Kadence International to administer the survey.

3 **Econometric modeling** of the historic and future growth performance of three markets experiencing digital disruption. We commissioned Oxford Economics to do this work.

4 **Interviews** with four business academics and experts, exploring sources of corporate agility outside the enterprise. They were Professor Julian Birkinshaw (London Business School), Dr Gary Hamel (author and management expert), Professor Ioannis Ioannou (London Business School), and Professor Andy Neely (Director, Cambridge Service Alliance, University of Cambridge) .

Executive sponsor

Mark Spelman

Lead authors

Tim Cooper and Matthew Robinson

Project team

Archie Maitland, Vittoria Traverso, Samuel Yardley

The authors would like to thank the following individuals for their assistance:

Julian Allen, Allan Alter, Bruno Berthon, Sarah Bird, Adrian Cooper, David Cudaback, Phil Davis, Paul Daugherty, David Day, Dan Elron, Svenja Falk, Luca Gagliardi, Graham Girling, Nancy Hamill, Gwen Harrigan, Mamta Kapur, Scott Kratzer, Jeremy Leonard, David Light, Scott Livermore, Mark McDonald, Matthew McGuinness, Ryan McManus, Joanne McMorrow, Raghav Narsalay, Paul Nunes, Anton Pichler, Eduardo Plastino, Mark Purdy, Abby Samp, Carron Sass, Lynda Stewart, Bob Thomas, Manuel Torres, Noshua Watson, Kuangyi Wei, Meg Van Winkle.

Contact

For more information about this research, please contact forward.thinking@accenture.com

About the Accenture Institute for High Performance

The Accenture Institute for High Performance develops and publishes practical insights into critical management issues and global economic trends. Its worldwide team of researchers connects with Accenture's consulting, technology and outsourcing leaders to demonstrate how organizations become and remain high performers through original, rigorous research and analysis.

About Accenture

Accenture is a global management consulting, technology services and outsourcing company, with approximately 281,000 people serving clients in more than 120 countries. Combining unparalleled experience, comprehensive capabilities across all industries and business functions, and extensive research on the world's most successful companies, Accenture collaborates with clients to help them become high-performance businesses and governments. The company generated net revenues of US$28.6 billion for the fiscal year ended Aug. 31, 2013. Its home page is www.accenture.com.

The views and opinions expressed in this document are meant to stimulate thought and discussion. As each business has unique requirements and objectives, these ideas should not be viewed as professional advice with respect to your business.

This document makes descriptive reference to trademarks that may be owned by others. The use of such trademarks herein is not an assertion of ownership of such trademarks by Accenture and is not intended to represent or imply the existence of an association between Accenture and the lawful owners of such trademarks.

Copyright © 2014 Accenture
All rights reserved.

Accenture, its logo, and High Performance Delivered are trademarks of Accenture.

13-3890 / 11-7909