

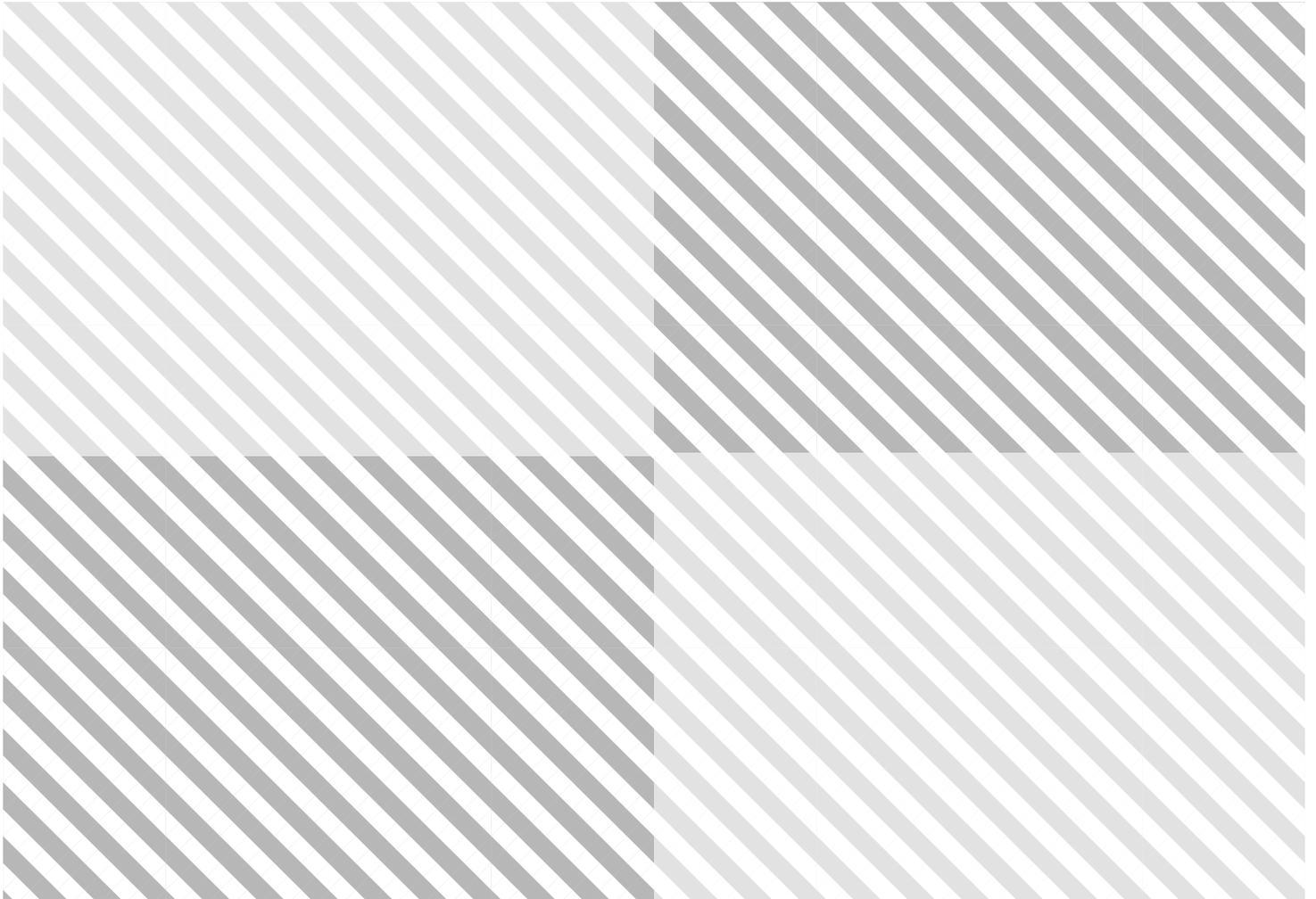
White Paper

Digital Transformation of Industries

Consumer Industries

In collaboration with Accenture

January 2016



World Economic Forum®

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1. Foreword

There is widespread recognition among leaders in most industries that the role of digital technology is rapidly shifting, from being a driver of marginal efficiency to an enabler of fundamental innovation and disruption.

Digitalization is the cause of large-scale and sweeping transformations across multiple aspects of business, providing unparalleled opportunities for value creation and capture, while also representing a major source of risk. Business leaders across all sectors are grappling with the strategic implications of these transformations for their organizations, industry ecosystems, and society. The economic and societal implications of digitalization are contested and raising serious questions about the wider impact of digital transformation.

While it is clear that digital technology will transform most industries, there are a number of challenges that need to be understood. These include factors such as the pace of changing customer expectations, cultural transformation, outdated regulation, and identifying and accessing the right skills – to name just a few. These challenges need to be addressed by industry and government leaders to unlock the substantial benefits digital offers society and industry.

Digital Transformation of Industries (DTI) is a project launched by the World Economic Forum in 2015 as part of the Future of the Internet Global Challenge Initiative. It is an ongoing initiative that serves as the focal point for new opportunities and themes arising from latest developments and trends from the digitalization of business and society. It supports the Forum's broader activity around the theme of the Fourth Industrial Revolution.

A key component of the DTI project in 2015 has been the quantification of the value at stake for both business and society over the next decade from the digital transformation of six industries. The 'compass' for these industry sectors is being set and it is imperative that all stakeholders collaborate to maximize benefits for both society and industry. Digitalization is one of the most fundamental drivers of transformation ever and, at the same time, a unique chance to shape our future. The World Economic Forum is committed to helping leaders understand these implications and supporting them on the journey to shape better opportunities for business and society.

In 2016, the DTI initiative will focus on the impact of digital transformation on an additional 10 industries, further deep-dives into industries from this year's project, as well as examine a number of cross-industry topics such as platform governance, societal impact, and policy and regulation.

The report was prepared in collaboration with Accenture, whom we would like to thank for their support. We would also like to thank the Steering Committee, the Working Group members, as well as the more than 200 experts from business, government and academia and over 100 industry partners who were involved in shaping the insights and recommendations of this project. We are confident that the findings will contribute to improving the state of the world through digital transformation, both for business and society.

Bruce Weinelt
Head of Digital Transformation
World Economic Forum

2. Executive Summary

Consumer industries touch people's lives in a way that few other industries can match. Every day, 2 billion people – almost a third of the world's population – use the products of just one global consumer products company.

Digital innovation is shaking up consumer industries: shifting power from brands to consumers, shifting value from traditional players to digital insurgents and putting the consumer in the driver's seat. Social and mobility trends, in addition to those in media, analytics and the cloud, have fundamentally shifted the way consumers buy and use products and services around the world. Consumers are making companies work harder to earn their money. The transformation of consumer industries has also led to some important innovations, particularly on the periphery of the consumer ecosystem (in areas such as payment technology and last-mile delivery).

As a consequence of their place in the digital vanguard, consumer businesses are sailing further ahead into uncharted waters. Four digital transformation themes expected to play an important role in the future evolution of consumer industries are:

- **Consumer data flow and value capture:** Growing digitization will create opportunities for companies to use consumer data to propel innovation and improve customer experiences. Developing successful data monetization models will be a critical challenge for consumer industries. The rising importance of consumer and enterprise data will draw increased scrutiny and activism from consumers and regulators, as society puts an even higher premium on data privacy and transparency.
- **The experience economy:** Products will evolve into services, and services into experiences, with data serving as the backbone of their delivery. Creating new revenue models is an opportunity in an environment where revenue could potentially be decoupled from output and more closely linked to outcomes for individuals and society.
- **Omni-channel retail:** Traditional stores will undergo a metamorphosis to stay relevant when online purchases in most categories are growing. Omni-channel strategies will play an important role. Consumer products companies will also need to have effective strategies to compete in a 'flatter world' and identify ways to replicate and maintain the quality of consumer experience across channels.
- **Digital operating model:** Smart supply chains and smart factories will be developed, enabling the mass customization of products and omni-channel experiences. The ability of a firm's operating model to manage consumer experiences will be central to gaining competitive advantage.

These digital themes are expected to put a cumulative \$4.9 trillion¹ of value at stake for the consumer industries in terms of operating profits from 2016 to 2025. This is approximately 14% of the total operating profits of the industry over the same period. The economically measured impact to society and consumers from the digital themes is estimated to be around \$5.4 trillion.

Underlying these themes are 12 initiatives that will achieve critical adoption at different points in time, with adoption rates varying by market. The success of digital transformation will hinge on the success of consumer companies in innovating while maintaining the trust of their consumers. Digital transformation will benefit the environment through the efficient use of resources, decreased energy usage and reduced wastage. It will also impact society by generating employment in new fields, which will require efforts to retrain and build the skills of the workforce, and by creating and propagating a wellness culture, leading to better health outcomes. Looking into the future, consumer industries need to think deeply about what digital innovation means for them and how digitization can help overcome problems.

Irrespective of the path that businesses choose to take, 'no regret' investments can be made to survive and thrive in the future. These include breaking down traditional organizational barriers, building ecosystem partnerships, investing in skills and digital capabilities, and building an omni-channel presence.

The key questions that arise for the stakeholders in the industry and its ecosystem are:

- With over \$600bn for industry and \$2.8trn for society, e-commerce is the single largest digital initiative we have identified across industries so far. Internet access and last mile delivery are critical to realizing this value, so how can consumer, telecoms and logistics industries collaborate to realize this potential?

- The sharing economy is estimated to have over \$2trn of societal impact. What innovative business models can incumbents deploy to increase second hand goods sales which in turn fuels 'new demand' growth?
- How can companies push the boundaries on innovation and invest in the right capabilities to enable product and service offerings that drive differentiation in the digital age? How can industry firms work with regulators to facilitate digital driven innovation in business models, while protecting interests of consumers especially around consumer data and transparency?
- Will businesses have access to a sufficiently skilled workforce to successfully leverage digital opportunities? What role will businesses play in skill development in the future?

3. Industry Context

The elevation of products from mere commodities to differentiated brands during the 20th century was a major innovation in consumer industries. In the 21st century, the Internet revolution is driving the industries' transformation. Alongside technological advances, the subtler but still powerful drivers of social and behavioral change have also prompted consumer industries to evolve. Major social, economic and technological developments are propelling the industries' digital transformation and creating new risks and opportunities for consumer businesses.

a. Market trends

The emergence of millennials: As greater numbers of millennials (those born between 1980 and 2000) enter the workplace and form households, their spending habits are helping determine the future direction of consumer industries. Millennials are estimated to exceed 2 billion around the world, accounting for 27% of the adult population in the United States and 24% in Europe.² Millennials make up the biggest generation in US history, even larger than the baby-boom generation.³ Numerous studies have concluded that millennials prefer access to ownership, place a high value on convenience, and demand transparency about how the products and services they consume impact the planet and their own well-being.⁴

An ageing population: While millennials are shaping workplaces, households and social spaces, many countries are seeing their population age. Elderly people (age 60 and above) now account for about 12% of the global population, up from 9% in 1990, and are expected to reach 21% by 2050.⁵ This has led to a rapid growth in goods and services catering to their needs. The elderly and millennial groups both boost the convenience economy, though in different ways.

Urbanization: Urbanization has been progressing at a rapid pace. The United Nations estimates that almost 60% of the world's population will reside in urban areas by 2050, up from 54% in 2014.⁶ A growing global population will further boost the size of the world's urban population and create overextended and over-congested cities. This has already contributed to the expansion of innovative distribution and delivery models to meet consumer needs.

A growing middle class: The number of people in the global middle class⁷ is expected to rise from 1.8 billion in 2009 to 3.2 billion in 2020, and to 4.9 billion in 2030.⁸ The growth of this group has fueled demand for products and services in emerging markets, especially in India and China.

b. Technology trends

Mobile devices and Internet penetration: Internet penetration has almost doubled over seven years to reach around 40% in 2014,⁹ and by the end of 2012, there were more mobile devices than people on the planet. Mobile and Internet services are increasingly available, leading consumers to shift more of their purchases online and providing companies with direct access to consumers. For example, in the first quarter of 2014, 198 million US consumers (78% of the population aged over 15) made a purchase online.¹⁰

Digital media consumption: Almost half of the media viewed or listened to in the United States in 2014 was digital.¹¹ This has led to an explosion in creating, collecting and analyzing consumer data. As a consequence, many marketers and companies in consumer industries today spend vast amounts trying to separate the signal from the noise in this data.

Consumer communities: People trust peer recommendations seven times more than advertisements.¹² Information now makes its way to the consumer in a matter of seconds through various social media platforms, allowing the almost instant sharing of views and creation of 'public opinion'. Notable examples of the impact this can have on companies include the drop in sales for Starbucks in the United Kingdom following consumer reaction to its tax policies, and the infamous "United Breaks Guitar" videos, which got 10 million views on YouTube and turned into a public relations issue for United Airlines. In today's socially connected world, companies need to act swiftly. Many are responding to this change: almost 80% of companies in a recent survey had a dedicated social media team.¹³

The Internet of Things and other technologies: The Internet of Things is expected to consist of more than 50 billion connected devices by 2020,¹⁴ providing companies with the opportunity to create distinctive customer value propositions

and experiences. Positioning sensors at store entrances to identify consumers and deliver tailored offers to their mobile devices, based on their purchasing history and profile, is just one example of how consumer goods companies can deliver personalization at scale. The retail sector, in particular, has already adopted technologies such as electronic point of sale and radio frequency identification (RFID), which have enhanced the ability of companies to accurately track the movement and sales of goods.

c. Ecosystem trends

New disruptions: With the Internet lowering barriers to entry, established players are facing competition that has increased exponentially. Moreover, competition is now diffused and not easily targeted, since it may not be a single corporation but a hundred small startups that transform the ecosystem. For instance, in India alone, more than 3,100 startups were created in 2014, and this number is expected to rise to 11,500 by 2020.¹⁵

Regulatory reforms: Data privacy has never been as important an issue as it is now. IBM states that, more than just being nice to have, data privacy and security are “required by more than 50 international legal and industry mandates”.¹⁶ Regulators have become more active in improving data-related policies and are demanding greater transparency in the use of data. Regulators’ roles and mandates are being questioned and redefined in multiple areas. In many instances and through increased transparency, digitally empowered consumers have been complementing the role of regulators – a case in point being bitcoin, an online peer-to-peer (P2P) currency regulated by its users.

‘Leapfroggers’: In some emerging markets, e-commerce and an associated ecosystem of enterprises offering innovative delivery methods and payment instruments have leapfrogged more conventional businesses. For example, Flipkart, an e-commerce firm based in India, was among the first companies to implement cash-on-delivery payment options at scale. With astonishing pace, they have innovated to overcome barriers such as poor infrastructure or a lack of payment technology. According to Ernst & Young, cash on delivery accounts for 50 to 80% of online transactions in India.

Jobs: Most industries have seen an increase in automation across the supply chain,¹⁷ often pushing people at the bottom of the skills pyramid out of employment. This has created a major challenge for companies and governments to address. Global sales of industrial automation systems are expected to keep rising, with IHS Technology forecasting an increase from \$170 billion in 2013 to \$209 billion in 2016. Significant concern exists that automation might reduce the need for human employees. One recent study, however, found that while technological advances have led to a decline in demand for employees in routine jobs, the demand for workers in non-routine jobs has increased.¹⁸

Skill clusters: Although most economies have become increasingly globalized, certain human resources and intellectual property have become more geographically concentrated, as illustrated by technology clusters (for example, Silicon Valley) or biotech clusters, such as Cambridge in the United Kingdom. The top five business clusters in the United Kingdom are all located in London and accounted for more than half of gross value added by all British business clusters.¹⁹ Ever more companies need to move to these locations to recruit talent, as opposed to traditional way of talent coming to them.

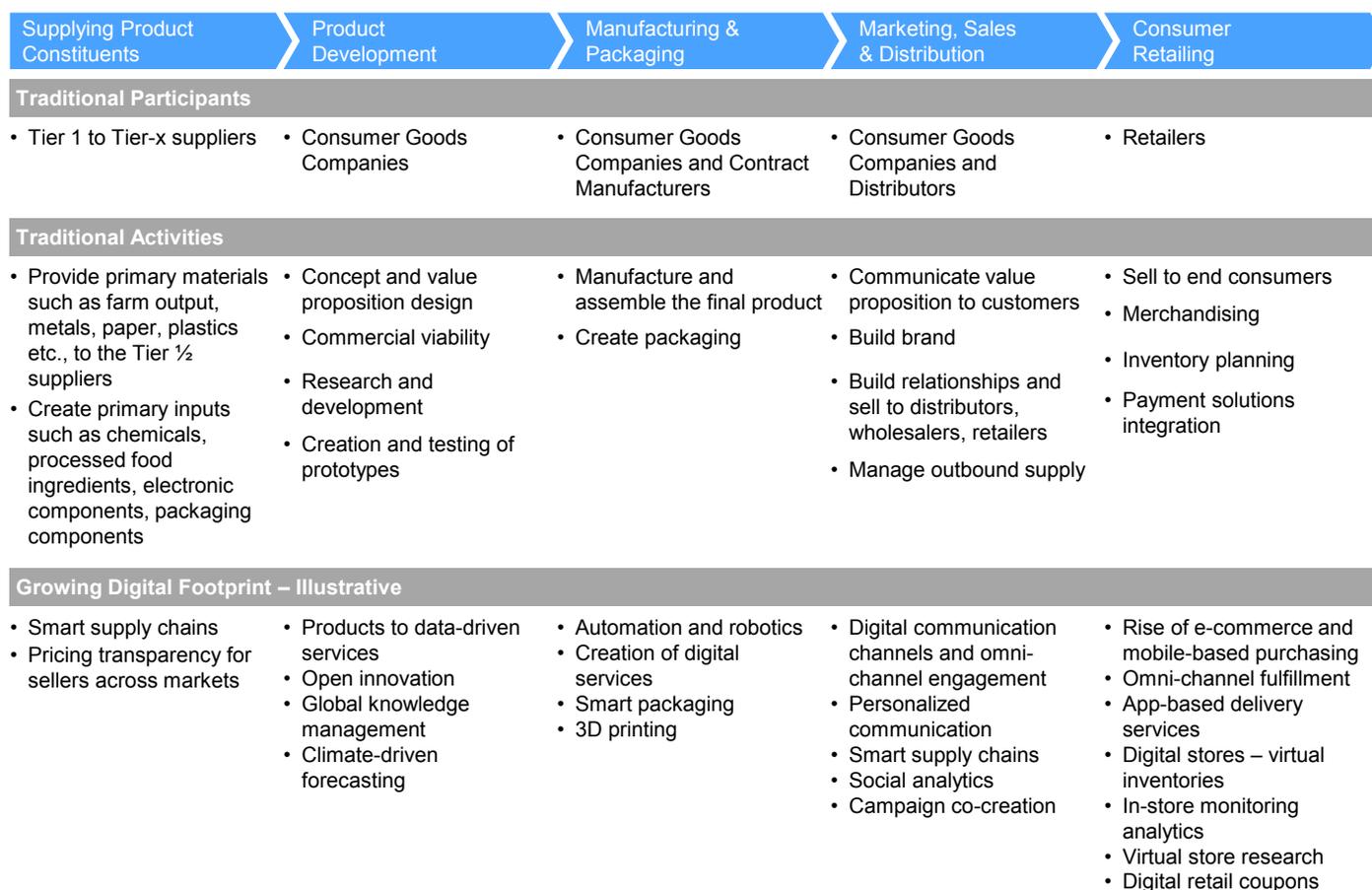
Environmental aspects: Consumers and governments are increasingly focusing on the environment and natural resource efficiency. Some food and beverage manufacturers in countries such as India have faced a backlash from society and governments against processes leading to increased water pollution and the depletion of groundwater. In addition, energy use patterns have shifted markedly over the past decade, with a move from high dependence on conventional energy sources (e.g., coal and oil) to a growing use of renewable sources. In the European Union (EU), energy from renewable sources has surged, with output nearly tripling between 1990 and 2013.²⁰ Digitization is changing home energy usage, with ‘smart connected homes’ enabling people to manage their energy profile and live more sustainably.²¹

d. Value creation and disruption in consumer industries

Consumer industries value chain

The impact of digital transformation varies across the different subsectors of consumer industries, but it has shifted power from brands to consumers and shifted value from traditional players to digital insurgents. New entrants have been able to create profitable services, such as payment processing, freight logistics and last-mile delivery. Digital transformation has affected the entire value chain of consumer industries (Figure 1), whether it involves integrating data with upstream suppliers, enabling open innovation, building smart factories, engaging with the ‘digital customer’ or shifting away from traditional retail models.

Figure 1: Consumer industries value chain – shifting ground



Source: World Economic Forum and Accenture

The growth in online retail already seems to be sparking a ‘value shift’ in the retail sector. Although e-commerce’s share of total retail sales remains relatively low at 5.9%,²² today’s top e-commerce companies (by revenue) are expected to see their earnings grow very rapidly, by more than 50% by 2018.²³ In contrast, the earnings of many of the traditional offline retailers and consumer goods manufacturers are forecast to increase by less than 10% over the same period.²⁴ In short, while the pie itself is expanding, digital companies are capturing an ever-larger slice of it.

The next section analyzes four key digital transformation themes for consumer industries and the imperatives they raise for participants across the value chain.

4. Future Horizons

Consumer industries, with the retail sector at the forefront, are already undergoing a significant digital revolution. Social and mobility trends, in addition to those in media, analytics and the cloud, are fundamentally shifting the way consumers buy and use products and services around the globe.

Four key digital transformation themes have been identified that are expected to shape consumer industries over the next decade:

- **Consumer data flow and value capture:** The shift to digital customer interaction models creates significant opportunities for companies to access consumer information, while the potential for disintermediation by new entrants will surface where incumbents lag. An important challenge for consumer industries will be developing successful data control and data monetization models. The rising importance of consumer and enterprise data will draw increased scrutiny and activism from consumers and regulators, as society puts an even higher premium on data privacy and transparency.
- **The experience economy:** Goods will evolve into services, and services into experiences, with data serving as the backbone of the delivery. In fact, 89% of business leaders surveyed by Gartner believe that customer experience is already becoming their main point of competition.²⁵ Continuous engagement between brands and consumers throughout a product's life cycle will become the norm. Creating new revenue models is an opportunity in an environment where revenue could potentially be decoupled from output and more closely linked to outcomes for individuals and society.
- **Omni-channel retail:** Traditional stores will undergo a metamorphosis to stay relevant in a world where online purchases are growing in most categories. Omni-channel strategies will help these retailers remain relevant. Inevitably, e-commerce will become globalized and oligopolistic, and provide a platform for small retailers and used goods sellers to coexist. Simultaneously, profitable niches in e-commerce will also emerge.
- **Digital operating model:** The Internet of Things will continue to drive the evolution of smart supply chains and smart factories, enabling the mass customization of products and omni-channel experiences. Having an operating model designed to manage consumer experiences – a model such as 'omni-channel support', 'agile supply chain', 'mass customization' or 'workforce of the future' – will be important for companies trying to gain a competitive advantage.

Each digital transformation theme can be disaggregated into a number of specific digital initiatives. Each initiative illustrates, with real-world examples, how these digital themes are relevant to consumer industries as they evolve over the next few years.

a. Consumer data flow and value capture

Around 2.5 quintillion bytes of data are created every single day.²⁶ Consumers are one of the most significant sources of this data; their online browsing, past purchases and payments leave huge trails of information. This consumer data provides a valuable source of feedback for companies, helping them keep their services relevant and attractive for their customers.

For many consumer enterprises, having a 'stake' in this data flow, from which they can create value, will be the foundation of their business model. The risk of disintermediation results from not having access to data. Some firms are already succeeding at capturing value: almost 75% of viewer activity on Netflix is generated through its smart recommendation engine.²⁷

At the same time, growing consumer activism and regulatory reforms reflect society's increasing concerns over data privacy and transparency. Providing a framework of rules and principles around transparency and privacy will serve as a vital differentiator for businesses. In many cases, it will become a prerequisite to keep their license to operate. Also, with the rise of analytics capabilities and the Internet of Things, companies will start making decisions for individuals, and the question of trust will become increasingly important. Significant opportunities will arise for companies to leverage consumer data, either by using it to improve services and personalize marketing messages, or by offering services to reassure consumers about the security and privacy of their information online.

Data as an asset

“Consumer data generates value only if it helps deepen understanding of consumers’ lives.”

–Mark McClennon, Vice President for IT, Unilever

Nearly all Web users will be accustomed to seeing customized ads on Facebook or Google, based on data derived from their interests or browsing habits. For Internet giants such as Amazon, using consumer data to drive revenues is at the core of their business model. Leveraging big data and analytics capabilities to drive insights from consumer data will help propel innovation – particularly relevant in the era of hyper-personalization. Despite privacy concerns, consumers are generally ready to hand over their data if they benefit from this in return.

Consumer industries are just beginning to successfully capture value from data. Barriers to effectively collect, analyze and monetize data include a reluctance to change one’s mindset, a talent shortage and a lack of supply chain agility. Additional efforts are required to keep up with regulatory developments surrounding data privacy.²⁸

Despite these barriers and risks, companies can start to bring value extraction from their data into the mainstream within the next five years. An exciting variety of possibilities would come into play, from manufacturers producing hyper-personalized products to retailers optimizing their inventory management.

Case study

Luxottica, the world’s largest manufacturer and retailer of designer eyewear, uses advanced analytics to provide rapid insights from the data it collects from 100 million consumers.²⁹ These insights are used to identify the company’s highest-value customers and create personalized marketing campaigns, which Luxottica believes will boost the effectiveness of its marketing by 10%.

Case study

ITC, a large Indian conglomerate with about \$8.5 billion in revenues, runs the e-Choupal program, linking farmers directly to the company via the Internet. The system has 6,500 centers across 40,000 villages in 10 states, helping approximately 4 million farmers (as of 2011) get the best rates for their produce and reducing ITC’s procurement costs.³⁰

Value at stake: In a world where every aspect of customer lives is being increasingly digitized, the ability to access and effectively utilize customer data is likely to drive significant benefits for the businesses that do this well. The impact of data as an asset can be assessed across four key categories: using data to creating more personalized marketing strategies and contextually relevant communication; improving effectiveness of product design processes; leveraging digital platforms to connect with consumers and crowdsourcing innovation; and monetizing consumer data by sharing with other industry stakeholders.

The combination of these areas are likely to drive both revenue and cost improvements for companies. More contextualized interactions should enable the winners to capture a larger share of the market, with up to 9%³¹ of total industry revenues estimated to be up for grabs. The overall size of the pie in terms of revenues is also expected to grow from increased consumption demand and crowdsourced innovation using social media platforms contributing to additional uplift (of approximately 1% each)³². Gaining access to the right data also presents significant opportunity to drive bottom-line impact – potentially reducing lead generation costs by a third.³³ The firms that are able to leverage data to improve success rates and reduce cycle times could also see a 6% reduction³⁴ in R&D costs.

We estimate that leveraging the power of data as an asset has the potential to generate almost \$550 billion in industry value at stake in terms of cumulative operating profits between 2016 and 2025. While the majority of this value is likely to result from some players capturing a larger share of the industry profit pool, up to \$250 billion of this total amount will be new value created through to 2025.

Data privacy and transparency

“Transparency is a key variable in coming across as a responsible firm. Consumers reward companies they trust.”

–Arthur Simonetti, Marketing Director, DSM

Major breaches of data security and privacy occur with worrying frequency in today’s digital world.³⁵ Consumer industries, with their vast amount of data collected, are major targets for criminals looking to access personal information and payment details. Since 2013, a number of high-profile retailers have suffered data breaches, leading to millions of debit and credit card records and other customer data, such as email addresses, being stolen. Incidents such as these, which can affect large numbers of consumers, have raised public awareness of the risks posed by breaches in data security.³⁶

Data breaches also have a punishing financial fallout for companies, with IBM estimating the average cost of security-related incidents to be more than \$40 million. Aside from the cost of clearing up the damage, firms that have been hacked can lose business, with 59% of consumers stating that they would be less likely to buy from a company that had suffered a data breach.³⁷ The worldwide cybersecurity market is expected to grow to \$170 billion by 2020.³⁸ For many companies in consumer industries, this focus on data privacy is likely to require higher spending on data security, and cybersecurity applications and processes, especially as data-driven business models become prevalent.

Costs are expected to increase because of compliance with stricter regulation of data protection. But businesses that earn consumers’ trust will also gain a competitive advantage. Transparent privacy policies and effective information security are crucial to winning that trust, with 80% of customers more likely to buy from companies that protect their information, and almost three-quarters of consumers stating that easier-to-understand privacy policies would increase their trust in companies.³⁹

Beyond privacy issues, consumers’ growing concern about the social impact of their purchasing decisions will also drive data transparency. Access to data and information throughout the supply chain will continue to promote transparency as it relates to products and the source of raw materials. Increasing demand for data privacy and security is creating new job roles related to the secure collection of data, track-and-trace services and cybersecurity.

Case study

John West, a canned fish company based in the United Kingdom, has introduced a service for consumers to identify the source of the fish they have just bought.⁴⁰ Consumers need to enter a unique code on the John West website, which then provides them with information about the origin of the fish, including the ocean it came from and the fishing boat that caught it.

Value at stake: With **data privacy** as a growing area of consumer concern given the rise in number of data breaches across industries, we expect a place for trust as a value proposition and differentiator in the market. Consumers will likely migrate toward consumer goods companies and retailers that are able to assure consumers of better data privacy. Capturing share of data privacy-conscious consumers (net of implementation costs and revenue foregone from non-monetization of third-party consumer data) should put around \$330 billion at stake over the next 10 years. The number of consumers actively moving to companies with strong data privacy measures is estimated to grow from 5% in 2015 to 25% in 2025. However, while data security could attract more customers, we expect only up to 5% of annual purchase basket size to be influenced by these measures. Limited adoption is largely driven by little information today for consumers to differentiate on the basis of privacy, but as more companies adopt this as part of their overall brand experience, the ability of consumers to exercise their choice should grow.

Data transparency refers to brands driving differentiation in the market by becoming more transparent about their products and supply chains in combination with improving their ecological footprint and societal impact. At around 0.5% of total retail market by 2025, this should drive around \$40 billion in value migration toward businesses that adopt greater transparency from those that do not. New value creation for the industry will be driven primarily by price premiums of around 15%,⁴¹ which are expected create an operating profit impact of around \$20 billion after considering implementation costs. The societal impact of brands pushing the sustainability and fair trade agenda go beyond more money flowing through to farmers and industry workers but are not quantifiable at an aggregate level. It could mean significantly higher societal impacts, from bringing people above poverty level, to improving education and literacy

levels, preventing farmer suicides, water table conservation, material conservation, waste reduction and emission reduction to name a few.

As demonstrated, data privacy and transparency, in combination, have the potential to generate more than \$400 billion in cumulative industry value through to 2025, underscoring the importance of these initiatives in driving competitive differentiation in the future.

Data to improve the experience

“Consumers value convenience, but a lot of consumers are beginning to value how secure their data is and how it is handled – creating scope for differentiation.”

–Sven Hermans, Head of Strategy & Business Development, Philips Consumer Lifestyle

All generations of consumers appreciate the appeal of services designed with the user in mind and to make life convenient. Consumer data can be leveraged to provide a ‘do-it-for-me’ experience, as demonstrated by the many companies providing consumers with recommendations, bundled offers and, in some cases, even virtual reality-based user experiences.

While using consumer data to improve customer experiences makes services more convenient for users, it could also lead to enterprises potentially making purchase decisions on behalf of customers. It could even have implications for companies looking to stay relevant in this model of the ‘new shopping experience’.

Case study

Companies such as Fits.me allow retailers to benefit from concepts such as virtual stores by providing the necessary agility and expertise without the need for large upfront investments. Thomas Pink, a leading luxury shirt brand, was one of the first UK retailers to use the concept of a virtual fitting room, done in this case by Fits.me. The shirt maker reports that customers entering the virtual fitting room are more likely to buy a product than those who don’t enter it (the virtual fitting room leads to a conversion rate that is 29.6% higher than that for consumers who don’t use the room).⁴²

Data-driven businesses that improve experiences and quality of life for consumers also drive other social benefits. They can create new forms of employment, especially those related to last-mile delivery and data analytics.

Value at stake: The benefits of leveraging data to improve experience are incorporated in the other themes such as experience economy and have not been repeated here to avoid double-counting the impact.

Consumer data flow and value capture: The impact on business and society

Initiatives in this theme will affect businesses in a number of ways. Greater customer loyalty will likely result from successfully using consumer data to create personalized products and services. With consumers increasingly aware of the risks of data breaches, trust will become an important differentiator in attracting customers for companies handling personal information. The growing use of data will create new opportunities for businesses in fields such as data analysis, data transparency and cybersecurity. It will also require higher levels of investment in data security by those companies collecting, storing and analyzing consumer data.

Significant social impacts should also occur. New business opportunities could potentially create new employment opportunities in the data economy. Individuals and the wider society could benefit from real-time insights generated from data analytics. Companies may introduce improvements in the transparency of their supply chain practices, either on their own initiative or in the face of consumer activism and regulatory oversight. In addition, significant privacy and security risks arising from the increased use of data would need to be mitigated.

b. The experience economy

According to an influential analysis of the consumer economy, companies have to offer their customers unforgettable experiences to succeed.⁴³ This vision of companies selling experiences is now becoming a reality. The breakthrough

has been made possible by the explosion in connectivity, the advances in analytics and artificial intelligence, and the growing profusion of smart devices and sensors witnessed over the past few years.

This new approach is forcing companies to reconsider whether their current revenue models and offerings are adequate to stand out from the competition. The move from offering products to offering experiences shifts the focus from outputs to outcomes, whether for the individual or for society.

Three specific initiatives within the experience economy are likely to become increasingly relevant over the next few years.

Hyper-personalization in goods

“As a result of digital transformation, we are talking about personalizing consumer experiences and doing that at scale. This is a significant departure from what we have been doing in the past. You need an entirely different skill set.”

–Pete Blackshaw, Head of Digital, Nestle

The digital revolution has given consumers unprecedented power. Thanks to the Internet, a shopper can now access products from around the world. With painstakingly curated Instagram pages and Facebook profiles, today's consumers are also used to customizing their online world. They now expect the same level of personalization in most of the products and services they buy.

The business rationale for companies to offer hyper-personalization varies; it may be to build brand loyalty or to create a niche within a premium segment. For others, particularly e-commerce platforms where competition is fierce, offering hyper-personalized products can be a way to differentiate themselves from rivals.⁴⁴ Personalization, for instance, helped Dutch retailer Wehkamp achieve a 271% increase in its sales-per-send ratio on marketing emails.⁴⁵

To do this successfully, operating models need to become more flexible. Companies will also need a change in their culture to alter traditional mindsets. Investments in areas such as data mining, analytics and production processes are needed. The potential rewards for businesses could be substantial, with personalized products and memorable experiences translating to brand loyalty. Personalized products also allow brands to charge a premium.

While beneficial for consumers and companies, personalization can have a potentially negative impact on the environment if it reduces efficiency in production – for example, by increasing the amount of packaging material used, waste generated or extra delivery miles incurred.

Case study

Luxury product companies have been taking steps toward personalization. Burberry first launched a made-to-order catwalk service as part of its London Fashion Week show in 2013. It featured a personalization service that allowed consumers to order products and have their name engraved into the coat tag or bag plate. Similarly, Fendi is manufacturing ‘personalized handbags’. Customers can create a one-of-a-kind bag by selecting the color and material, and having their name or initials woven into the body of the handbag.

Value at stake: Although the idea of personalized products and services is not new, hyper-personalization at scale with real-time data flows and operational responses is still at a nascent stage and would need time to achieve significant scale for the industry. We estimate that hyper-personalization could generate approximately \$300 billion in cumulative operating profits until 2025 across three broad areas: personalization of product portfolios, personalization of retail experience and product customization.

Personalization of product portfolios: Product manufacturing companies will leverage consumer data to create the right products for each market cluster and distribute the right portfolio for each channel, store format and market. Assuming adoption of the concept to increase from 0.5% in 2015 to 5% of the total market by 2025, the companies that do this better than others could capture \$70 billion in additional operating profits from those that do not. Hyper-personalization could drive new value addition of approximately \$100 billion from both better pricing through product design improvements and additional growth in sales volumes.⁴⁶ For every migration to more personalized products, we anticipate consumers to buy 10% fewer traditional products as the new designs are closer to fulfilling their utility and

could reduce purchases that consumers end up not using. This could lead to a value erosion of approximately \$15 billion.

Personalization of retail experience: Retailers, in collaboration with shopping applications, are creating more targeted and contextual promotions and recommendations for consumers that are based on information gathered from past behavior, current shopping activity and location. Retailers that succeed at this could drive up to 8%⁴⁷ improvement in revenues. Of this revenue addition, 90% is attributed to value migration from traditional retail, resulting in around \$300 billion of operating profits at stake over the next 10 years, with the remaining 10% attributed to new demand creation. To the extent that shopping applications enable retailers to drive these benefits, these applications could capture 10 to 20% of the total benefits generated for retailers. Retailers are also expected to derive benefits of around \$90 billion from a reduced need for discounts and lower unsold inventories, which also implies some demand reduction for manufacturers.

Product customization: Companies are also building a more intimate relationship with consumers by offering them the ability to customize products to their individual needs. As digitalization enables companies to deliver customization at scale, the number of consumers choosing customization could grow from 6% in 2015 to 25% in 2025 and the share of annual shopping baskets where customization is applied could grow from around 0.1% in 2015 to 5% in 2025. This drives around \$50 billion of value migration from traditional non-customizable products to customized product offerings. Consumers are expected to pay around 20%⁴⁸ higher prices for customized, made-to-order products as compared with traditional substitutes, leading to a value addition of about \$30 billion.

Hyper-personalization will not benefit businesses alone. Customers and society stand to benefit from time savings, reduced spending on unused purchases, and a decline in emissions from reduced production of unused goods, together aggregating to around \$230 billion over the next decade.

From products to services and experiences

With recent advances in technology, the digital economy is now able to deliver a wider range of services and experiences that people are looking for. Uber epitomizes this preference for a service: it is more convenient to pay a small fee and summon your chosen vehicle and 'personal chauffeur' with a couple taps on a smartphone, than to buy a car, make sure it is properly fueled and insured, and find somewhere to park it.

Offering services to complement products enables businesses to develop a longer-term engagement with their customers. With that engagement comes the potential for newer methods of capturing value and the chance to build strong customer loyalty.

Case study

One of the first mainstream players to venture into the experience economy was Nike. In 2012, it launched the FuelBand, a wristband that monitors the wearer's activity levels. Importantly, this new product allowed users to share their fitness exploits with other members of the 7-million strong Nike+ Web community. While Nike has now decided to move out of manufacturing wearables and is focusing on partnerships with Apple, this remains a relevant example of a company that has tried to focus on creating an experience around a product.

Nestlé has managed to convert its Nespresso product into an experience by building branded boutiques that showcase coffee machines and capsules, while at the same time closely integrating these with online ordering and fulfillment services.⁴⁹

Companies that manage to create unique, personalized and memorable experiences for their customers will generate the most value. By 2018, business-to-business sellers incorporating personalization into digital commerce are set to realize revenue increases of up to 15%.⁵⁰ This requires investment in service design and possibly also in the physical environment where the experience will take place.

Value at stake: As consumer goods companies and retailers migrate from products to differentiating services and from services to differentiating experiences, we expect consumers to substitute regular products and retailers with those that are able to use data, connectivity and social platforms to create unique and valuable services and experiences. Smart apparel and appliances are the most common examples of products going beyond their traditional role and helping

consumers in some aspect of their lives. Smart apparel is helping consumers monitor their health and fitness and improve their performance, or in a different context, help new parents track the movements of their toddler. Smart appliances are helping save energy, enabling remote control and co-creating a smart home ecosystem.

We estimate around \$1 trillion of value at stake for the industry over the next decade. Of this, \$800 billion of value will be redistributed within the industry toward manufacturers and retailers that succeed at creating compelling experiences for their customers. This estimate is based on a conservative market adoption rate of 5% for both manufacturers and retailers by 2025. The transition toward services has the potential to generate price premiums of up to 15% for manufacturers, while retailers that differentiate in experience could earn an average price premium of 5%. These benefits with demand improvements should add around \$200 billion to the industry. Further, shopping applications that enable retailers to create seamless omni-channel experiences for consumers could also add \$5 billion in value through commission-based services.

For consumers and society, benefits include time savings from more convenient retail experiences, energy savings from smart appliances, health cost savings from health and fitness-oriented products, aggregating to around \$220 billion in value from 2016 to 2025.

Goods and services driven by health and well-being

The cost of caring for people with chronic diseases is increasing (accounting for 75% of health spending in the United States) and driving the growth in healthcare spending. With a large number of consumers looking to live healthy lives, companies offering health-based services will have significant opportunities. For example, the market for wearable healthcare devices is expected to grow by 30% a year until 2019.^{51,52}

Case study

Phone manufacturers have made some of the greatest leaps so far in this field. Samsung, for instance, decided to introduce health-related sensors, such as pedometers, in some of its latest smartphones. These phones help users track exercise schedules, food intake, weight, sleep patterns and heart rate. A health wearables company, Fitbit, allows users to share their health outcomes and compete with a community of friends.

Such products encourage a healthy lifestyle, and the experience helps drive health outcomes for societies dealing with malnutrition or obesity. For companies entering what could be a booming segment of the consumer market (Euromonitor estimated the health and wellness food market to be worth €1 trillion in 2014), a key differentiating point will be how credibly they can market real health benefits to consumers. A crucial capability for these firms will be to demonstrate transparency in their supply chain, nutritional data and products. The success of these companies will rely on making health a priority in every activity, product and service, rather than becoming just a niche segment of consumer industries.

Value at stake: A number of trends are driving the shift toward an increased focus on health and well-being: growing health awareness at the consumer level; ageing populations; growing healthcare costs; increase in incidence of lifestyle disorders; and emergence of digital communities of health with consumers driving conversations. This paper does not value the initiative on a stand-alone basis given that the initiative is an outcome of both digital and nondigital factors. Moreover, the value from business models relevant to this initiative has been included in other initiatives in the paper.

The experience economy: The impact on business and society

The experience economy provides companies with a number of potential benefits and opportunities. The hyper-personalization of products and services should lead to improved customer loyalty and enable businesses to charge premium prices for customized goods and services. The initiatives in this theme are also likely to create new business opportunities relating to data analysis, transparency and security. Increased investment, particularly in customized manufacturing processes, service delivery and research and development (R&D), may be needed by companies seeking to realize these initiatives.

The experience economy could also generate a number of major benefits for individuals and society. New employment opportunities may be created by demand for new consumer services and experiences, or for customized products. But

the biggest benefits are likely to come from innovations in consumer healthcare that contribute to improved health and well-being for individuals and society as a whole.

c. Omni-channel retail

With platforms being one of the most lucrative business models in the digital economy,⁵³ the crucial battlefield for retailers has shifted from the high street to a combination of both offline stores and the online world.⁵⁴

On the high street, bricks-and-mortar retailers are grappling with how to stay relevant when consumers can often shop more cheaply and conveniently online. Many big retailers, such as Walmart and Best Buy, have decided to build their strategies around omni-channel sales. As the importance of e-commerce grows, it is becoming globalized, and a few dominant players are emerging. These players, such as Amazon and Alibaba, have started to allow smaller retailers and sellers of secondhand goods to use their platforms, thereby expanding market share with very little investment.

The impact on the retail sector has wider ramifications across the consumer industries value chain. Brands that have traditionally engaged with conventional retailers now have to develop their strategies across all available channels. As online retailers grow, they will increase the level of access that small traders and manufacturers have to global trade. The level playing field being created provides new opportunities for smaller niche players, while reducing the power held by the traditional 'big brands'. In fact, the very concept of how brands are built could potentially see a transformational shift.

Three key initiatives – physical store transformations; e-commerce penetration, globalization and consolidation; and the sharing economy – are likely to take center stage as this battle continues.

Physical store transformations

“We don't believe physical retail is going anywhere. People will always want to go out shopping in stores, in part because they simply want to feel good and enjoy themselves. The challenge is for the retail market to improve and deliver a great experience.”

–Peter Thulson, Managing Director, Germany and Vice President, International Partnerships, Shopkick

Many bricks-and-mortar retailers appear to be going through an existential struggle. In the United Kingdom, an average of 16 stores closed each day in 2014, while in the United States, high-profile retailers have shut down dozens, and in some cases hundreds, of stores in 2015, including RadioShack (1,784 closed), Office Depot (135) and Abercrombie & Fitch (60).

Companies are adopting two strategies for survival. One is for retailers to invest in their stores so that they can offer a truly distinctive shopping experience, taking into account excellent customer relationship management and community activities that will attract consumers who might otherwise have opted to buy online. The second strategy is to transform physical stores into fulfillment centers for e-commerce, providing a convenient point for customers to pick up the products they have ordered.

Case study

Nordstrom in the United States has linked up with Pinterest to exploit the data that users create on the site about their tastes and latest fashion choices. Nordstrom uses the data to update store merchandising weekly, and also gives staff an iPad app that allows them to show customers what products are trending.⁵⁵

With worldwide online retail sales growing faster than retail sales offline, pressure will only grow on retailers to make their bricks-and-mortar stores relevant and part of a coherent omni-channel strategy. Large retailers undergoing this churn may choose to aggressively negotiate lower prices with consumer products companies (rather than take a hit on their bottom lines). While investing in building an omni-channel presence, they will be effectively pushing manufacturers to 'share the burden' of retail transformation.

Case study

UK retailer Argos has transformed five of its physical stores into digital stores in London, offering customers a quick, easy way to shop using digital tablets instead of catalogs and physical products. A seamless paying process works with the company website to enable customers to choose from more than 30,000 products and pick up their purchases straight away.⁵⁶

The company has announced plans to run a trial of 10 new stores where 20,000 products can be bought instantly or reserved, while an additional 40,000 products can also be ordered in-store for home delivery. More than 40 Argos stores offer free Wi-Fi and 60-second collection for online orders.

Echoing the earlier trend of own-brand retail in big-box retailers, online retailers are also entering this space. For example, Amazon, one of the largest e-commerce companies, has recently launched a number of private label ranges for food and drink items and products such as batteries, keyboards and bedding. Moving into the future, this tussle over shelf space between private labels and brands will greatly influence manufacturers' decisions about integration.

While digital is transforming traditional retail, a large number of customers still value face-to-face interactions and in-store experiences, allowing companies to use their existing physical assets to their advantage. For instance, firms could use existing stores to support service and maintenance, apart from product sales.

Value at stake: The penetration, globalization and consolidation of e-commerce is likely to escalate and accelerate the threat to physical stores. We expect a cumulative 10% physical store closures over the next 10 years, leading to a potential value migration within the industry of more than \$300 billion. At the same time, physical store transformations driven by digital technologies is likely to generate additional value for the industry. This value creation is largely from the rationalization of higher cost retail stores and reallocation of inventory to warehouses in an omni-channel world. Real estate reallocation could reduce rental expenses by approximately 30%, resulting in \$180 billion savings for the applicable market, while the shift to fulfillment centers should also reduce stockouts by 80%.⁵⁷

Leveraging in-store analytics to drive additional sales (10% increase in same-store sales)⁵⁸ and reduce pilferage (10% reduction)⁵⁹ could create further value for retailers.

Consumer goods companies could experience a mixed but net positive impact from added demand created by retailers. The combined impact could create around \$200 billion in value addition, leading to an overall \$500 billion in cumulative value for consumer industries over the next decade.

E-commerce penetration, globalization and consolidation

With cross-border e-commerce expected to grow at more than 10% annually in the coming years,⁶⁰ the battle to become one of the dominant retail platforms is set to involve Internet giants from different parts of the world. As the global e-commerce market consolidates around a few huge platforms, this development could also lead to possible cost savings (from economies of scale in inventory and technology costs) and greater revenues (through increased market share and enhanced transaction rates).

Case study

When Amazon launched, it only sold books, but now it offers more than 100 million items in more than 30 product categories.⁶¹ The company also made the astute move of allowing other retailers to sell their goods through the Amazon website. Moreover, because of the efficiency of its logistics infrastructure, Amazon could offer to warehouse and ship goods on behalf of these retailers. Lining up against Amazon is Alibaba, a Chinese e-commerce platform that recorded a 45% year-on-year growth in active customers in 2014.⁶²

The changing retail landscape has significant implications for consumer goods companies. The level playing field that e-commerce has created, allowing smaller and niche players to compete, calls into question the dominance of the 'large brand'. E-commerce will have a deep impact on society, and not just through expanding the reach of small retailers.

Increasing e-commerce penetration will also have a significant effect on the way brands and manufacturers work with their channel partners. It has already made it more difficult to manage pricing across channels, as pricing power has gradually shifted from manufacturers to online retailers. Some manufacturers in India, for example, have used measures such as restricted warranty for products purchased online to wrest sales back from online marketplaces. As convenience and refund policies become increasingly important factors for consumers to consider, manufacturers and retailers need to incorporate those in their value propositions.

A recent report by McKinsey estimated that while the online revolution will create up to 46 million new jobs in the high-skill sector in China by 2025, this will come at the cost of almost 31 million traditional jobs – equal to about the entire employed population of the United Kingdom.⁶³ Given that learning new digital skills takes time, this trend should be taken seriously by governments and companies alike.

Value at stake: We expect e-commerce penetration to grow from around 6% in 2015 to 17% in 2025. This translates to around \$450 billion of profit migration from offline channels to online. We estimate consumers would increase their purchasing volume by 5%⁶⁴ when they shift toward purchasing online as the channel presents customers with more options and recommendations based on customer centricity. The current focus of online channels is on growth even if it means sacrificing margins. However, as the online industry matures and consolidates, we expect the average discount in online pricing to reduce to 1% in 2025 from the current 2% discount⁶⁵ in pricing and also be able to achieve parity in margins with offline channels due to lower operating costs. The combined impact should add around \$200 billion in cumulative operating profits up to 2025.

The migration to e-commerce also has the potential to generate significant benefits for customers – contributing to more than 250 million hours in time savings over the next decade, assuming an average basket size of \$50 across categories and an average travel time of 40 minutes for offline shopping. This translates to a potential value of \$2.4 trillion in productivity gains. The combined value of time and cost savings from online platforms results in a total of \$2.7 trillion of overall societal impact over the next decade.

The sharing economy

The explosive growth of the sharing economy has taken many by surprise. More than 400,000 people stay in Airbnb properties every night, and Uber is valued at almost \$50 billion, making it one of the 150 biggest companies the world.⁶⁶

Case study

A number of interesting startups enable people to rent or sell used goods. Some examples include NeighborGoods, which provides the opportunity to share things with friends; Poshmark, where clothes can be posted and sold online; and Rent the Runway, which allows people to rent fashion apparel.

As consumers increasingly turn away from buying new possessions, this will have implications for companies whose business models are centered on manufacturing or retailing new products. Firms will need to find new ways of monetizing the trend of consumers sharing and selling their used goods with others through online platforms. The trend also has implications for the ownership of intellectual and physical property, and the regulations concerned with this. On the positive side, product recycling will help reduce manufacturers' environmental footprint.

Value at stake: The sharing economy combines two key categories – rental economy and used goods economy– both driven by digital platforms and together driving around \$350 billion in consumer industries value at stake.

The **rental economy** allows consumers to give up ownership and save money on low utilization products. We estimate around 4% of the applicable product category sales (premium apparel, children's products, home and garden equipment) to move to rental models by 2025. We assume that rental platforms could charge 20 to 30% of the rental fee as commissions. Retailers could lose approximately \$50 billion in operating profits resulting from reduced demand from consumers shifting to rental models. For manufacturers, value migration from selling to traditional retail to serving new rental channels amounts to around \$130 billion in operating profit.

The **used goods economy** refers to the facilitation of P2P and business-to-consumer sales of used goods by digital platforms. The digital marketplaces for used goods are estimated to grow from around 5% of new good sales in 2015 to 20% of new goods sales for applicable categories by 2025. We assume a vast majority of sellers in the used goods

market would use the proceeds to replace the product with newer purchases in a much shorter replacement cycle as they are able to monetize the depreciated value of the goods they otherwise would have waited to consume fully. Facilitating replacement of used goods and bringing sellers back into being buyers of newer goods could drive about \$150 billion in operating profits for retailers and manufacturers. Marketplaces facilitating the used goods economy could earn about \$100 billion in operating profits, leading to a combined value at stake exceeding \$250 billion over the next 10 years. Consumers and society stand to gain more than \$1.9 trillion cumulative over 10 years as buyers would receive the benefit of owning goods at a fraction of the retail price and sellers would be able to monetize goods they had already spent for.

Omni-channel retail: The impact on business and society

Omni-channel retail is likely to generate growth in existing markets and also create new market segments by establishing new customer channels. Other benefits for businesses should include higher frequency of customer transactions on online channels and optimization of physical store costs. To compete in omni-channel retail, however, companies may need to increase investments in warehousing and last-mile delivery.

Omni-channel retail is set to affect employment, with reductions in some job roles coupled with the potential for new roles requiring new digital skills. It may also encourage more entrepreneurs to build businesses in the retail sector. Finally, the growth of the sharing economy will likely lead to a positive environmental impact from reduced use of natural resources and energy, as fewer products need to be manufactured.

d. Digital operating model

To truly address the needs of the digital consumer and remain relevant, consumer companies need to ensure that all major functional areas (including R&D, manufacturing, supply chain and human resources) are aligned with a common operating model. A digital operating model will enable efficiency, allowing firms to gain and retain a competitive advantage over their rivals.

Companies have been able to offer intelligent and responsive digital services because of the prevalence of connected devices, sensors and cheap data storage, coupled with rapid advances in artificial intelligence. These technologies also give companies the opportunity to revolutionize operations and functions that are crucial to the success of their businesses.

Some companies will need to overhaul their supply chain and processes just to be able to deliver their newly launched innovative services and experiences. For other firms, the move to smart supply chains and smart factories will allow them to respond faster to changing customer demand and to react more flexibly to demand for personalized products. Some businesses will want the visibility of their entire supply chain that smart processes offer, so that they can reassure consumers, regulators and activists that their product is ethically sourced and manufactured.

“Digital technologies offer more than new products and services; companies can use them to drive transformations across their complete value chains.”

–Rob Monk, Global Enterprise Architecture Director, Heineken

Smart supply chains

In the digital world, supply chains need to become more agile to thrive in an environment of shorter lead times, and higher frequency and uncertainty of demand. Companies will also need micro-level visibility across the supply chain. The technological advances that created the Internet of Things will give companies and their partners the ability to monitor supply chains in real time. This will allow firms to respond better to changes in consumer demand, enable suppliers and distributors to greatly improve logistics efficiency and empower retailers to manage their inventories more effectively.

Investing in and upgrading a supply chain is a complex operation, involving multiple partners around the world. Some executives believe that the regular transactional side of businesses can be automated, but a lot of new business development comes from real conversations and offline engagement. However, investing in a smart supply chain has certain benefits.

Case study

Three years ago, Amazon saw that e-commerce was only taking a small share of the market for personal care products. Looking to grow its business in the sector, it introduced the innovative Vendor Flex project with P&G. The program allows Amazon to work directly within P&G's warehouses and distribution networks, enabling it to save moving and storage costs. As a result, Amazon can compete better against Walmart and Costco in the personal care sector, while P&G benefits from lower transport costs from not having to ship products to Amazon.

Case study

The Coca-Cola Company has introduced Freestyle fountain machines, which use RFID to monitor and track dispenser operations and place orders for supplies. These machines also have the ability to provide real-time analytics about product consumption and preferences. For consumers, the machines are appealing and have contributed to increasing traffic in restaurants that use them.⁶⁷

Value at stake: Consumer companies stand to derive significant benefits from establishing connectivity and automation beyond the factory floor and integrating the supply chain.

We have estimated benefits to the consumer companies from implementing control towers, shared warehousing and digital procurement. Added visibility across the supply chain through the use of control towers could increase operating profits for consumer companies by approximately \$400 billion over a 10-year period through 2025. We assume productivity-related improvements of 20% and reduction of inventory carrying costs by 25%, delivery costs by 10%, and warranty-related costs by 12%. Sharing warehousing infrastructure and related logistics services⁶⁸ could generate \$70 billion in operating profits. Additional \$50 billion cumulative operating profits could be generated through reduction in procurement costs.

For retailers, automation in warehousing could reduce fulfillment costs by about 40%.⁶⁹ We expect this to generate approximately \$200 billion in operating profit, assuming a 20% adoption rate by 2025.

Using digital platforms to share warehouse capacity could reduce logistics costs in the range of 12%.⁷⁰ We expect aggregate cost savings of approximately \$250 billion, assuming a 20% adoption rate by 2025.

The aggregate operating profit impact for retailers is approximately \$450 billion from 2016 to 2025.

Talent management

Talent recruitment and development structures at consumer companies have tended to focus on hiring those with skills related to sales and marketing, as these functions have traditionally been important at the companies. As every aspect of a company's operations becomes digital – from vendors and factories to distribution networks – the skills required by company workforces will change dramatically. About 44% of business leaders feel that lack of digital skills is an important barrier to transformation.⁷¹ A widespread concern is that educational systems are not providing people with the skill set sought after by consumer businesses: namely, data and technology skills coupled with an understanding of how the business works. The challenge for consumer industries will be to develop attractive value propositions to attract the right talent.

Case study

P&G and Google started an employee exchange program with the aim of encouraging innovation and enabling cross-pollination of digital talent. P&G used the program to scale up digital skills among its employees and step up its Internet marketing initiatives. With this program, the company gained expertise in digital and search marketing, helping it sell its products more effectively online.⁷²

While companies rely on government policy to revitalize educational systems and create a new generation of workers with those desired digital skills, they can take steps to improve their talent base. Placing more emphasis in their long-

term strategies on developing digital skills will help businesses, which can partner with government and educational institutions to design courses for producing graduates with the skills most relevant for the digital era. Investing in skills development of existing employees – especially those whose jobs are threatened by automation – is equally important.

Value at stake: The digital revolution is presenting challenges for consumer companies and retailers in finding and retaining talent with requisite skills, but is also helping transform recruitment and workforce management practices. We estimate an increase in operating profits of approximately \$150 billion over the next 10 years, assuming a 50%⁷³ reduction in recruitment costs when hiring through use of social networks. Currently 50%⁷⁴ of major companies use social networks for recruitment and we expect the share to grow to 90% by 2025. Workforce analytics could help reduce attrition by 6% and improve productivity by 2%. We assume workforce analytics usage to grow from 10%⁷⁵ in 2015 to 50% of major companies by 2025. Investing in digital upskilling of the workforce could improve productivity by 20% in 2025.

Smart factories

Like smart supply chains, the smart factory concept builds on the technology behind the Internet of Things. The smart factory will have cyber-physical machines that combine electronic and mechanical systems to form a modular, adaptable production line. Startups will have the chance to begin with a blank slate, building state-of-the-art smart factories on greenfield sites.

In an era when consumers want more personalization, the flexibility of a smart production line will facilitate the manufacture of highly customized goods. It will also be easy to reformulate, produce prototypes and launch new products faster.

Case study

Smart factories are already up and running, particularly in Germany.⁷⁶ Siemens has set up a smart factory in Amberg that can produce 250,000 electronic components an hour. In 1990, only 25% of the production line was automated; now, the proportion is 75%. At the same time, the defect rate has dropped to 11.5 per million, output has increased 8.5 times and employee numbers have been steady.⁷⁷

Interest in smart factories is growing, and sales of industrial automation systems are expected to rise from \$170 billion in 2013 to \$209 billion in 2016.⁷⁸ Companies weighing whether to invest in smart factories face some big decisions, particularly as substantial investments in automation and connectivity technologies will be required to create a smart factory. At the same time, deciding how to optimize investments in R&D will be important, as competing priorities exist for the same capital. Increasingly, open innovation, aided by digital technologies, is gaining ground and could be an additional, cost-effective option for some areas of R&D.

Smart factories could lead to challenges for regulators and governments. If increased automation in smart factories leads to job losses, governments and business must ensure that those workers are retrained with skills that will help them find new and productive jobs.

Value at stake: The smart factories driving high levels of automation, connectivity and intelligence with real-time feedback loops from consumers is expected to have slow adoption at scale⁷⁹ but has potential for creating significant value. Some of the key benefits expected are energy cost savings of 5 to 15% by monitoring and modifying energy usage across the factory; maintenance cost savings of 10 to 15% through services such as predictive maintenance; and up to 10% productivity improvements through reduced cycle times and greater automation. Besides operational efficiencies, the factories also enable companies to realize benefits from offerings such as personalization, which have been captured under the hyper-personalization initiative. Smart factories could add approximately \$70 billion in operating profits over the next 10 years, assuming that 5% of the overall production will be under the ambit of smart factories by 2025.

Digital operating model: The impact on business and society

The initiatives in this theme will require significant investments to realize them, especially in smart manufacturing facilities and supply chain operations, but they are also likely to bring benefits and opportunities for businesses. With

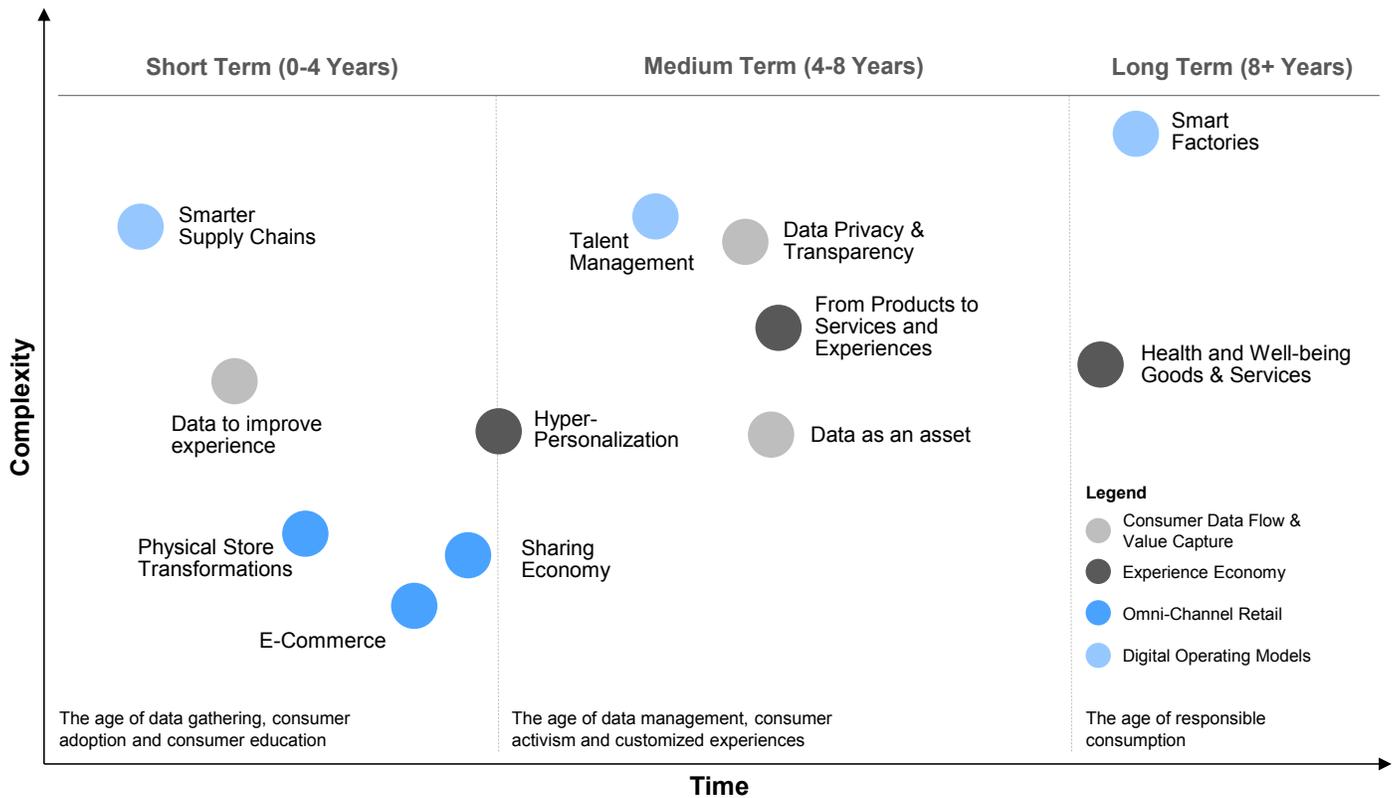
smart factories and supply chains, companies can expect less frequent stock shortages. Digitally powered operations could lead to lower costs for transportation, energy, maintenance and their workforces. Digital operating models will also offer greater opportunities for price differentiation based on customizing products and services.

Such models should also bring environmental benefits from lower energy and resources consumption. Moreover, the models are likely to lead to shifts in demand for employment, from lower-skilled manual work to higher-skilled roles.

e. Consumer industries digital roadmap

It is wise to bear in mind the complexity and required time frame of bringing each of the digital initiatives to scale. Figure 2 illustrates the relative complexity versus time to maturity for the different initiatives already discussed.

Figure 2: Digital transformation themes – time required to scale up

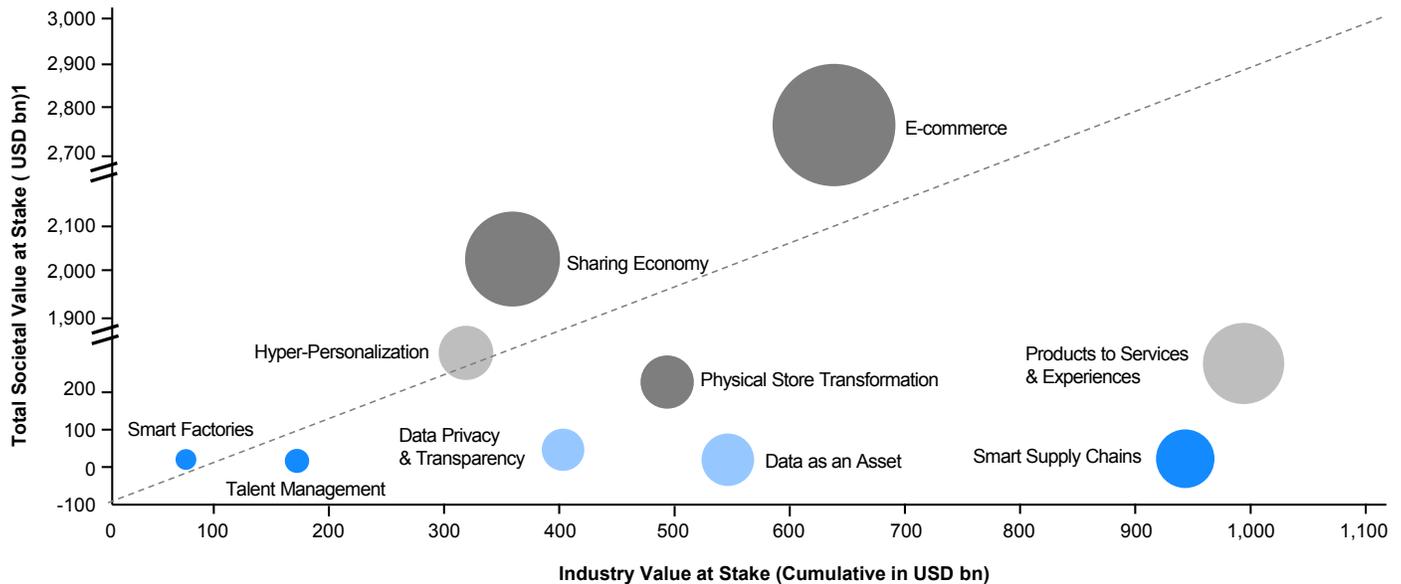


Source: World Economic Forum and Accenture

f. Digital initiatives: Value at stake

Plotting the value at stake assessments for each digital transformation initiative provides us a view of the relative impact of each to the industry and society.

Figure 3: Value at stake impact overview



Bubble size indicates the combined industry and societal value at stake in 2025.

● Experience Economy ● Digital Operating Model
● Omni-Channel Retail ● Consumer Data Flow and Value Capture

Note: (1) Total Societal Value at Stake includes impact on the consumers, society and environment. Impact on external industries has not been considered. The initiative "Health and wellbeing driven goods and services" has not been valued.

Source: World Economic Forum, Accenture Analysis

Summarizing the impact of the transformation initiatives, we estimate that digital transformation in the consumer industry has an industry value of \$4.9 trillion⁸⁰ at stake while creating an impact of \$5.4 trillion to consumers and society over the next 10 years.

The extent of impact varies by each digital theme:

1. **Consumer data flow and value capture:** The total industry value at stake driven by this theme is estimated to be close to \$900 billion. Around \$700 billion of the business value at stake consists of value migration as firms that are more effective in leveraging data to create personalized marketing exposures and firms that are able to strengthen their brand image around the concepts of data privacy and transparency become preferred suppliers for consumers. Approximately \$200 billion of business is attributed to value addition in the form of better pricing for differentiated offerings, reduced costs of product design and greater efficiency in the marketing function. The quantifiable societal impact from these initiatives amount to around \$20 billion. However, there are significant contextual benefits which may not be quantified but would vary on a case-to-case basis. Some examples include higher marginal returns in utility from added income for farmers and industrial workers such as better access to health, sanitation or education as companies adopting transparency promote fair trade practices and share greater proportion of benefits with suppliers; water conservation for beverage companies; reduced wastage for fashion and apparel companies; and reduced use of artificial substances in food products. These benefits are derived from brands making a push for improvements in these areas and simultaneously offering transparency into their products and businesses as a differentiating value proposition.

2. **Experience economy:** Efforts made by consumer goods companies and retailers to enrich the experience of consumers throughout their journey of purchase and consumption has put approximately \$1.3 trillion of business value at stake while generating a societal impact of more than \$450 billion. Close to \$900 billion of business value is at stake from the substitution of traditional products and retail experiences by digitally enriched offerings. At the same time, better pricing, service revenues and increased demand could create around \$400 billion in value. The value for customers and society add up to more than \$450 billion. Consumer benefits are driven primarily through time savings in their purchase journey at a cumulative 40 billion hours. The time savings could have productive value for consumers and society, if exercised wisely. This is complemented by cost savings through price discounts, benefits driven by smart products such as energy savings, lower health costs and reduction in spending on unused products. To the extent that the theme enables consumers to reduce unnecessary spending, we anticipate a smaller environmental footprint thanks to a decline in demand for goods that are sold but do not drive utility for consumers.
3. **Omni-channel retail:** The migration of business from offline to online channels, the evolutionary response of some physical stores to survive and grow in the digital age and the proliferation of the sharing economy enabled by digital marketplaces is estimated to put \$1.5 trillion of industry value at stake. Close to \$900 billion of industry value at stake is attributed to the substitution of purchase channels from traditional retail to omni-channel experiences. The rest is attributed to increased volume growth, and value created by new marketplaces, platforms and shopping applications. This theme has the most significant impact for society at around \$4.9 trillion. It is driven primarily through time savings (300 billion hours) from online shopping primarily in travel times, and cost savings attributed to online discounts, lower priced used goods and rental services.
4. **Digital operating model:** The companies that leverage automation, connectivity and intelligence in supply chains and that invest in digital tools to recruit, manage and train their workforce in an environment of digital skill shortage could generate an industry value impact of around \$1.2 trillion. More than \$1 trillion is attributable to smart factories and supply chains with benefits driven from improved productivity, reduced logistics costs, and lower procurement and inventory costs. The efficiencies in operations also benefit the environment with lower energy footprint and emission reductions of around 160 million metric tons, driving a societal impact of close to \$10 billion over the next 10 years. Around \$150 billion could be attributed to value creation by companies that succeed at leveraging digital in talent management with lower recruitment costs, lower attrition levels and improved productivity of a digitally skilled workforce.

5. Recommendations

This section outlines a number of key recommendations and questions for businesses to think about against the backdrop of the fundamental changes affecting consumer industries.

The key questions that arise for the stakeholders in the industry and its ecosystem are:

- With over \$600bn for industry and \$2.8trn for society, e-commerce is the single largest digital initiative we have identified across industries so far. Internet access and last mile delivery are critical to realizing this value, so how can consumer, telecoms and logistics industries collaborate to realize this potential?
- The sharing economy is estimated to have over \$2trn of societal impact. What innovative business models can incumbents deploy to increase second hand goods sales which in turn fuels 'new demand' growth?
- How can companies push the boundaries on innovation and invest in the right capabilities to enable product and service offerings that drive differentiation in the digital age? How can industry firms work with regulators to facilitate digital driven innovation in business models, while protecting interests of consumers especially around consumer data and transparency?
- Will businesses have access to a sufficiently skilled workforce to successfully leverage digital opportunities? What role will businesses play in skill development in the future?

Digitization may lead to abrupt changes in business models, but businesses can adopt capabilities – called no regret investments – to be better prepared for its disruptive effects. As the term implies, these capabilities can help organizations develop and improve today, irrespective of their industry or their digital strategy, to realize benefits for the longer term. In this section, each no regret recommendation is followed by several lead questions to invite further reflection and identify some particularly difficult challenges that businesses must address.

However, the speed and scope of the digital revolution are such that 'business as usual' and incremental change are no longer sufficient to adapt to and harness the ecosystem's more systemic disruptions. These are testing times for business leaders, but also potentially rewarding ones for those who act more decisively.

No regret investments

Break down traditional organizational barriers:

Digital technology is transforming the traditional linear relationship between departments, from product development to marketing and sales. The relationship is now often a circular, reversed or fragmented one. Many companies still see the digital revolution as an issue about information technology, or as providing new ways of communicating with customers. However, functions through the value chain will need to be aligned to meet the digital consumer's needs. Investments must be made in tools that allow multiple functions to access real-time sales data and customer feedback, and make coordinated decisions – for example, to optimize marketing messages, production or inventory management.

1. How can companies inspire employees across divisions to bring down their firewalls?
2. What innovation models will businesses and society need in the future, as many creative processes are outsourced and decentralized to smaller players?
3. How do companies organize for digital success? What new set of digital metrics are required?

Invest in partnerships:

Partnerships will be important in the digital landscape, especially as firms aim to provide consumers with experiences beyond the core product. Partnerships will not only help provide a seamless experience for consumers as they switch between products or services, but also generate value for the companies involved. An attractive ecosystem of partnerships helps promote loyalty from customers and users who increasingly demand integrated solutions.

Invest in digital skills and capabilities:

A recent study found that many employees doubted that their company's leadership was ready to deal with advances in new digital technologies.⁸¹ Investment in digital skills has to start at the top, as digital will run through every part of a business. Most chief executives are not digital natives and will need to gain as much digital experience as possible to make the right decisions.

Looking beyond sales and marketing skills, firms in consumer industries will also need to invest more widely in the digital skills of their talent base, either through skill-building programs or by acquiring promising startups. Successful organizations must build capabilities to listen to their customers, look out for new disruptive ideas and respond to customer feedback. This will involve creating interactive platforms and more opportunities to interact with consumers. Building relationships with venture capitalists can help in sourcing disruptive ideas, as can investing in relationships with other technology firms and social media platforms.⁸²

Build an omni-channel presence:

Although omni-channel is not a new concept, many retailers have yet to implement it.⁸³ Numerous channels already exist (e.g., brand portals, online marketplaces, retail stores), and more, such as social media, will be created in the future. Consequently, product companies will need to gear up to compete in the omni-channel world. Investment will be required in smart supply chains to add flexibility for tolerating the much higher volatility in demand brought by the omni-channel environment.

1. How creative do companies need to be in finding partners outside their industry (for example, car manufacturers with financial firms or health providers with mobile device manufacturers)?
 2. How will data be valued? How should data ownership be governed across businesses, industries and sectors?
-
1. Will businesses have access to a sufficiently skilled workforce to successfully leverage digital opportunities? What role will businesses play in skill development in the future?
 2. How can businesses develop attractive value propositions that help attract the best digital talent?
 3. As power shifts to the consumer, what capabilities will companies need to grow and protect their brand value?
-
1. How will businesses develop optimal investment allocation strategies across channels and technologies?
 2. What type of partnerships will companies need to create and build an effective omni-channel presence?
 3. In a world where goods and services evolve into experiences, how will consumer industries replicate and maintain the quality of consumer experience across channels?

Build platforms for the future

The digital transformation themes set out in the Future Horizons section of this report all touch on a common idea. Companies in consumer industries have the opportunity to go beyond being just suppliers, manufacturers or sellers, and instead can function as a platform or a partner to a platform. In many cases, this will require expanding 'beyond the core'. Authors Bonchek and Choudary, in an article in the *Harvard Business Review*, define a platform as a stage where "other businesses can easily connect their business with yours, build products and services on top of it, and co-create value".⁸⁴ Platforms are appearing everywhere, from the digital car to the connected home, but have been particularly successful in retail and media. While Google, Amazon and Alibaba are the best-known examples of platforms, the platform concept (which is not limited to online businesses) can also be applied to a variety of product-related services and experiences, digital operations and processes, and digital retail and marketing services.

Successful platforms in consumer industries will need to find ways to nurture the ecosystem around them. This may include initiatives such as partnering with other industries, the government, innovators and companies from other sectors; building digital skills; investing in advanced transport infrastructure; and developing cutting-edge technologies to drive differentiation.

As businesses prepare and position themselves for the digital future, they will have to address some overarching questions:

1. Which business challenges can be addressed and which business opportunities realized through digitization?
2. What capabilities, investments and partnerships are needed to achieve the organization's 'digital ambition'?
3. What risk factors can derail the organization's digital ambition? How can these risks be best managed internally (for example, with strategy or technology) or externally (such as by regulation)?
4. Can traditional players in consumer industries create platforms to supplement their business? How can this help create new markets?

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7. Endnotes

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