Trends report series

Microsoft Dynamics 365

Top seven trends every CEO should know about the future of retail

COVID-19 Update

Sudden changes prompted by COVID-19 have driven retailers to accelerate the digitisation of their businesses in 2020. In discussions with leaders across the sector, KPMG found five areas where retail executives are applying new technology and tactics to contend with a highly fluid social, economic and health environment which include:[1]

1. Managing demand fluctuations, including supply chain rebalancing and optimisation and category management.

2. Shoring up cash reserves.

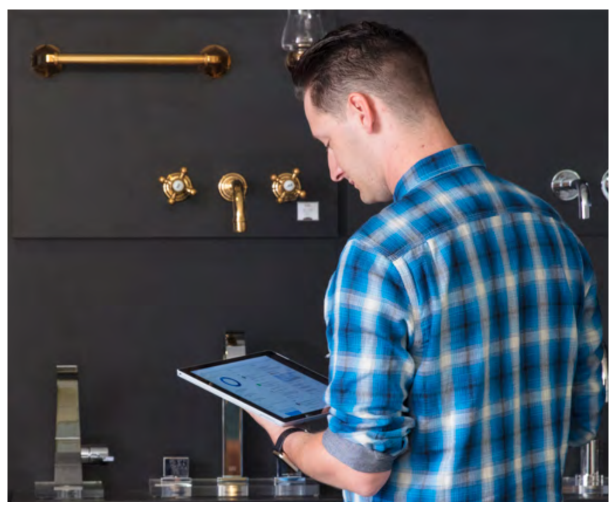
3. Protecting people, including adapting in-store experiences with contactless payments, checkout-less stores and curbside delivery.

4. Planning for longer-term supply challenges.

5. Strengthening customer relationships and experiences through personalisation, using loyalty data and anticipating seasonal needs and trends.

Some retailers are developing or refreshing crisis management and contingency plans, including 'survival minimum' scenarios, and planning for the long haul. This includes revisiting and digitising processes, preparing for team members to work remotely long term and capturing increasing demand for digital services.[2]

In the process, retailers have further explored the potential of artificial intelligence (AI), augmented reality (AR), automation and advancements in fraud protection to keep their organisations agile, protect revenue and increase business continuity and resilience.



[1] 'The Realities of Retailing in a COVID-19 World', KPMG, 2020.

[2] 'Responding to COVID-19: Six Things Retailers Should Do to Keep Calm and Carry On', March & McLennan Companies, 2020.

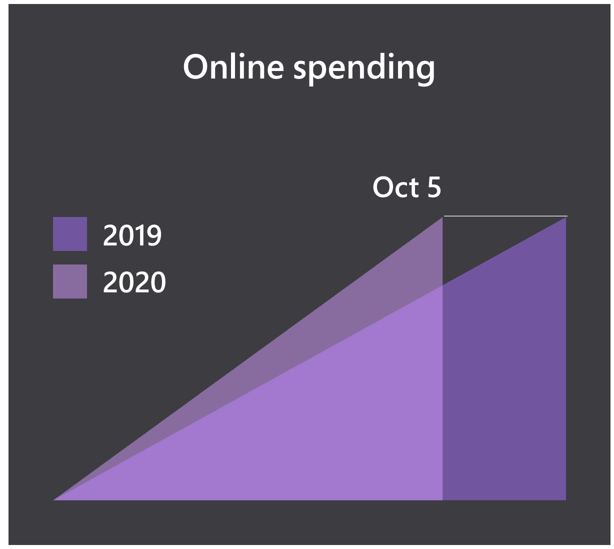
Post-pandemic changes in retail

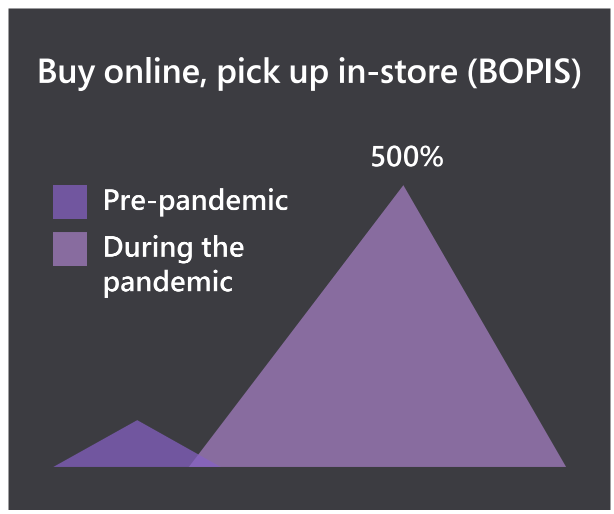
The COVID-19 epidemic immediately created a hierarchy of retailers based on who could pivot quickly – and offer the best digital experiences.

Online spending

Demand for contactless shopping increased dramatically, with buy online, pick up in-store (BOPIS) growing more than 500% during the pandemic.[3] Online spending for 2020 is on track to exceed online spending for all of 2019 by October 5.[4]

Retailers such as grocers and restaurants – many of whom previously operated exclusively out of physical locations – moved ordering, delivery and pickup online. Others, such as food and beverage suppliers, found they needed to adapt to changes in demand as restaurants closed, then opened, then closed again. Some distilleries stopped producing spirits altogether and switched to making disinfectants, only to return to producing spirits again.[5]





[3] ‘BOPIS Grows More than 500 Percent During Pandemic’, Digital Commerce 360, June 2020.

[4] ‘Adobe Digital Economy Index’, Adobe Analytics, July 2020.

[5] ‘Distilleries Raced to Make Hand Sanitizer for the Pandemic. No Longer.’ New York Times, August 2020.

Customer experience

Demand has gone up and down with shifts in the economy, COVID-19 statistics and government restrictions, forcing retailers to continue to respond and adapt. At the same time, customers still want personalisation and convenience.

Many retailers' service organisations have turned to AI, automation and chatbots to deal with surges in demand for customer service in 2020. To differentiate themselves online, retailers are also using technologies such as augmented reality to give customers a personalised, in-store experience and help customers to visualise products in their homes.

Fraud protection

With more purchases happening online, online fraud has increased as well. According to Forrester Research, online fraud is growing at an even faster rate than the increase in e-commerce sales.[6] Retailers are leveraging AI, analytics and cloud-based, secure frameworks to protect revenue and customer accounts.

[6] '[Artificial Intelligence Is Transforming Fraud Management]', Forrester, 2019.

How to use this report

The critical points in this report are as relevant as ever. The pandemic has only magnified the need for changes and prompted companies to accelerate digital transformation.

This report will inform, inspire and assist you in clarifying the next steps for your company. It will help you:

- Learn from a wealth of stories from other retailers navigating the challenges of modern retail.
- Consider and define the challenges you have.
- Prioritise what you need to address first.
- Understand the value of specific short- and long-term technology investments, so you can develop a strategy that has the most significant impact on your business.

01 /

Unified data, intelligence everywhere

02 /

Customer experience is everything

03 /

Retailers experiment with new formats

04 /

Operations drive retail excellence

05 /

Supply chain becomes a competitive differentiator

06 /

Retailers place a renewed focus on ethics

07 /

Businesses adapt to global uncertainty

01 / Unified data, intelligence everywhere

Unified data, intelligence everywhere

Unlike the other trends detailed in this report, which we have tried to make as independent and differentiated as possible, this first trend is more of a macro-level trend. It's a trend that, in some capacity, is either an influence or a force-multiplier of each of the subsequent trends. It is a trend that is as much about its individual elements as it is about the sum of its parts: the Internet of Things (IoT) and artificial intelligence.

Executive summary

Fully-connected businesses are able to provide AI tools with more complete data. This helps these systems provide more accurate outputs and deliver intelligence to every corner of the business.

Highlights

- Global spending on digital transformation efforts is projected to reach USD $2 trillion by 2022.
- The AI market in the US is projected to reach USD $118.6 billion by 2025, up from USD $14.7 billion in 2019.
- Spending on AI automation in the US is projected to increase from USD $9.7 billion in 2018 to USD $15.4 billion in 2021.

Meet the new, fully connected business

For the last decade – and accelerated further in the last several years with the growing ubiquity of cloud computing – we have seen a push towards a more connected business. This transformation has been neither linear, nor has it been one dimensional; for many, it has been complex and evolved in key stages.

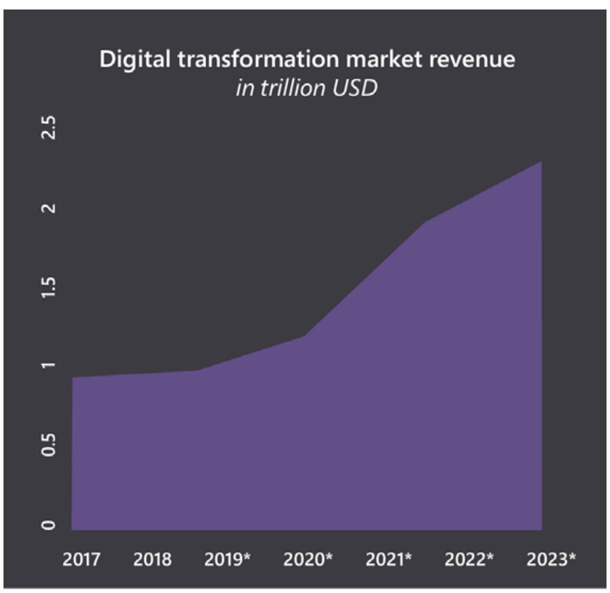
First, companies digitised. Through computers, mobile devices and sensors that enabled digital tracking of mechanical devices, this digitisation process made it possible to capture data from any device. Next, they aggregated this data. For most, this data aggregation process happened in stages, in one team or department at a time. This approach left businesses with aggregated, but siloed data. To connect these data silos, companies hacked together systems and APIs to help transfer data between siloed business units, often resulting in duplicate data sets, slow speeds and increased security risks. To a degree, this system of interconnected data silos has been standard operating procedure for a while now, but as cloud technology matures, this model is starting to change.

Through advancements in cloud processing, data lakes and software – as well as better business processes and governance – businesses are finally starting to tear down data silos and realise the potential of a fully connected business, one where all of an organisation's data is aggregated into a central database, which both receives and sends data across the organisation, in real-time, wherever it is needed.

For businesses, this presents a huge leap forward, and the implications and opportunities for unified, real-time data from across the organisation are substantial. It means that business leaders can have access to live data to help make more strategic decisions with the latest information. It means that businesses can push updates to workers in the field, ensuring that they have the most recent information. It means that companies can track a customer's relationship with their brand through every touch point across their entire lifespan. And it means that financial reporting is both faster and more accurate.

> **"The implications and opportunities for unified, real-time data from across the organisation are substantial."**

These changes are not merely an update to existing tools, they represent the next phase in a company's digital transformation journey, and business leaders are making the investment. According to a recent study by eMarketer, about eight in ten US companies are currently investing in digital transformation to improve performance, meet customer demands and remain competitive.[1] Globally, spending on digital transformation efforts is projected to reach USD $2 trillion by 2022,[2] providing organisations with the infrastructure and software they need to innovate and grow.



*Projected

Business leaders gain visibility into performance and operations

One of the most significant gains from a connected business is the ability to leverage unified data from across the organisation. Unified data provides business leaders with better visibility into both performance and operations. With a more complete picture, they are able to make faster, smarter decisions.

It also provides business leaders with a better opportunity to identify correlations from different parts of the business that would not otherwise be visible. This visibility can help companies improve forecasting and identify market trends faster, so they can shift strategies and capitalise on evolving consumer interests.

Furthermore, increased visibility into business operations and performance helps business leaders mitigate risk, either through early recognition of operational issues that need to be addressed or from identifying outlying data that may suggest an abnormality – such as an impropriety on the part of an employee or a data breach from an external threat.

> "AI's output is only as good as it's input."

Unified data unlocks advanced analytics and artificial intelligence

Artificial intelligence (AI) has received a lot of air time these last few years, as improvements in computer processing and algorithms have introduced even more powerful solutions. And adoption is on the rise. The AI market in the US is expected to reach USD $14.69 billion in 2019 – a 154% increase from last year – and is projected to reach USD $118.6 billion by 2025.[3]

However, for as great as modern AI solutions are, there remains one major limitation impeding their effectiveness: data quality. AI's output is only as good as it's input, and in years past, this has been a significant challenge. At best, AI analysis conducted using incomplete data sets can result in suboptimal outputs; at worst, it can steer companies in the wrong direction.

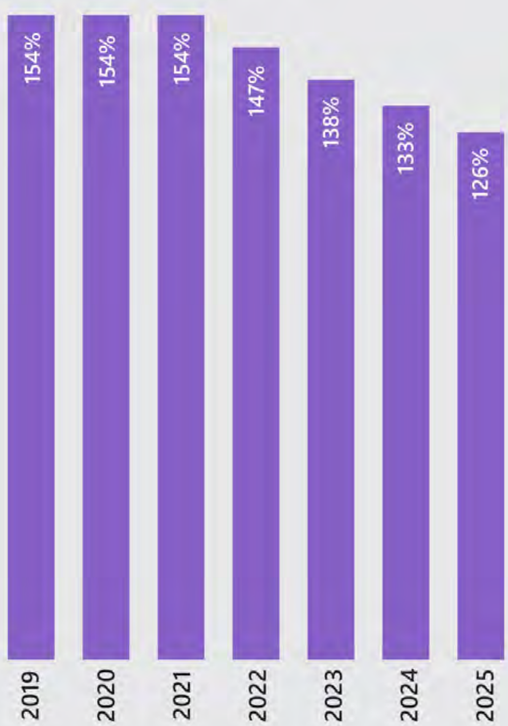
As connected businesses unify data from across the organisation – providing a more comprehensive data set – it is unlocking the true potential of AI. This broader data set not only enables better data for primary analysis, but it also allows AI tools to discover connections and correlations in discrete parts of the business where no one would think to look, and these insights may help improve operations and performance. Unified data removes silos, which in turn enables intelligent tools to be leveraged across all business units, elevating every part of the business through applied intelligence.

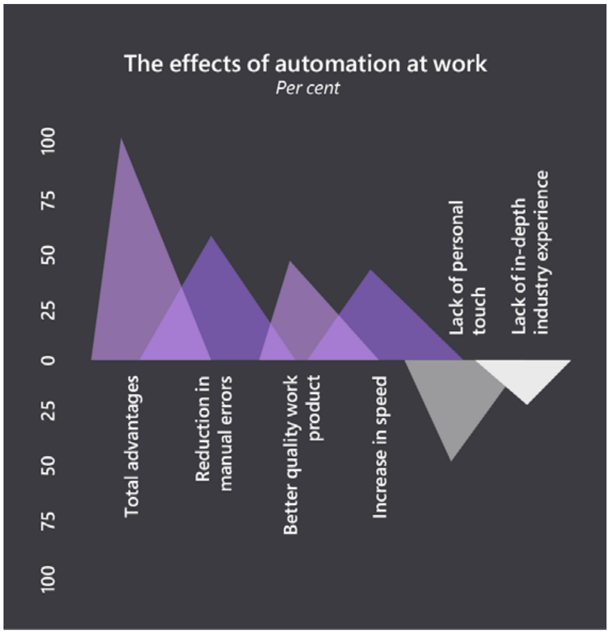
Connected businesses empower automation

As business systems and machines push data into a unified database to be processed and analysed using AI tools, this same interconnection also allows for information to be pushed back throughout the system. While we may not think of applied AI in these terms – sending data to a central database, analysing that data, then pushing some response back to the source – this is often (in very simplified terms) how these tools work. This includes AI interfaces that humans interact with, such as virtual assistants, robo-investors and smart speakers.

> "Unified data removes silos, which in turn enables intelligent tools to be leveraged across all business units, elevating every part of the business through applied intelligence."

Forecasted growth of the artificial intelligence (AI) software market worldwide from 2019 to 2025

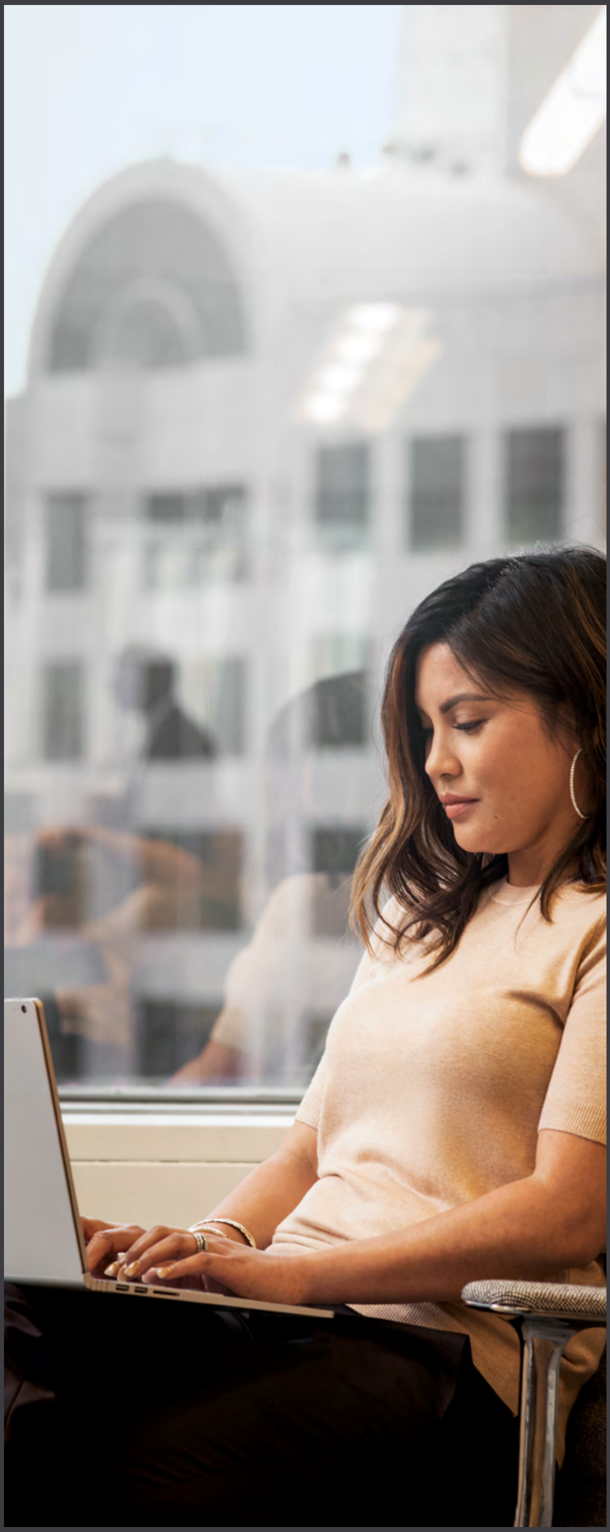




This cycle enables intelligent automation: the ability to collect input data from a system, use artificial intelligence to automatically generate an output command, then push that command outwards to control the system. Put simply, the 'muscles' that feed the data to the brain can then be controlled by output from the brain. And as this input-output cycle continues, it creates a feedback loop where the algorithms generating the output commands are able to learn from new results and improve their performance.

The impacts of automation at work are substantial. In a recent survey, nearly all business leaders (99%) felt that there are advantages to automation. 52% of business leaders think that it leads to a reduction in manual errors, 45% believe it leads to better quality projects and 43% feel it improves speed.[4]

This is not to suggest that automation does not come without risks. In the same survey, 47% of business leaders cited a 'lack of personal touch' as a risk of automation, while 23% fear it will lead to a lack of in-depth industry experience. Despite these risks, businesses continue to invest in AI automation. Spending on AI automation in the US is projected to increase from USD $9.7 billion in 2018 to USD $15.4 billion in 2021, nearly a 60% increase.[5] It is clear that as businesses become more connected and more intelligent, more systems and processes will become automated.



@Microsoft

Connect and modernise
To stay competitive and innovate, retail leaders need to connect their operations and leverage the latest intelligent tools. At Microsoft, we are empowering retail leaders with the infrastructure, power, scale and intelligence to help them modernise and transform their businesses.

Unify business data
Retail leaders need real-time visibility into operations and performance to make informed decisions. From cloud-based data solutions on Azure to intelligent analytics tools in Dynamics 365, we're helping retail leaders turn data into actionable insights so they can optimise operations and make more strategic business decisions.

Get greater visibility
To effectively guide their organisations, retail leaders require visibility into all areas of their businesses. By combining unified data in the cloud with powerful data visualisation tools, like Power BI, Microsoft provides retail leaders with a single source of visibility into their operations – from technology to financial data – so they can make more informed decisions.

Automate workflows
As the pace of modern business accelerates, retail leaders are looking to streamline processes and get more done. With Azure, Dynamics 365 and Office 365, we're providing retail leaders with tools to automate workflows and simplify communication so they can improve efficiency, performance and productivity.

02 / Customer experience is everything

Executive summary

As younger shoppers and increased competition cause customer expectations to rise, retailers are turning to technology to help deliver the personal experiences that help build lasting customer relationships.

Highlights

- 69% of Gen Z reported that they're more likely to transact with companies that contribute to social causes.
- 75% of respondents have heard of at least one of five emerging retail technologies – mobile point of sale, augmented reality, cashier-less checkouts, interactive screens and 3-D printing – but only one third have experienced any of them in a store.

Customer experience is everything

In retail, perhaps more than in any other industry, customer experience has long been at the foreground. From 'customer-first' to 'the customer is always right', retailers have always prioritised the shopper. However, over the last decade, this hyper-focus on customer experience has started to take a new shape.

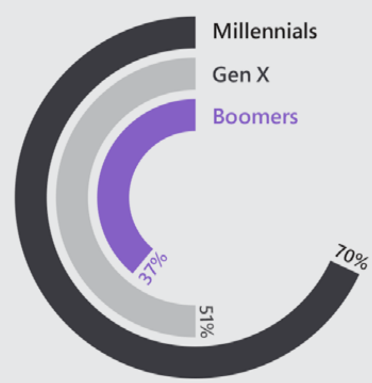
With the rapid growth of e-commerce, the relationship between the retailer and the customer began to shift. Demand for omni-channel commerce drove investment in new technologies while growing expectations around free and fast delivery pushed retailers to optimise operations. As a result, the last decade has been marked by increased access, faster operations and reduced operational costs. What got lost was the experience. Emerging technologies delivered new capabilities, but many failed to produce results because they didn't make the shopping experience easier or better for the customer. This year, retail leaders have renewed the focus on experience at a time when it is needed more than ever.

Millennials and Gen Z redefine brand expectations

It's official – at 73 million members strong, millennials now outnumber baby boomers in the United States.[6] Born between 1981 and 1996, millennials are now approaching their thirties and forties, and with that, they're also approaching their peak earning potential. Despite their influence, millennials aren't actually America's largest living population group; that distinction belongs to Generation Z, a cohort of more than 90 million people born after 1997,[7] the oldest of whom recently entered the workforce.

So, how are these two influential generations shaping the market for goods and services? The answer is that it's all about values, authenticity and engagement.

According to Forrester Research, nearly 70% of millennials weigh a company's values when making a purchase.[8] As a group, Gen Z places high worth on inclusion and equality, reflecting the broader national conversation around ethics and social responsibility.[9] According to a study by Ad Age, 69% of Gen Z reported that they're more likely to transact with companies that contribute to social causes, while 33% of respondents said they have stopped making purchases from companies that back causes they don't support.[10] Signs show that this ethos is steadily influencing other generations as well. A majority of Gen X consumers (51%) and a growing number of baby boomers (41% of younger boomers and a third of older boomers) indicated that company values influence their purchasing decisions.[11]



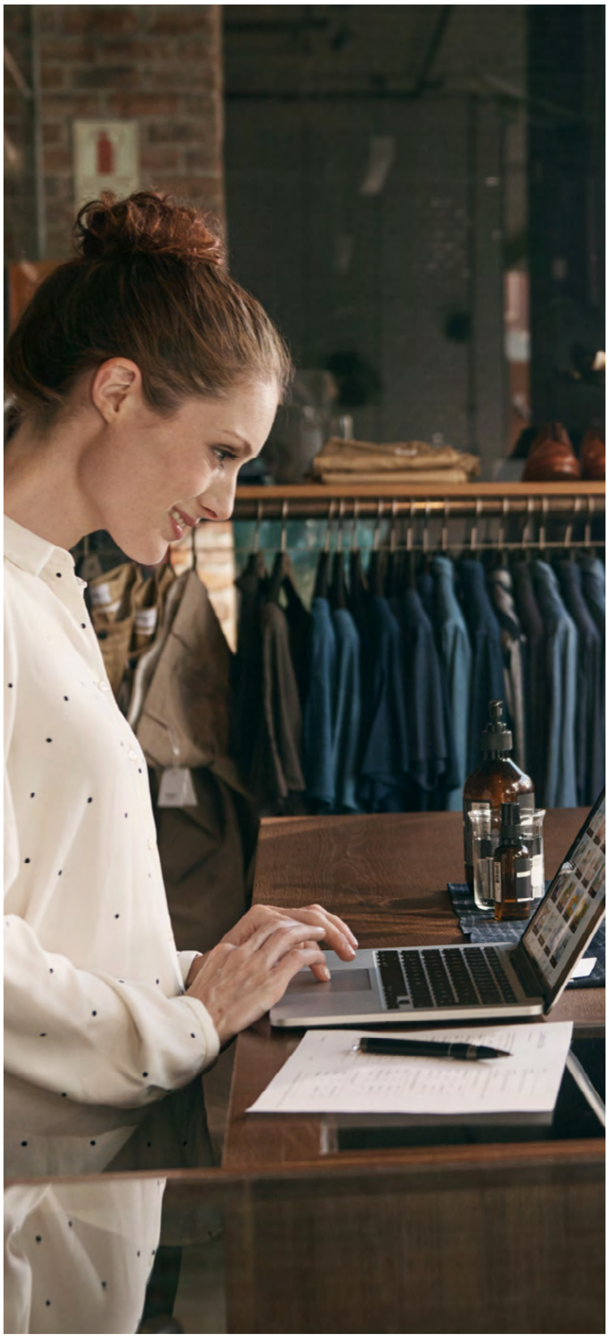
Consumers who actively consider company values when making a purchase

Despite the importance that they place on corporate ethics, cost is still a major deciding factor for both millennials and Gen Z, albeit for different reasons. Both generations' purchasing habits were influenced by the Great Recession, which hit during their childhood or early adult years. Millennials, who were adolescents or young adults during the recession, are far more likely to prize affordability, quality and reliability over ethics and transparency.[12] Members of Gen Z, who were children when the recession hit, strongly believe that companies have a responsibility to serve communities and society.[13] Their price sensitivity is largely rooted in a desire for novelty when it comes to the clothes they wear, which is unsurprising given that they're the world's most photographed generation to date.[14]

As the first generation of true digital natives, Gen Z also has little tolerance for what they view as 'marketing fakery'. Members of this generation strongly prefer brands and influencers that they see as authentic, trustworthy and approachable.[15] According to a study by Ad Age, Gen Z looks to real people – as opposed to brands – for

information and style inspiration. Along those lines, members of Gen Z are wary of brands' attempts to sell to them, making them far more likely to trust companies that don't Photoshop their images and feature actual customers in their campaigns.[16]

Last, both groups expect more than a superficial connection to the brands they buy. Increasingly, millennials expect companies to engage with them in meaningful – and often immersive – ways.[17] Similarly, Gen Z sees itself as co-creators who can shape the conversation around brands.



Technology and innovation reshape customer demands

Stating that technology is changing customer demands feels like stating the obvious. Innovation – from the printing press and combustion engine to computers and wireless internet – has always been a driver of demand, unlocking new possibilities and raising expectations. Today, we find ourselves at the intersection of rapid innovation and a new generation of consumers who have grown up empowered by technology.

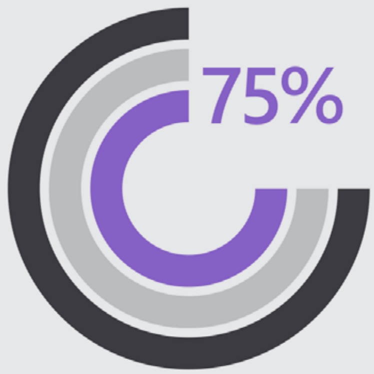
Customer expectations have changed dramatically over the past decade and are continuing to evolve. Technology and services that were fresh and innovative just last year are now considered par for the course. How exactly is technology shaping customer demands today? First, it's putting an unprecedented level of information at people's fingertips, making it easier than ever for customers to compare products and to choose the one that best aligns with their aesthetic, budget, technical specifications and increasingly, their moral values. Second, it's giving customers greater control over nearly every aspect of the shopping experience: when and where they make purchases, how to pay for what they buy and how and when they take possession of those purchases. In today's retail landscape, the customer truly is king.

"How are retailers using technology to enhance the shopping experience? It depends on the setting."

Technology experiences improve for customers

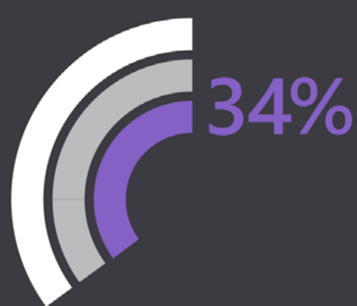
A customer's experience of the technologies that a retailer employs – in store, online or on social media – is becoming inextricably tied with how customers perceive the brand itself. To a certain degree, a brand *is* its website, its conversational commerce platform or its AR product demos. As a result, the relationship that retailers have with technology is changing. Companies have shifted from using technology to deliver a product or service (i.e. tech strictly as a tool to enable and fulfil sales) to using technology to improve the shopping experience (i.e. tech as a means to enhance brand value and to strengthen relationships with customers).

How are retailers using technology to enhance the shopping experience? It depends on the setting. Research suggests that customers prefer big-box retailers to offer technologies that make the shopping experience faster and more convenient, whereas shoppers at speciality stores prefer technologies that provide a better experience or allow greater customisation.[18] Customers reported that they were most



Percentage of respondents who have heard of at least one of five emerging retail technologies

Mobile point of sale, augmented reality, cashier-less checkouts, interactive screens and 3-D printing



Percentage of respondents who have tried an emerging retail technology in-store

Mobile point of sale, augmented reality, cashier-less checkouts, interactive screens and 3-D printing

interested in technologies that would help them locate items faster, learn more about products and check out more efficiently.[19]

In terms of e-commerce, retailers are focusing on making online shopping as streamlined, intuitive and transparent as possible. Features like clear site navigation, responsive site design, enhanced product information (e.g. virtual catwalks and explainer videos that allow customers to see products in action), chatbots, express checkout, order tracking and after-purchase support improve the shopping experience and reduce perceived risks for customers.

A study conducted by A.T. Kearney suggests that retailers have a lot of room to grow when it comes to in-store retail technology. Three-quarters of survey respondents reported having heard of at least one of five emerging retail technologies – mobile point of sale, augmented reality, cashier-less checkouts, interactive screens and 3-D printing – but only one-third of respondents had experienced any of them in a store.[20] Likewise, most e-commerce platforms have yet to adopt features like mobile wallets and AR and VR shopping experiences (e.g. webcam-enabled digital mirrors).

Personalisation and convenience become competitive differentiators

There has been a quiet but seismic shift in consumer spending in the years since the Great Recession, particularly among members of younger generations. Whereas during the post-World War II economic expansion, buying a home, a car and the other accoutrements of adult life was a symbol of both success and patriotism, Millennials are buying homes – and spending on everything[21] – at lower rates than their predecessors.[22] The reasons are complex and include factors like higher levels of debt and less earning power,[23] a trend towards delaying marriage and having kids,[24] lower levels of transportation spending across all generations,[25] issues in the broader real estate market and a predilection for living in urban areas[26] where housing is expensive and it's easier to access other methods of transportation. That said, part of this shift in millennial consumption reflects a growing preference for spending on experiences, not possessions[27][28] and mounting concerns about the sustainability of contemporary consumption habits.[29] In search of a competitive advantage, companies from all kinds of industries are using technology to adapt their business models to the needs of this cash-strapped segment.

The key to surviving the new retail landscape is moving customers from transactional loyalty to emotional loyalty.[30] It's the difference between trying to generate repeat sales by offering customers perks like vouchers or loyalty cards and cultivating brand devotees who will buy whatever a company provides, who deliberately seek the brand out and who sing the company's praises to everyone they know. To that end, both start-ups and established businesses are experimenting with personalised, affordable, sustainable and convenient offerings aimed at a new breed of American consumers.

On-demand services

With an estimated 56 million Americans participating in the on-demand economy in 2018, a number that is projected to grow to 93 million by 2022,[31] on-demand services represent perhaps the largest category of these new offerings. Popularised by Uber, on-demand businesses are launching for just about every category imaginable, allowing consumers to book and pay for everything from housecleaning and dog walkers to babysitters and massages with the click of a button.

Sharing economy

The sharing economy – where consumers 'share' products and services directly instead of purchasing via a retailer or distributor – is another business model that has grown in popularity over the last several years. Perhaps the most commonly known example of a sharing economy business is Airbnb, where travellers can rent rooms and homes directly from other individuals. Clothing rental – as distinguished from consignment services like thredUP or subscription services like Trunk Club – is a growing trend in this segment and includes new entrants like Express Trial Service and Urban Outfitters' Nuuly,[32] as well as more established players such as Rent the Runway.

> "The key to surviving the new retail landscape is moving customers from transactional loyalty to emotional loyalty."

Subscription box services

Subscription box services have become incredibly popular due to their highly targeted nature and ease of use. Companies like Birchbox, HelloFresh, Stitch Fix and NatureBox are just the tip of the iceberg when it comes to the subscription box market, which now provides services for dog owners, coffee lovers, mountain climbers, gold miners, sock enthusiasts, plus an entire category of offerings targeted at kids.

Online consignment

When eBay and Craigslist launched in the mid-1990s, they provided individuals with the opportunity to use the internet to sell used goods. Nearly two decades later, a new set of online consignment stores has emerged to help streamline this process. Sites like thredUP, Swap and TheRealReal allow shoppers to sell and purchase used clothes, jewellery, toys and luxury fashion accessories online. Capitalising on the fact that peer-to-peer selling is en vogue, eBay launched a 2019 ad campaign that urged consumers, "When you're over overpaying, get it on eBay."[33]

Revamped loyalty programmes

Companies are also investigating new ways to make their loyalty programmes more enticing to customers. Some are employing AI to make their loyalty programmes more engaging, featuring exclusive experiences, tailored content and games. Others are even experimenting with ditching traditional rewards altogether in favour of offering customers stock options using companies like bumped.com.[34]

Using technology to provide better products, services and experiences

In today's modern retail environment, technology is key to improving relationships between brands and their customers.[35] Technology can help brands foster closer relationships with their audiences in a number of ways, such as using analytics to better predict and meet customer needs, improving supply chain operations to provide faster and more reliable service and offering a seamless omni-channel shopping experience. One promising technology development is the introduction of cloud-based consumer engagement platforms that arm front-line employees with up-to-the-minute CRM, inventory management and sales data, allowing them to provide better, more targeted customer service.[36]

On-demand and micro-manufacturing help deliver personalised experiences

In a world that's obsessed with big data, companies are continually looking for new data streams to incorporate into product and process design. Consumer feedback, purchasing patterns, product usage data – every information node helps retailers meet unique user requirements.

Fuelled by the low cost of additive manufacturing and a heightened interest in product personalisation, companies are steadily moving towards on-demand and micro-manufacturing. On-demand production is not only enticing for customers; it virtually eliminates inventory issues and dramatically reduces production waste for retailers. Rather than attempting to predict product needs, retailers and manufacturers are able to meet the point of demand directly, producing appropriate volumes as needs arise.

Advances in AI and automation are helping companies get creative with their products, allowing them to focus on serving an individual consumer, not the market average. Nike's NIKEiD programme has led the product-personalisation charge, enabling customers to create a completely customised shoe or athletic bag that arrives in four to six weeks. To achieve this, Nike partnered with manufacturers to automate factory processes and develop laser technology that streamlines production.

Other retailers are taking advantage of online buying to offer customisation options for products that previously required in-store measurements or tailoring. On the websites of menswear companies – such as Indochino, Black Lapel and Knot Standard – consumers can select their desired fit and cut, and upload their measurements for a 'bespoke' suit.

Automation holds the key to greater customisation

Automation has long been a boon for the manufacturing sector, allowing companies to shorten production times and decrease production defects. Soon, automation may show up in more unusual settings, like restaurant kitchens. Seattle-based Picnic recently showcased the food and hospitality industry's first intelligent automated assembly system for making custom pizzas. Picnic's system allows customers to pick and choose their favourite pizza toppings and sauces via an app interface. Using computer vision systems to monitor the pizza at various stages enables fast and accurate pizza assembly – up to 300 pizzas per hour – with very little supervision.

The cosmetics industry has always struggled to provide products that are personalised to an individual's hair or skin type. Shoppers have historically had to manoeuvre through aisles of mass-market products with confusing labels and competing claims, despite the fact that most formulas contain the same essential ingredients. For some cosmetics brands, automation may hold the key to offering a greater degree of customisation. Prose, a newly launched custom haircare brand, is using the power of AI to create personalised haircare products. Data gathered via interview questions helps Prose's system identify the ideal hair care regimen for each customer, which is then formulated using a unique combination of ingredients perfectly tailored to the customer's needs. Mainstream cosmetics brands are also investigating new opportunities to leverage automation. At the 2019 Consumer Electronics Show, Neutrogena unveiled MaskiD, the first-ever 3-D printed face mask. The face mask can be printed to fit the shape and size of the customer's face and will contain custom skincare ingredients based on the individual's skin treatment requirements.

In early 2018, Amazon received a patent for a new retailing system that would enable the company to accept online orders for custom 3D-printed items.[37] The resulting products would then be available either for pickup or delivery.

A team of researchers at Carnegie Mellon University's Textile Lab has discovered a way to translate 3-D meshes into instructions that can be read by industrial knitting machines.[38] The development would give factories the ability to create one-off and small-batch designs, something that was not previously possible given the time and expense typically involved in programming knitting machines to produce a new design. Using the new algorithm, factories could generate designs tailored to the exact size and colours a consumer ordered. At scale, this technology could potentially reduce the amount of inventory that retailers need to stock and allow manufacturers to produce goods for a broader range of customers.

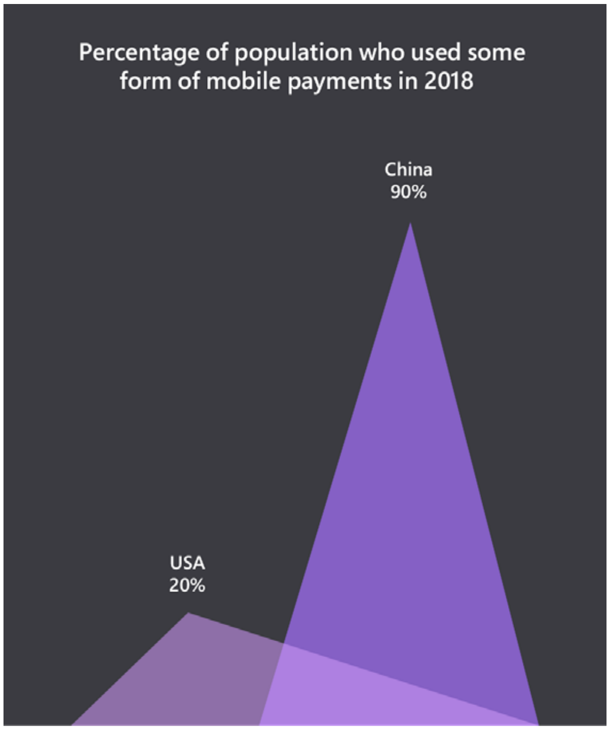
As the demand for faster, more personalised products grows, so will the need for on-demand production and micro-manufacturing.

"The global market for mobile payment systems was USD $881 billion in 2018 and will grow to an estimated USD $3 trillion by 2024."

New payment systems give consumers greater flexibility

A cluster of new technologies – mobile point of sale (mPOS) payment processing, Near-Field Communications (NFC), mobile wallets and peer-to-peer (P2P) payments – are making it faster and easier for consumers and businesses to exchange funds.

Since Apple Pay was introduced in October 2014, the market for mobile wallets has exploded. Today, dozens of companies offer their own mobile payment options, including PayPal, Intuit GoPayment, Samsung Pay, Google Pay, Barclaycard bPay, LoopPay, Chase Pay, Visa Checkout, Walmart Pay, CVS Pay, Target Wallet, Starbucks, Kohl's Pay, Square Cash, Stripe, Venmo, LevelUp, PayAnywhere and Zelle. An increasing number of businesses are leveraging mobile wallets in creative new ways, using the technology for things like paperless tickets, loyalty cards, in-store pickup of online orders, gym memberships, coupons, and more.[39]



As adoption increases around the world, it seems clear that mobile wallets are the way of the future. The global market for mobile payment systems was USD $881 billion in 2018 and will grow to an estimated USD $3 trillion by 2024.[40] However, despite the proliferation of companies offering contactless payment options – and the fact that 81% of Americans own a smartphone[41] – mobile payments have yet to have the same impact in the US that they have had elsewhere in the world. Fifty-five million Americans, or 20.2% of the population, used some form of mobile payment in 2018.[42] Contrast that with China, where 90% of consumers reported that AliPay or WeChat was their preferred method of payment.[43]

There are a handful of reasons why other countries are leapfrogging the US when it comes to the adoption of mobile payments. In part, it's because in countries like China and India, mobile payment offers consumers a convenient alternative to paying in cash, whereas in the US, consumers already have a convenient, widely accepted means for making digital payments: credit and debit cards. A recent survey by Bain found that the forms of payment most commonly used by Americans were credit cards (80%), cash (79%) and debit or bank cards (59%).[44]

The other piece of the equation is adoption by merchants. Retailers must weigh the potential benefits of embracing these new payment methods against the expense of purchasing POS devices for contactless payments, as well as the fees involved in accepting digital wallets for online transactions. While a majority of US merchants report that they currently accept or have plans to accept payment using Apple Pay, Masterpass, Visa Checkout, PayPal, Google Pay or Chase Pay, many retailers are still taking a 'wait and see' approach to mobile payments.[45] A new service offered by the US government may change that dynamic. In April 2019, the Federal Reserve announced that starting in 2024, the FedNow Service will make money transfers available anytime and in real time. Having real-time access to customers' bank accounts – including the ability to receive payments immediately – will likely give businesses that are still on the fence the incentive they need to embrace digital wallets. The new service will probably also result in more companies creating the type of financial products that were previously only available through banks.

In parallel with this trend, many retailers are beginning to roll out mPOS devices, which allow companies to process payments using tablets, smartphones or other handheld devices. For smaller merchants, mPOS devices reduce the equipment costs associated with accepting digital payments. For larger retailers, arming front-line employees with mPOS devices allows the company to accept payments anywhere in the store; however, issues like limited battery life and the awkwardness of carrying a mobile POS terminal has somewhat slowed adoption for this particular application.[46] Other retailers – including Meijer, Macy's and Sam's Club – are investigating mobile self-checkout, which essentially turns a customer's smartphone into a POS device.[47]

The growing consumer interest in these technologies – NFC, cryptocurrency, P2P and mobile wallets – coincides with regulation changes in the US and abroad that will eventually make near-instantaneous payment processing the norm rather than the exception. Since faster account reconciliation holds clear benefits for both consumers and retailers, it's likely that companies and consumers alike will adopt these technologies at a faster rate in the next few years.

Service-oriented sales

In an effort to make the shopping experience stickier and more engaging, many brands are putting renewed focus on customer service. Starbucks, for example, has set out to delight members of its Starbucks Rewards programme by creating customer experiences centered on flexibility, convenience, personalisation and fun. The company uses prior purchasing behaviour to create games, offers and product recommendations specifically tailored to the customer's unique preferences. Starbucks Rewards uses sophisticated personalisation engines that take into account the weather, time of day and the stores nearest to the customer to provide the smoothest and most targeted service possible. Using the Mobile Order and Pay feature on the Starbucks Rewards app, customers can use the app to pay for orders in-store using Starbucks' mobile wallet. Customers can also use the app to pre-order and pick up their purchase upon arrival at the store. The Starbucks Rewards programme, which was revamped in April 2019, now allows customers to choose how they use their rewards points, giving them the flexibility to use them on beverage upgrades – like an extra shot of espresso or pump of syrup – free food and beverages or store merchandise.

In the retail clothing market, many mass-market brands are embracing a boutique approach to provide more personalised service to their customers. Subscription clothing services like StitchFix and Trunk Club promise to deliver customers curated selections chosen by a stylist based on their responses to a style quiz. Trunk Club and Indochino both offer free in-store tailoring, and Indochino will reimburse customers for alterations if they don't live near one of the company's showrooms. Similarly, Victoria's Secret helps demystify the bra shopping experience with one-on-one fittings that help women find the right size and style for their body type among the company's hundreds of offerings.

Brands explore experiential marketing

Providing a unique customer experience is integral to a store's ability to stay relevant and competitive. Facing increased pressure from both online retailers and other brick-and-mortar retail brands, many companies are turning to experiential marketing to create feature-rich shopping experiences. The goal of these efforts is to drive in-store traffic, inspire customers to talk about the company on social media, and extend the value of the company's brand beyond the products they sell. Using experiential marketing, companies are connecting with their customers in a host of new and interesting ways.

In 2018, Macy's acquired STORY, a stylish and narrative-driven retail concept that allows customers to discover a curated selection of products from small businesses. Macy's relaunched STORY as a store-within-a-store concept, and as of October 2019, there were STORY locations inside 36 Macy's stores in 15 states across the US. The store's concept and inventory are updated every four to eight weeks to reflect a new editorial theme and to drive repeat traffic. STORY also hosts regular events, such as yoga classes, book panels, kids' crafting sessions, make-up tutorials, mixology classes and trunk shows, to give customers more reasons to visit and interact with the brand.[48]

Like Macy's, Nike's forays into experiential marketing rely on frequent updates in inventory. Where they differ is that the sports brand's efforts are focused on one specific niche: their most ardent fans. Nike has opened the first location of Nike Live, a tech-driven experiential store designed for members of the brand's NikePlus loyalty programme. The store features a rotating selection of gear explicitly chosen for the local market, plus perks and information that are only available via the NikePlus app.[49]

IKEA and Casper are taking experiential retail to a new location: the bedroom. In response to consumers' love for their showrooms – as well as several unauthorised overnight stays by overly enthusiastic customers – the Swedish retailer has organised official sleepovers at various store locations across Australia[50] and Canada.[51] The sleepovers featured a special sleep zone, a lineup of activities designed to relax the store's guests and breakfast in bed. Similarly, at Casper's Dreamery in New York City, customers can book naps for a small fee and experience other offerings from the company's line of mattresses and sleep products.

While experiential stores are popping up all over the world, in the US, many brands head to New York City to test their concepts. New York boasts dozens of experiential offerings, including Whole Foods Market 365, which features PourIT Authority, a touch screen enabled self-serve bar; MINI's A/D/O creative workspace; Glossier's showroom, which offers an

"Retailers that are exploring experiential store designs must identify which elements of their concept stores resonate most and find ways to replicate them in cost-effective ways across other brand touch points."

immersive scent experience and interactive mirrors; Converse's customisation lab; the American Girl Store, where girls can make appointments for their dolls to receive beauty treatments and stay for lunch; Lululemon's Zen Pods and in-store meditation studio; Amazon Books; and Macy's b8ta in-store pop-up, where customers can interact with a variety of innovative tech products.

Cosmetics brand L'Occitane wants visitors to their flagship stores to feel like they've been transported. In August of 2018, L'Occitane debuted an immersive new concept store in Midtown Manhattan featuring a live video of the company's Instagram feed, a space where customers could take a virtual hot air balloon ride while receiving a hand massage using the brand's products, and a virtual reality experience where customers could experience a bike ride through Provence.

L'Occitane plans to change the store concept four times yearly to keep things fresh.[52] Paul Blackburn, who helped design and launch more than a dozen experiential stores for L'Occitane over a five-year period, noted that while concept stores are impactful and useful for garnering press and social media plaudits, the store formats aren't ones that retailers can profitably repeat at scale. For retailers that are exploring experiential store designs, the challenge is to identify which elements of their concept stores resonate most and to find ways to replicate them in cost-effective ways across other brand touch points.[53]

Retailers bridge the digital divide

There's a new gold standard in retail: the frictionless omni-channel shopping experience. Where multichannel retail involves marketing to customers and enabling purchases on a variety of platforms – such as on chat apps, Facebook or Instagram – omni-channel retail aims to unify all of these channels to create a singular, seamless customer experience.[54]

Disney has mastered the omni-channel approach. Customers that have booked trips with Disney can plan their entire journey using the My Disney Experience tool. Once they arrive, they can use the Disney mobile app, which helps them get around the park and even tells them the expected wait time of each ride. Disney also offers MagicBands, which are a room key, photo storage and Disney FastPass all in one waterproof wristband.[55]

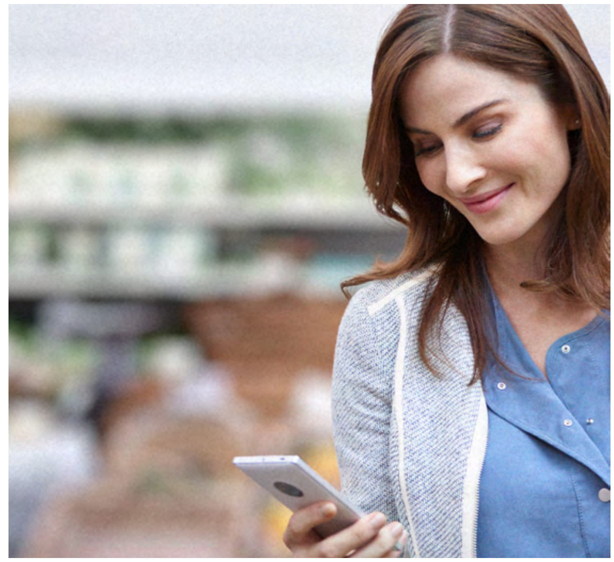
While seamless integration across all commerce platforms remains essential to the customer experience, customers now rely more heavily on digital interactions at every stage of the shopping process. By 2023, it's estimated that 58% of all retail sales will be digitally impacted.[56] Furthermore, customers expect retailers not only to be mobile-friendly but mobile-first. Customers consult their smartphones, computers and tablets for everything from finding inspiration, to browsing and researching, to purchasing a product. To capitalise on this usage, retailers must embrace digital platforms at every touchpoint to create a smoother shopping experience.

Percentage of retail sales that will be digitally impacted by 2023

Apple offers another example of using digital technology to enhance every aspect of the customer experience. Through a mobile device or online, customers can make 'Genius Bar' appointments prior to coming into the store. Once at the store, employees all have iPads with them, which they use to answer customer questions.

Equipping sales associates with mobile point of sale (mPOS) devices – tablets or smartphones that can process payments – can decrease the time required to complete transactions by allowing the transaction process to occur anywhere in the store, eliminating the need for a large number of traditional POS stations and freeing up valuable real estate.

Touchscreen mirrors are another new technology that some stores have implemented to improve the customer experience. Rebecca Minkoff's flagship location in New York City uses these mirrors to let customers browse merchandise, select merchandise they want to try on and request that it be added to a fitting room. Once a customer's fitting room is ready, the customer will receive a text message. If the customer decides to make a purchase, the entire checkout process can be completed on the mirror located in the fitting room.[57]



Though some companies in the United States have successfully created omni-channel experiences for their customers, as a whole, China is far ahead of the US and other nations. In the US, the average tech-driven purchasing process requires consumers to toggle between many different channels – scrolling through social media, researching the product using a search engine, visiting the brand site, searching on Amazon and paying with a credit card or mobile wallet. In China, this same process could all take place through WeChat – discovering a new product, reviewing the product through the company's WeChat page, connecting with the brand through videos, asking the community questions about the product and paying with WeChat Pay.[58]

A-commerce (anywhere) becomes the new reality

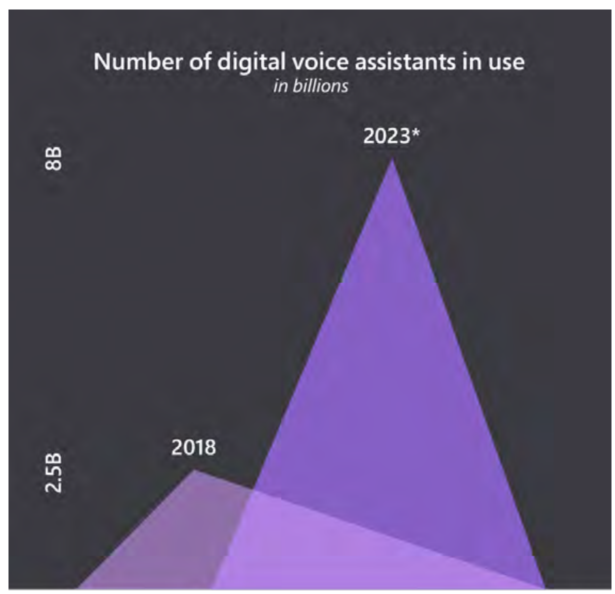
Thanks to technology, not only do today's consumers have access to a dizzying array of goods and services, they have the ability to dictate where, when and how they make their purchases. From social buying on Instagram to voice-commerce through Alexa, businesses are no longer forcing customers to their websites to make a purchase; instead, they are turning every platform into a purchase platform.

Voice-first conversational commerce makes some noise

Voice technology is on the rise as consumers become more comfortable with digital assistants, robots and AI. By 2023, it's estimated that there will be eight billion voice assistants. This is more than a threefold increase from the 2.5 billion voice assistants in use in 2018.[59] The majority of these voice assistants are expected to be on smartphones,[60] but other platforms are quickly growing. Voice assistants now exist on household devices like the Harman Kardon Invoke, Apple HomePod, Amazon Echo and Google Home, and by 2022, the smart speaker market is projected to reach revenues of USD $17 billion.[61]

While the shopping capabilities of voice-enabled assistants are still nascent, as they evolve, they will offer a powerful new platform through which businesses can reach customers directly. By 2023, voice-first commerce will account for USD $80 billion in sales worldwide – although the majority of those sales will be digital purchases and money transfers, not sales of physical goods.[62] Some companies are hoping to change that. Walmart has partnered with Google to offer customers the ability to add groceries to their Walmart Grocery cart using Google's voice assistant. This allows customers to request groceries on any device with Google Voice capabilities, including Android phones, iPhones and Google Assistant devices. Representatives for Walmart have also mentioned that they are looking into expanding this service to other voice assistants as well.[63]

With dramatic growth expected in voice technology, it's no surprise that Facebook, Amazon, Microsoft, Apple and Google are all working to enhance their voice offerings and increase their market share. These companies are investing in advancing their Natural Language Processing (NLP) capabilities, including new foreign languages and adding a host of other innovative capabilities. For example, in an effort to help address privacy and security needs, Microsoft has patented technology that allows users to whisper commands.[64] As users increasingly rely on their voice assistants, the trend towards voice interactions will continue alongside the development of other artificially intelligent systems – based on gestures, biometrics, and more – that will make these types of interaction easier and more natural for users of all abilities.



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Enterprise chatbots are here to help

In 1966, Joseph Weizenbaum used natural language processing to create ELIZA, an early robot that was capable of having basic conversations with people. Four decades later, this technology has developed to the point where chatbots assist users in everything from making everyday choices to helping people combat depression.[65]

Recent history has seen a rapid change in at least one human attitude towards AI bots: we've grown used to conversing with them. Millions of people around the world now tell virtual assistants like Siri, Alexa and Cortana to play their favourite song, create calendar events or tell an awful joke. We ask chatbots to contact customer service or translate English phrases. And sometimes we may not even be aware we're talking to a chatbot. To make things more interesting, Amazon and Microsoft just announced a partnership between Alexa and Cortana to help their customers' transition tasks across the two interfaces.

"Early adopters of chatbots and virtual assistants are reporting massive reductions in overhead costs."

Virtual assistants first captured the public's attention when Apple announced Siri in early 2011. Siri was the first in her class to both understand and execute user commands, including making calls, sending texts, scheduling events, checking the weather and finding information on the internet. Since 2011, the market has changed significantly; by the year 2023, there will be eight billion virtual assistants in use around the world.[66]

Despite overall recognition of the importance of this technology, corporate America has been slow to adopt these interfaces. Less than 50% of the top 100 organisations in automotive, consumer products, banking and insurance use voice assistants or chatbots, and 40% of those now using voice assistants have only started doing so in the last year.[67] That may soon change, as companies of all sizes look to take advantage of what the technology has to offer. Shopify Chat, rolled out this past August, allows vendors using Shopify to have conversations with their customers using customisable chatbots.[68]

Early adopters of chatbots and virtual assistants are reporting massive reductions in overhead costs. Insurance company Progressive estimates that chatbots will save the company USD $5 million each year by handling inquiries that would otherwise have to be answered by a human agent.[69] These same corporations now consider interactive AI to be a crucial part of their overall strategy. Sprint uses chatbots to cut customer service calls by nearly a third, according to their chief digital officer.[70]

Cost saving aside, there's another compelling reason for companies to deploy chatbots and virtual assistants: they fit with how younger generations of consumers prefer to communicate. Surveys have shown that the majority of millennials prefer texting over talking, emailing over making phone calls and messaging over face-to-face interactions.[71]

Before deploying chatbots or virtual assistants, companies should also be aware of concerns the public has about these ubiquitous new helpers. A growing number of consumers worry about the security of the data they disclose to chatbots and virtual assistants, both intentionally and unintentionally.[72] To retain the trust of their customers, businesses must be transparent about the data they collect and how it's used and secured.

"The goal of frictionless shopping is to minimise the amount of time between a customer's first encounter with a brand and when they complete a purchase."

Frictionless commerce

The goal of frictionless shopping is to reduce the amount of time between a customer's first encounter with a brand and when they complete a purchase. The idea is that by streamlining operations and minimising the 'friction' in the process, customers will be more satisfied, brand loyalty will improve and a brand's profits will increase. Today, companies are attempting to create frictionless shopping experiences by using data and technology to more naturally integrate the purchase process into the consumer's life. Several categories contribute to frictionless shopping, including ease of access, fulfilment, multichannel alignment, payment options, personalisation, positive friction and security. The relative value of each of these categories depends on the type of purchase the customer is making and whether they're making the purchase online or in-store. A customer making a frequent offline purchase, such as groceries, is far more likely to value ease of access and payment options since these are the two categories that will save the customer time. A customer making an infrequent online purchase, such as a new lawnmower, will likely spend time

Seven categories that contribute to frictionless shopping

1. Ease of access
2. Fulfilment
3. Multichannel alignment
4. Payment options
5. Personalisation
6. Positive friction
7. Security

> "A key tool in removing friction is increasing the amount of automation involved in the shopping experience."

researching the product and want to ensure it's the best option[73] and is thus more likely to value personalisation, fulfilment and multichannel alignment.

Automation is a useful way to remove friction from the shopping experience. Amazon has paved the way for full automation with its staff-less, checkout-less Amazon Go locations, which employ multiple technologies to detect which items customers have with them when they leave the store and charge their accounts accordingly.[74] Clear, a company that uses biometric information to confirm customers' identity, now has identification kiosks that streamline security lines at airports, verify ages for alcohol purchases at stadiums[75] and authorise Hertz car rentals.[76]

Though technology in the US is rapidly advancing, Asia is still far ahead of the West in frictionless retail. Technology that the US is just now exploring is already passé in China. Chinese tech companies, such as WeChat, have been successful at reducing friction in the shopping experience by creating omni-channel experiences. Hema frictionless grocery stores, which are part of Alibaba's 'New Retail' strategy, treat online and offline shopping as part of the same experience. The stores use a number of technologies to streamline the shopping experience, including self-checkout with facial recognition, flexible shopping and delivery options for customers within two miles of the store and even things like barcodes on live fish. Hema customers pay using Alipay, Alibaba's proprietary digital wallet, a move which has obvious benefits for the Chinese tech giant, as the more people who use Alipay, the more information Alibaba is able to gather its customers.[77]

The retail revolution that has occurred in China over the last ten years is due in large part to Chinese companies Tencent, JD.com, and Alibaba, which helped create the infrastructure necessary to support growth. It's also due to the country's large number of well-educated millennials. China has 415 million millennials[78]; of these, 57% have bachelor's degrees[79] and over 90% own smartphones.[80] Given the large number of educated young people with access to the internet and technology, it's not surprising that China's e-commerce sales made up 55% of global e-commerce sales in 2019[81] and that China's mobile payment transactions reached USD $13 trillion in 2017, while those in the US reached only USD $50 billion.[82]

@Microsoft

Deliver amazing experiences

Driven by new technologies and changing demographics, customer expectations for retailers are higher than ever before. At Microsoft, we're helping modern retailers meet changing customer demands with the tools and technology to better understand customer needs and create more personalised experiences for their customers.

Gain customer insights

As customer behaviours and demand evolve, retailers must leverage technology to better understand their customers. With tools such as Dynamics 365 and Power BI, Microsoft enables retailers to gain valuable insights into their customers' needs so they can provide better service and exceed expectations at every touchpoint.

Deliver personalisation

Modern customers want a relationship with their brands, and accordingly, they expect personalised interactions with these brands. From AI-powered product recommendations to fulfilment flexibility, Dynamics 365 gives retailers the intelligence and tools they need to deliver a more personalised experience for their customers.

Exceed expectations

As the baseline for retail experiences continues to climb, retailers must rely on technology to deliver the amazing experiences that customers expect, at scale. Microsoft is empowering retailers with the tools and technologies to create innovative, frictionless experiences that delight customers and exceed expectations every time.

03 / Retailers experiment with new formats

Retailers experiment with new formats

Over the last decade, we've seen some major shifts in retail and consumer shopping behaviours. In 2010, e-commerce made up just 4.5% of all US retail sales. In 2019, it composed 11% of retail sales.[83] Conversely, the rate of mall expansion has slowed, from an annual growth of 17% in the early 1980s, trickling to a mere 1% growth rate in 2017.[84] And yet total US retail sales continue to climb, up 27% since 2012.[85]

These statistics begin to tell the story of a significant shift in the way consumers shop: more online shopping, fewer trips to the mall. And yet both online and in-store spending is up.

Over the last decade, retail leaders have worked hard to address these shifts in consumer shopping behaviours – investing in new technologies and processes to help customers shop the way they want. Today, modern retail leaders are exploring new opportunities to engage with customers through emerging formats that better fit the new ways customers enjoy shopping.

Executive summary

As the retail landscape changes, retailers are experimenting with new formats – including pop-ups, direct-to-consumer offerings and zero-inventory stores – to try to engage with customers in new and meaningful ways.

Highlights

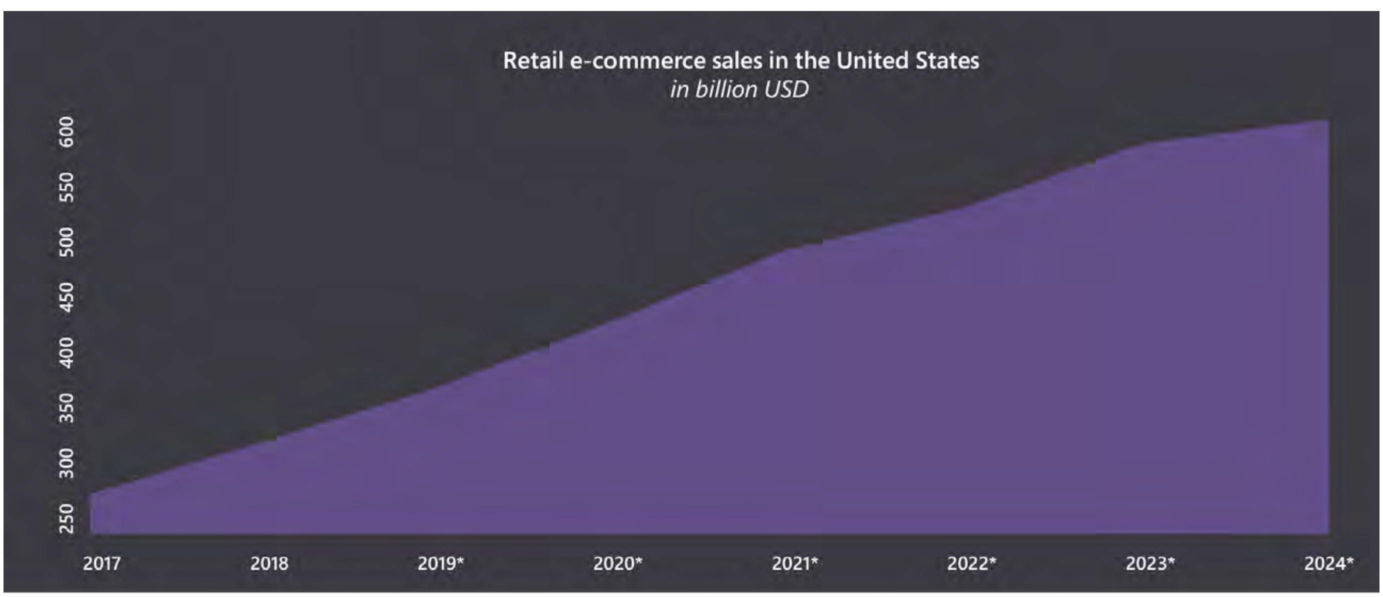
- Compared with online-exclusive shoppers, zero-inventory apparel store customers make fewer returns and buy more high-end products.
- A third of American consumers intend to do at least 40% of their shopping with direct-to-consumer (D2C) brands.

Online retailers open physical stores

In the US, online retail sales of physical goods exceeded USD $365 billion in 2019 and are projected to increase by over 64% by 2024.[86] Much of this growth has been driven by brands such as Amazon that have built their business around disrupting the traditional retail experience; however, in a new decade, this disruption is taking on a new form.

Where disruption once took the form of moving the shopping experience online, now disruption means opening brick-and-mortar stores that blend online and offline shopping.[87] Despite the strong growth of online retail sales, many digital-only brands are experimenting with opening physical stores to forge closer ties with their customers, reach new markets and to compete more effectively in the increasingly competitive retail sector.

Driving this trend, in part, is the rising cost and falling share of visibility in an increasingly crowded online advertising category, combined with an infusion of venture capital, which enables emerging online retailers to compete with more established brands.[88] Hundreds of retailers have joined this click-to-brick movement, including Indochino, Allbirds, Amazon, Warby Parker, Outdoor Voices, Rent the Runway and The Tie Bar.[89]



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Zero-inventory apparel store shoppers
compared to online-exclusive shoppers

60% higher average order

28% less time between purchases

20% more product categories

A popular option for many born-on-the-web brands is the zero-inventory store, an experience-centric offline store format designed to 'supercharge' customers by stimulating and maximising positive buying behaviours. Zero-inventory stores eliminate in-house products, reducing both store size requirements and the time required to maintain and organise the space. This allows staff to focus on developing deep and meaningful relationships with customers and provide engaging shopping experiences. Compared with online-exclusive shoppers, zero-inventory apparel store customers make fewer returns, buy more high-end products, spend up to 60% more on an average order, buy more frequently – with time between purchases reduced by 28% – and expand buying to 20% more product categories.[90]

E-tailers – such as Clearly Contacts, MM.LaFleur, ModCloth, Endy and Bonobos – have all established zero-inventory showrooms and pop-up stores where customers who are hesitant to buy items online can go to a physical location to try on, feel, examine and get personalised guidance on specific products.[91] Evidence suggests that customers who visit these zero-inventory showrooms spend an average of 20% more than those who buy online.[92]

Percentage of customers who browse or shop when returning an online purchase in-store

Mall owners, hoping to capitalise on the trend, are offering incentives to online retailers who are looking to extend their brand experience into physical locations. Such incentives include accepting a portion of sales in lieu of rent, offering shorter and more flexible leases – including providing spaces for pop-up and concept stores – offering to cover part of the expense of remodelling retail spaces and even investing in promising start-ups.

Brick-and-mortar stores simply give companies the opportunity to engage with customers in a meaningful way, regardless of where they are in the purchase lifecycle, which has shown positive returns for retailers. For example, when customers opt to return online purchases in-store, 67% of them go on to browse or shop while they're there. This stat not only shows that it pays to offer flexible fulfilment and returns, but it highlights the value of human interactions, showing a meaningful advantage for retailers who operate both online and in brick-and-mortar locations compared to those that only operate in one space or the other.[93]

Traditional retailers diversify their holdings

Retail stores – without the products

Modern retailers are having success with merchandise-free, experience-oriented mini-stores. At Nordstrom's experiential store, customers can work with personal shoppers and access a variety of services, such as product returns, alterations, shipping, manicures and even stroller cleaning and repair.[94] The specific services offered at each location are tailored to the local market, allowing Nordstrom to position itself not just as a retailer but as a convenient hub that's aligned with the needs and values of its customers. At LA's Nordstrom Local, customers spent an average of 2.5 times more and returned items eight days faster compared to the classical Nordstrom shopper.[95] [96]

> "Traditional retail giants are diversifying their offerings by partnering with e-tailers and launching zero-inventory stores that offer unique services and experiences."

Acquisition of digital start-ups, e-tailers and tech companies

Traditional retail giants are also diversifying their offerings by partnering with or acquiring e-tailers and by launching zero-inventory stores of their own that offer unique services and experiences. Walmart has dominated this acquisition activity, having purchased more than a dozen e-commerce and tech companies since 2010. Their goal is to compete more effectively against Amazon while increasing their revenue pipeline by leveraging the latest retail technology. The company has expanded its digital portfolio with the acquisition of Vudu (2010); Kosmix (2011); Jet.com (2016); Hayneedle (2016); shoes.com, ModCloth, Parcel and Bonobos (2017); Moosejaw (2018); and Bare Necessities, Eloquii, Aspectiva and Art.com (2019).[97] [98] [99] [100] Not all customers were completely enthusiastic about the change of ownership, but for the companies Walmart acquired, having access to Walmart's resources and experience was a game-changer, dramatically improving their ability to scale up operations, negotiate with suppliers and reach new customers.[101] The acquisition activity has enabled Walmart to massively increase year-over-year e-commerce sales, with a 47% increase in 2017 and a 32% increase from 2018 to 2019.[102]

Retail-as-a-Service

One of the most interesting offerings in the sea of new XaaS business models is Retail-as-a-Service. The concept is more straightforward than it sounds. Using the cloud, Retail-as-a-Service providers offer companies a turnkey platform that can help them in a variety of ways. It can enable brands to set up their own online stores, get their products showcased in brick-and-mortar retail stores and establish their own brick-and-mortar stores with proprietary retail software and infrastructure support.

Dynamics 365 Commerce, Shopify, Squarespace and, to a lesser degree, Amazon are examples of Retail-as-a-Service in the online space. As a general rule, online Retail-as-a-Service platforms enable companies to set up digital storefronts, offer flexible options for payment processing, give brands the ability to monitor inventory and adjust prices, and offer varying degrees of fulfilment support.

By contrast, b8ta is firmly rooted in the brick-and-mortar space. The San

Francisco-based company partners with the makers of innovative new consumer products to showcase said products in b8ta stores across the country. The company's experiential showrooms allow customers to interact with and test products before buying them. Each b8ta store features cameras, machine learning and data analytics to assess in-store browsing behaviours, funnelling those insights back to the brand owners.[103]

B8ta has also forged relationships with major retailers such as Macy's, Lowes and Toys 'R Us, who are exploring the potential of experiential retail to drive traffic, engagement and sales. In 2018, Macy's acquired a minority stake in b8ta. The department store is using b8ta's software system to expand its Market @ Macy's store-within-a-store concept to more locations and to ensure that the curated pop-ups always offer a fresh assortment of intriguing products and experiences.[104] Toys 'R Us, anxious to make a comeback after declaring bankruptcy in 2017, contracted b8ta to set up a series of experiential toy stores, the first of which opened in time for the 2019 holiday season.[105]

In 2018, b8ta took its brand in yet another direction when it began marketing Built

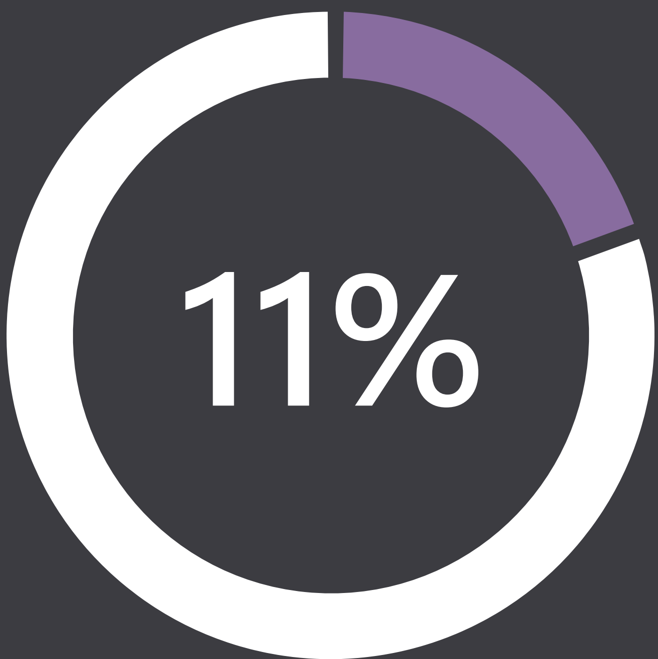
by b8ta, which allows brands to quickly set up their own brick-and-mortar retail operations using b8ta's retail software and services.[106]

Retail banks without physical locations

A new cohort of digital-only challenger banks is setting its sights on the retail banking industry. Thanks to lower overhead costs, these challenger banks are able to offer incentives like free checking, lower minimum deposits, low account fees and penalties, and higher interest rates on savings accounts and CDs. Combined with easy account set-up, user-friendly digital interfaces and convenient features, such as mobile cheque deposit, it's no wonder that these web- and app-driven banks are appealing to younger consumers.

Twenty-five of the most popular challenger banks account for more than 30 million accounts worldwide – and that's not including offerings from neo-banks in China and India.[107] Given public frustration with national banks over perceived missteps, lack of transparency, hefty account fees and data security breaches, it seems likely that these challenger banks will continue to steal market share from the industry's most prominent players. It is estimated that the top 10 retail banks in the US could lose up to 11% of their customers to smaller competitors, accounting for a whopping USD $344 billion in deposits and USD $16 billion in revenue.[108]

"The top 10 retail banks in the US could lose up to 11% of their customers to smaller competitors, accounting for a whopping USD $344 billion in deposits and USD $16 billion in revenue."



E-commerce subscription service market value

USD $10 billion

Brands go direct-to-consumer

To pursue larger profit margins and retain control of the customer experience, some manufacturers are bypassing traditional retail channels and going straight to the consumer. Retailers and manufacturers recognise that selling directly to consumers gives them greater access to consumer data, allowing them to have a more significant brand impact while increasing profit margins. A third of American consumers intend to do at least 40% of their shopping with direct-to-consumer (D2C) brands.[109]

One prominent example of this trend is the rise of D2C subscription services over the past decade. Fuel, a subsidiary of McKinsey, estimates that the market for e-commerce subscription services is now worth more than USD $10 billion.[110] One of the most successful D2C practitioners is Dollar Shave Club. The men's grooming company, a disruptor in its sector, was eventually purchased for USD $1 Billion by Unilever in 2016.

"A third of American consumers intend to do at least 40% of their shopping with direct-to-consumer brands."

Dollar Shave Club has inspired other subscription-based D2C services, such as Gillette On Demand and the Tide Wash Club. Recently, Procter & Gamble launched Tide Cleaners, an app-based, on-demand mobile laundry service. The Tide Cleaners app leverages consumer data and enables P&G to increase its brand reach and establish brand loyalty.

Even major brick and mortar retailers are joining in with their own subscription box services, including Walmart and Macy's (coincidentally, both call their subscription services 'Beauty Box'); Nordstrom, which purchased Trunk Club in 2014; and Amazon, which acts as a platform for other companies to sell their subscription services, including flowers, camping supplies, pet toys and workout gear. To succeed in this sector, subscription services must feature an offering that can surprise and satisfy customers on a recurring basis.

Subscription services aren't the only players that are faring well in the D2C market. Consider Casper, the internet upstart that's challenging the titans of the USD $17.3 billion mattress market. With USD $400 billion in sales in 2018, Casper has sold more than a million mattresses since its founding and inspired a string of D2C mattress copycats. Like many other brands that were born on the internet, Casper intends to supercharge its growth with the addition of hundreds of physical stores over the next several years.[111] The company hopes that this clicks-to-bricks strategy will allow it to broaden its reach and increase customer engagement by providing store visitors with a more immersive, tactile experience. Casper's Dreamery is the first of its planned mega-expansion into physical stores. Located in the heart of New York City, customers can book naps for a small fee and truly experience Casper's products at the Dreamery.

Other entrants in the D2C market have found success because of supply chain innovation and vertical integration. Brilliant Bicycle offers quality cycles for less than competing manufacturers because it ships each order directly from the factory to the customer. Harry’s, another contender in the men’s grooming space, has focused on offering quality shaving gear at a lower price – a feat that’s possible not only because Harry’s sells direct to consumer, but also because the company purchased its own razor factory.[112]

Another promising niche made possible by the D2C market is the sale of artisan foods. Companies like GrubMarket allow small-scale growers and producers to connect with consumers, restaurants and other businesses that want to feature local products, but who previously couldn’t because of the expense and difficulty involved in sourcing those goods.[113] This new model of commerce is made possible by technology; it’s also made possible by venture capital firms like Evolv, a USD $100 Million venture fund backed by Kraft Heinz, which invests in early-stage technology companies in the food industry, including GrubMarket.

For retailers and manufacturers alike, the biggest advantage of adopting a D2C model is the elimination of middlemen. When brands go through third-party retailers, they typically have little to no access to the end-users of their products. As a result, their branding and advertising activities are usually centred around generic consumer personas. In contrast, direct selling enables retailers to truly know and understand their customers, information they can leverage to create stronger relationships with their customers, market more effectively to their niche and tailor products more closely to customers’ needs.

Malls evolve

Malls, the iconic fixture of the American suburb, are changing. The first enclosed shopping mall appeared in 1956 in Edina, Minnesota, and by 1970, there were 30,000 shopping malls in the United States.[114] By 2017, that number had grown to 116,000. But as e-commerce changed how consumers expected to shop, their relationship with malls changed, too. Softer sales and slower foot traffic have forced the closure of anchor stores – such as Macy's, Sears and JCPenney – at malls across the country, and these closures have had a ripple effect on smaller retailers. Recent estimates predict that US store closures could reach 12,000 by the end of 2019.[115]

In the wake of e-commerce's rapid expansion, changing suburbs and overdevelopment, malls have had to be creative about how they fill vacant space. Mall owners are embracing a new wave of tenants that includes entrepreneurs who might lack the capital to secure a long-

term lease and digital brands who want to establish a physical footprint – part of the growing ‘clicks-to-bricks’ movement.

Opened in March 2019, New York City’s Shops at Hudson Yards Mall includes ‘The Floor of Discovery’, an area filled with former online-only retailers.[116] Fourpost, a store devoted exclusively to local entrepreneurs, opened at the Mall of America in late November 2018.[117] Fourpost accommodates up to 30 retailers at a time and offers turnkey operation for vendors, complete with Wi-Fi, fixtures and other components of a typical retail store. The space began with local brands and now offers a rotating mix of national brands.

Also in November 2018, Macerich Co. launched BrandBox, a leasing service that helps digital brands transition into retail spaces in several of the mall owner’s properties.[118] BrandBox is available in Full Shop, Showroom and Guideshop formats. Stores are available in selected themes, and once a retailer selects their preferred option, BrandBox coordinates with architects, designers and other professionals to create a retail space built to the brand’s specifications. Macerich features a third leasing option, Pop-Up Exp. These ‘micro-retail’ stores measure 100 to 300 square feet and are equipped with digital displays and everything a brand needs to open a store within a few weeks.

Established e-commerce brands are seeing the potential of mall partnerships. Falling rents, sweetheart deals with flexible leases and the opportunity to increase per visit spending all contribute to making physical space attractive to formerly digital-only brands. Physical spaces make returns easier for consumers and more profitable for brands. Two-thirds of shoppers who return orders in-store either browse or make purchases while they’re there,[119] and 71% of shoppers spend more per visit in-store than they spend online.[120]

Mall owners are also thinking beyond traditional retail to breathe new life into vacant or stale properties. Simon is redeveloping Seattle’s Northgate Mall – which was one of the country’s oldest enclosed malls – removing 60% of its retail space in the process. They are replacing it with an open format, mixed-use development that features office space, 953 residential units and an NHL ice rink

centre.[121] Across the country, malls and their retail spaces are being transformed into walk-in clinics, churches, gyms, art galleries and community spaces.[122] As retail evolves, mall owners are striving to create welcoming spaces that centre around the community, with farmer's markets, fashion shows and other rotating events. Other owners focus on making properties into 'destinations' with family-friendly amenities. Lakesquare Mall in Leesburg, Virginia, features an ice skating rink, a kid's corner, a laser tag area and an escape room.[123] Columbus, Ohio's Tuttle Crossing, filled its Macy's vacancy with a 22,500-square-foot two-story indoor amusement park.[124] Other practical uses for malls include public libraries, government offices and even storage spaces.

Lastly, Simon Property Group is exploring yet another avenue for growth, as the nation's largest mall owner has expanded into e-commerce. In cooperation with Rue Gilt, Simon launched an e-commerce platform, ShopPremiumOutlets.com, designed to make outlet shopping more convenient for consumers who don't live near an outlet mall yet want an option to shop several outlet stores at once.[125]

@Microsoft

Redefine shopping
Technology is redefining the shopping experience by making it possible for any platform – from social media to smart speakers – to be platforms for making purchases. At Microsoft, we're empowering retailers with the tools they need to embrace these new channels and allow their customers to shop on their terms, from wherever they are.

Shop seamlessly
Today's customers expect a seamless shopping experience across channels and the flexibility to buy in-store, pick-up in other locations or to receive home delivery. Dynamics 365 enables retailers to provide a consistent shopping experience across nearly every channel and offers flexible fulfilment options, increasing customer satisfaction and brand loyalty.

Make tech accessible
Successful retail leaders are seeking diverse perspectives and new ideas to challenge their most ingrained assumptions. With intuitive, familiar tools that are easy to learn and cloud-based applications that enable individuals to access information from anywhere, Microsoft is making technology more accessible to more people, opening up untapped markets for talent and innovation.

Evolve your business
To meet the needs of today's customers, modern retailers must evolve beyond their existing business and operating models. From analytics solutions to collaboration tools to development platforms, Microsoft provides the technology, resources and support retail leaders need to redefine their businesses.

04 /
Operations drive retail excellence

Operations drive retail excellence

Demands on retailers are greater today than ever before. Customers want more options at lower costs, they're requesting greater transparency into inventory and they expect shipping to be fast and free. And even the definitions of terms – such as transparency and fast – are shifting. Where two-day shipping was once the gold standard, today, many retailers not only offer same-day delivery, but two-hour delivery. It is truly becoming the age of near-instant fulfilment.

To meet these rising customer expectations, retail leaders must optimise their operations for speed and costs. Across the board, technology is helping retailers become smarter, leaner and more responsive to customers' needs. From innovative new uses for IoT sensors to robots that help employees work smarter, today's retailers are charging forward into a bright new era of commerce.

Executive summary

As retailers work harder to meet customer demands, they are turning to technologies – such as AI, IoT and robotics – to help improve operations and streamline delivery.

Highlights

- 80% of executives in both the retail and consumer products industries expect their companies to use AI-powered intelligent automation by 2021.
- 45% of the public agrees or strongly agrees that the positive aspects of AI outweigh the negatives.
- Nearly 60% of retailers plan to increase spending on handheld mobile devices by ~10% over the next three years.

Using AI to analyse and optimise retail stores

Brick-and-mortar retailers are excited about AI and see great value in the opportunities it unlocks. 40% of executives say they already use a form of intelligent automation,[126] and the National Retail Federation reported that 80% of executives in both the retail and consumer products industries expect their companies to use AI-powered intelligent automation by 2021.

Retailers are leveraging AI to analyse purchase patterns at individual store locations to forecast optimal inventory volumes for each location. Costco uses machine learning to forecast how many fresh baked goods workers should prepare daily by leveraging weather, holiday and existing sales data for their forecast.[127] Retailers see AI's potential for merchandising, with 59% of retailers planning on leveraging AI to improve sell-through of inventory.[128]

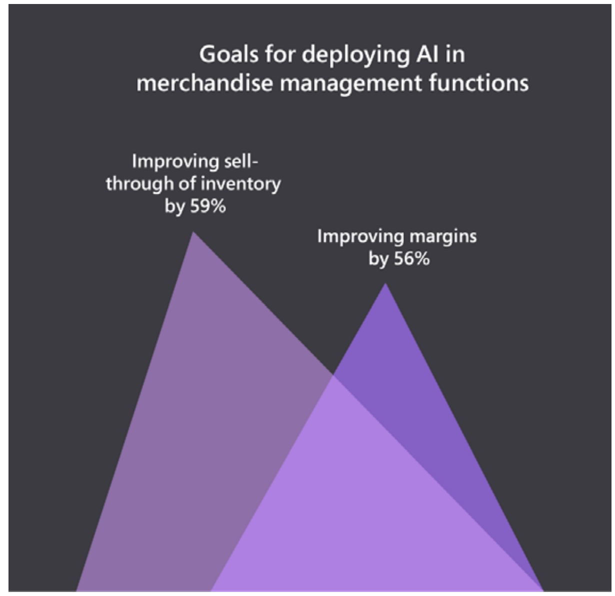
While many retailers leverage artificial intelligence to optimise forecasting and resource allocation, others are bringing it in-store to refine the format and content of their spaces. From helpful autonomous robots that roam the aisles to in-store mapping capabilities, AI is transforming the physical brick-and-mortar experience.

In the US, Amazon has been a leader in implementing AI to improve in-store shopping experiences. The arrival of the cashier-less Amazon Go in 2018 set off a chain reaction of similar AI-powered stores.

Percentage of executives (retail and consumer products) who expect their companies to use AI-powered intelligent automation by 2021

Walmart and Sam's Club were among the first to roll out pilot programmes, and others soon followed as the benefits of AI in a retail setting became more apparent. In April 2019, Walmart redesigned its Levittown, NY location – one of the company's busiest – into a real-world Intelligent Retail Lab (IRL) that tests AI in-store. IRL features AI-powered sensors, cameras and processors for real-time monitoring inside a 50,000-square-foot retail space. When a product needs restocking, or a banana is discoloured, the AI-enhanced camera triggers an alert to staff members. Walmart also uses AI technology to analyse the freshness of its perishable goods.[129]

Supermarket chain Giant Eagle uses a similar system with Tally, an in-store robot that scans and analyses merchandise availability and generates a report every 30 minutes. The report of 35,000 products highlights misplaced merchandise, validates prices and identifies low or out-of-stock products.[130]



Midwest supermarket chain Heinen's partners with retail artificial intelligence company CB4 to identify and analyse each location's highest-selling SKU numbers. When sales on a particular SKU drop, the AI flags potential display issues, such as covered products, incorrect pricing and other sales obstacles.[131]

Artificial intelligence and machine learning are also being used to optimise store layouts. Using computer vision and AI tools, retailers can analyse customer walking paths, then determine what areas of the store are the most profitable. While store remodels are costly, the potential ROI of this type of implementation is high. In 2017, Target underwent an ambitious

"45% of the public agrees or strongly agrees that the positive aspects of AI outweigh the negatives."

USD $7-billion plan to remodel hundreds of its stores in an effort to boost profits. The first 70 stores saw an average of 2% to 4% increase in sales.[132]

As with any change, AI implementations don't come without their challenges. Cost, ability to scale and privacy concerns are all considerations, but beyond these challenges, there is great opportunity. Retail and consumer products executives project that intelligent automation capabilities could help increase annual revenue growth by up to 10%, according to the National Retail Federation.[133]

With AI, customers don't just want to see another new and shiny gadget, they want something that offers genuine value, and many consumers are ready to embrace in-store innovation. Three out of five consumers say retail technologies have improved their shopping experience. Consumers are actively prepared to engage with AI, with 59% of respondents reporting they use AI technologies on at least a monthly basis.[134] Despite some targeted concerns, consumers maintain a positive outlook on AI; 45% of the public agrees or strongly agrees that the positive aspects of AI outweigh the negatives.[135]

Robotics and automation streamline operations

Robots are proving to be useful across the retail value chain, helping to automate processes, streamline operations and create a safer work environment for employees.

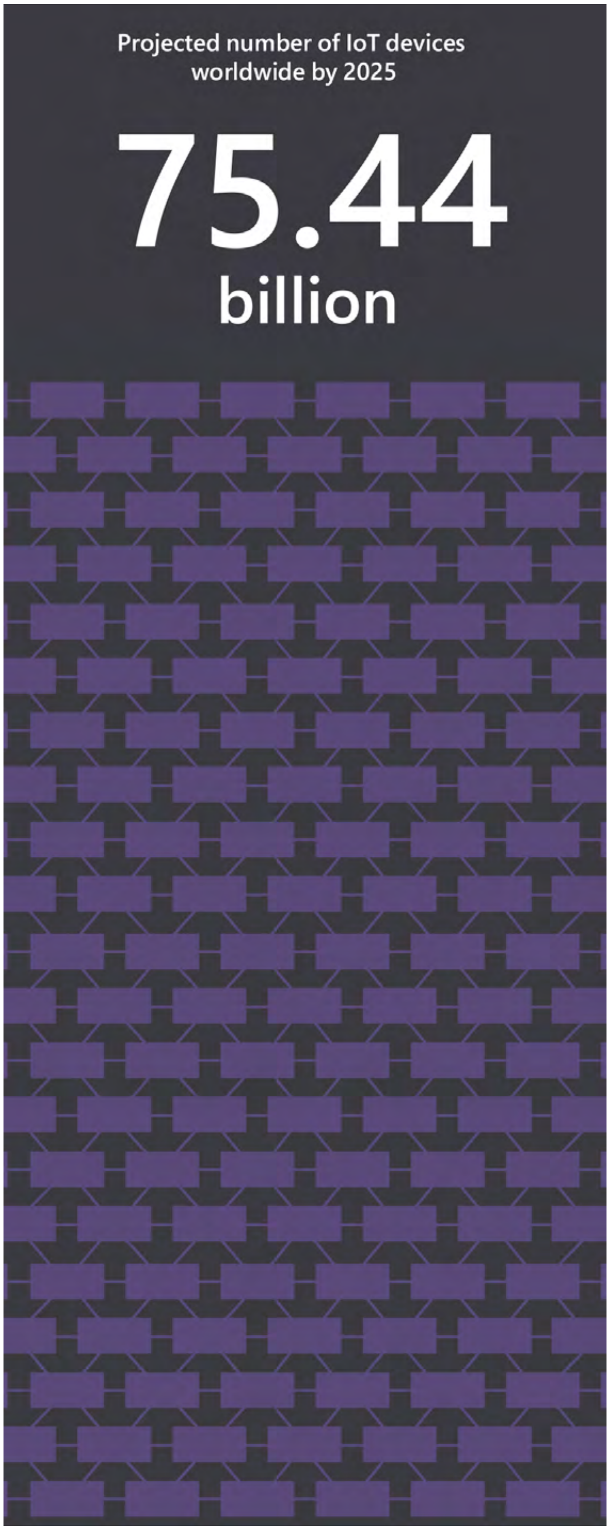
In factories, cobots work alongside human workers, helping to assemble and inspect products, while in warehouses, autonomous robots help retrieve products and prepare orders for shipping. By performing the heavy lifting and repetitive tasks, these robots are making the work environment safer for their human partners.

Autonomous robots can be used to roam the aisles of stores, analysing product availability and notifying their human counterparts when stock is low. Some robots, like Lowe's LoweBot, are also able to help shoppers locate items and answer basic customer service questions. Others roam the aisles looking for spills and other potential hazards. Autonomous floor scrubbers keep stores sparkling clean, allowing front-line employees to focus on higher-value tasks.

Automating delivery

Autonomous and semi-autonomous trucks – from companies like Tesla, Mercedes and Waymo – aim to make the shipping process more efficient, while making long-haul trips safer for drivers. 65% of consumable goods in the US are trucked to market; with full autonomy, operating costs for the trucking industry would decline by about 45%, between USD $85 billion and USD $125 billion.[136] While adoption will certainly come in stages, current projections predict that one-third of all long haul trucks will be semi-autonomous by 2025.[137]

Beyond trucks, other autonomous vehicles, such as drones, will help companies make last-mile delivery faster and more efficient. Companies, like Seattle-based Starship Technologies, are already starting to pilot autonomous robots to streamline fulfilment of online orders and in-store pickup. While an exciting step, these small, four-wheeled vehicles still face much testing before mass deployment. As for the swarms of autonomous flying drones delivering packages, these may still be a bit farther off.



The Internet of Things opens new doors

The Internet of Things (IoT) refers to any device that connects to the internet and can network with other devices, as well as the global transfer of data without human intervention. By 2025, more than 75.44 billion devices will be connected to the IoT worldwide.[138] Enabling this new paradigm is the arrival of 5G, which offers faster, more powerful connections, lower latency rates and the ability to transfer larger volumes of data. The data generated by this new generation of smart sensors is dramatically altering how retailers develop and refine their products, how they operate their stores and how they relate to their customers. Beacons, RFID tags, temperature sensors and other forms of IoT technology already have their place in retail stores, yet as the world becomes more connected, there's more ground to cover, especially in terms of customer engagement. In a survey of how IoT can address various operational challenges, 89% of retailers said they are most excited over creating closer engagement with consumers using internet-connected devices.[139]

"Five quintillion bytes of data are produced each day by IoT devices."

Consumers have a wide range of internet-connected products to use and assimilate into their daily lives. These devices let consumers track important health information, automate processes, simplify tasks, plus connect to the broader ecosystem of the internet. From wearable technology such as FitBit and Apple Watch to connected speakers, appliances, cars and other goods, this connectivity spans a variety of product categories. All of these devices generate valuable data about consumer use and preferences – a lot of data. Statistics show that five quintillion bytes of data are produced each day by IoT devices.[140] Retailers now have the ability to translate this information into personalised offers, predictive analytics and operational changes that improve customer service.

One example of big data in action comes from Disney. Walt Disney World was an early adopter of IoT's power and introduced its MagicBand, an RFID-equipped band that integrates throughout the Disney theme parks, in 2013.[141] Visitors use their MagicBands to enter admission gates, unlock their hotel room door, check-in for the FastPass expedited entry and charge purchases to their hotel room. Data mined from this wearable technology uncovers insights into consumer spending habits, including where they spend time at the park, what they order, what characters they visit and how much time they spend queuing. Disney then uses the data to improve guest experiences and tailor their offerings to enhance engagement. After studying visitor data from MagicBands, Disney was able to lower turnstile wait times by 30% on average while boosting profits by 18% in 2018.[142]

Data generated from IoT devices offer opportunities for marketing and research, and they can provide predictive analyses based on current consumer use. In February 2019, Walgreens tested Cooler Screens, connected freezer and refrigerator doors, in six of its stores.[143] Equipped with motion sensors, eye tracking and cameras, these doors display information and observe consumers, analysing a shopper's gender, age range, preferred products and their emotional response to a product. This contextual information can be used for targeted offers, such as offering a college-age student a Red Bull. Kroger takes a similar approach with EDGE, its cloud-based shelf displays. These smart shelves include nutritional information, advertisements and vouchers. If a shopper uses the Kroger app, the shelves' sensors can target them with an offer based on previous purchases.[144] While these new technologies raise privacy concerns, 61% of American shoppers say they would share personal data in exchange for personalised marketing experiences.[145]

Reaching consumers using IoT isn't just limited to in-store activities; it's applicable anywhere the consumer uses their connected devices. Parents who track their child's health and growth on connected baby scales may receive a targeted ad for an age-appropriate toy once their child has reached a particular milestone. Vehicle manufacturers can observe driving habits such as average speed, driving locations, hard braking and other road safety factors in connected cars and then use these data to improve car performance for future vehicles. The world's biggest carmakers are currently working with auto insurance companies to offer discounts based on the cars' data, corroborating data from weather-service providers with data from windshield wipers and even partnering with mapping firms for better road information.[146]

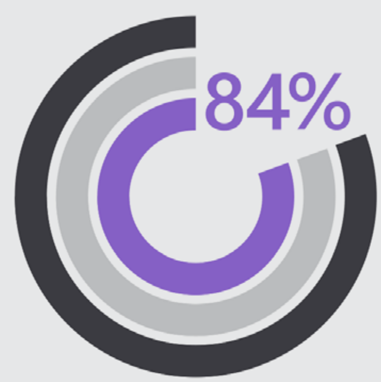
There's still a lot to explore in IoT, and retailers are ready. The IoT in retail market size is predicted to reach 94.44 billion by 2025.[147]

Technology empowers frontline sales associates

With the power to research products using their smartphones, today's consumers are more knowledgeable than they were in the past, and 51% of shoppers believe they are better connected than store associates.[148] To bridge the gap and empower associates, retailers are investing in technology to improve employees' access to product and inventory information and to allow them to complete transactions via mPOS devices. Both retail decision-makers (84%) and store associates (73%) believe customers would have a better shopping experience if retailers equipped employees with technology. Consumers want store associates empowered with technology and believe it offers a faster shopping experience; 85% of shoppers surveyed said they liked the idea, a figure up from 56% the previous year.[149]

Apple was one of the first retailers to equip associates with mobile technology to assist customers. Now the practice is more widespread amongst retailers spanning a variety of product categories. Nearly 60% of retailers plan to increase spending on handheld mobile computers and rugged tablets by about 10% over the next three years.[150] Walgreens upgraded its dated computers with new handheld and portable mobile devices to offer better customer engagement.[151] With a focus on empowering its beauty associates, the retailer moved product inventory information out of back-office computers and into employees' hands. The upgrade means that managers and associates no longer need to leave customers to check product information.

Faced with high employee turnover, Best Buy spent several years interviewing store associates on how to improve customer service and usability problems.[152] As a result,



Percentage of retail decision-makers who believe customers would have a better shopping experience if retailers equipped employees with technology

> "51% of shoppers believe they are better connected than store associates."

the consumer electronics retailer has added new technology and improved systems, cutting store POS transaction times in half. In October 2018, Walmart introduced a Bring Your Own Device (BOYD) initiative for associates to help employees work smarter.[153] While employees can still use a store-issued handheld device to assist customers, they also have the option to download Walmart apps into their own phone for price checking, finding items in the store and other tasks. Employees of Walmart and other retailers with BYOD policies gain 81 minutes of productivity a week.[154]

Chico's has a different approach in empowering store associates, with Salesfloor technology for personalised customer service both in-store and online.[155] Frontline employees of the company's brands can curate looks for online customers via Live Shopping Apps. The employees then receive compensation for their in-store sales and those made within their territory, both online and in-store. Designed for fashion retailers, Modist enables associates to increase customer engagement in-store. The iPad app helps frontline employees improve client relationships, drive sales and manage inventory as they assist customers.

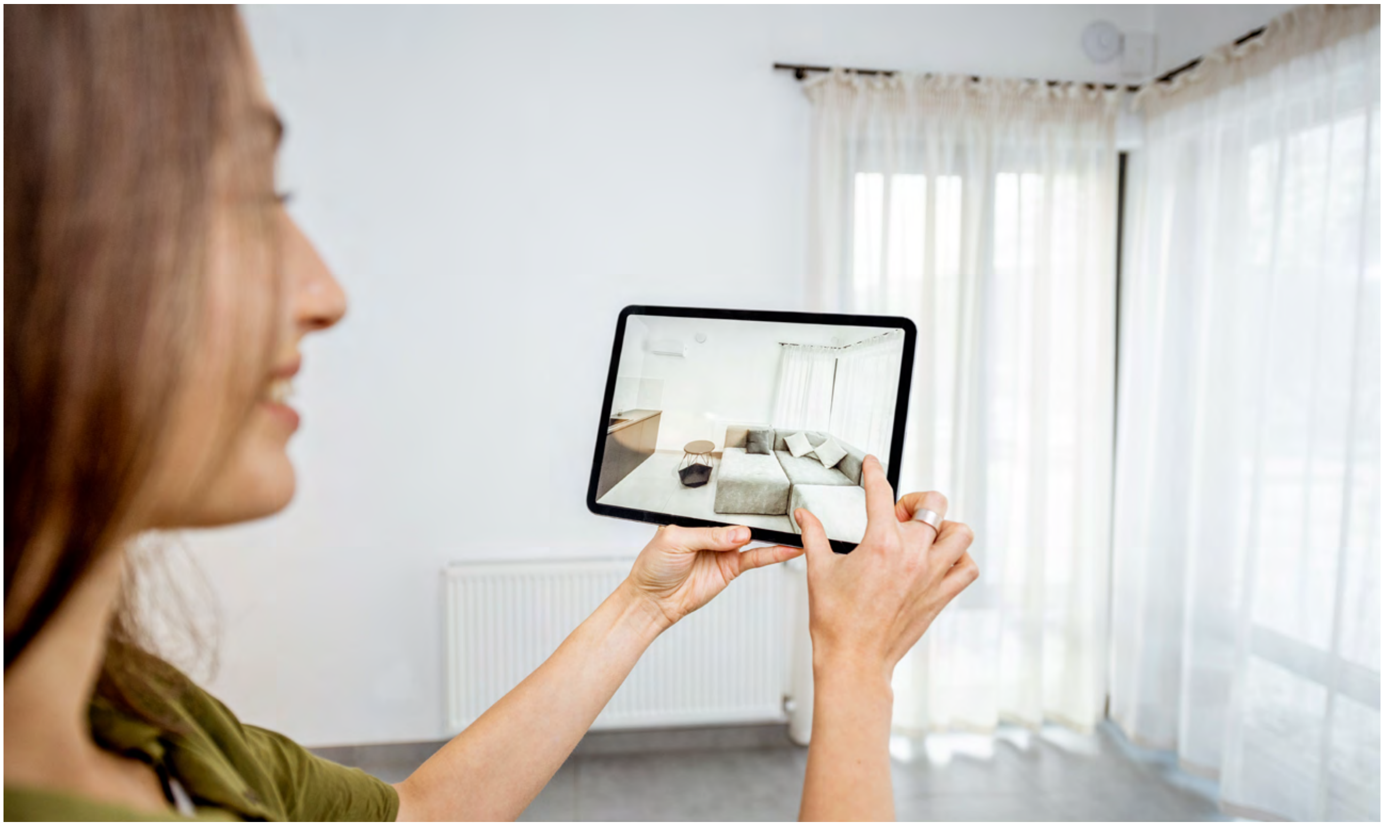
Extended reality (XR) makes shopping immersive

Initially dismissed as just a gimmick, AR and VR are proving to vastly increase retail productivity and efficiency. More and more businesses are discovering the real-world benefits of incorporating these technologies into their products and customer experiences. Both are part of the growing field of extended reality (XR), an umbrella term for AR, VR and other technologies that blend the physical world with the virtual. The XR industry is expected to reach USD $209 billion by 2022 and offers new frontiers for retailers.[156]

"The XR industry is expected to reach USD $209 billion by 2022."

AR utilises technology that superimposes computer-generated graphics onto images from the real world. AR is typically easier to adopt than VR because it doesn't require additional hardware. In-store AR technology includes smart mirrors that let customers 'try on' items before purchasing them. AR mirrors are just one of the technologies on display at McKinsey & Company's new retail lab, the Modern Retail Collective, which opened in September 2019 as an ongoing way to test what types of retail technology customers find most appealing.[157] At Kendra Scott Jewelry's Colour Bar, customers can pick up an RFID-equipped stone and customise a bracelet, then view the configuration on a screen, swapping out stones as desired.[158]

Nike's AR program, Nike Fit, scans the shapes of shoppers' feet to find them the best fitting pair of shoes.[159] Nike Fit takes into consideration the potential footwear material, style and type of shoe to identify which shoe size will work best for the wearer. Nike Fit is available on smartphones and in certain Nike stores as an AR mat. Toyota offers an AR program where customers can try out one of ten vehicles before they even step inside the car.[160] At several of their locations, Walmart, Walgreens and Meijer launched a test of an AR-based experience



in partnership with Garnier's Virtual Shade Selector technology with MODIFACE.[161] The tool lets shoppers virtually try on new hair colours by scanning a barcode and promises a match in 60 seconds. Home furnishing companies such as IKEA and Lowe's have launched AR apps that allow customers to use unique room specifications to 'see' how certain furniture or appliances would look in their spaces, which can reduce return rates. IKEA's Kitchen Planner lets users 'place' cabinets and other items in their rooms, customise materials and colours and generate a complete shopping list. Sephora and Vogue use facial-mapping technology in their apps to enable customers to 'try on' certain products.

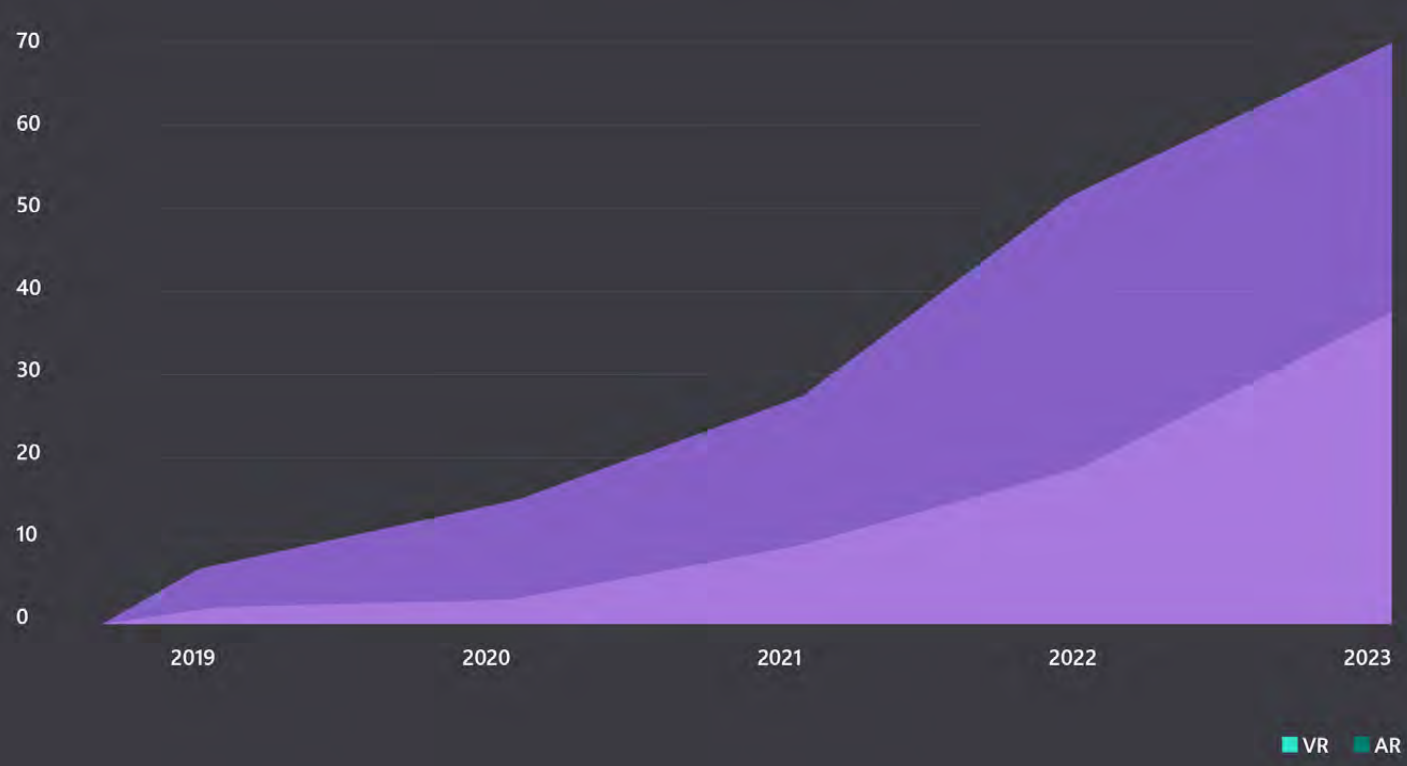
Retailers will adopt AR technology as well, especially as Apple, Microsoft and other companies create AR headsets. By incorporating AR technologies into online and mobile presences, retailers can satisfy customers' desire to visualise their options pre-purchase.

In 2016, a number of virtual reality devices hit the market, including HTC's Vive, Samsung's Gear VR, Facebook's Oculus Rift, Sony's PSVR and of course, Microsoft's HoloLens, the first self-contained, holographic computer. New generations of this technology soon arrived on the market, expanding AR's capabilities and reach. XR is expected to generate 160 billion USD in revenue by 2023 in content, hardware, distribution, software platforms and delivery services. Significant growth is projected for both AR and VR headset sales, with both technologies expected to sell over 30 million units per year by 2023.[162] To date, companies have seen value in XR as either a training or a visualisation tool.

After seeing success with its customer-facing Innovation Labs' Holoroom, Lowes developed a new module, Holoroom How To: Red Vest, to instruct employees on operating in-store equipment.[163] More than 90% of employees report the system helps them better assist customers. Walmart rolled out a VR training program in late

Forecasted unit shipments of virtual (VR) and augmented reality (AR) headsets

cumulative; shipment in millions



> "By 2022, over 120,000 stores will be using AR smart glasses."

2018, sending 17,000 pairs of VR goggles to nearly 5,000 stores for use in training more than one million employees.[164] VR modules train employees for specific tasks and prepare them for difficult store events, such as Black Friday. The goggles reduce the cost and time investment associated with deploying in-person trainers to multiple stores. Walmart uses VR to evaluate how employees applying for management positions react to scenarios such as irate customers or messy retail displays.[165] Nearly 33% of small and midsize US businesses will use VR employee training by 2021, getting employees up to full productivity 50% faster than after undergoing traditional training.[166]

VR technology is also being used to create unique and engaging shopping experiences. Obsess is a VR start-up that is partnering with brands like Vera Wang, Farfetch and Levi's to develop immersive VR shopping.[167] Customers can 'visit' and shop a series of virtual, experiential retail stores with a smartphone or VR headset. The technology lets retailers' pop-up shops appear in VR to shoppers all over the world.

By offering interactive visualisation of products, AR offers e-commerce retailers a way to reduce their return rate and guard against profit loss. Customers with buyer's remorse can impact a retailer's bottom line, especially if the retailer offers free shipping or free returns. 17% of customers surveyed said they return merchandise because the item doesn't match the product description.[168] AR-enhanced product pages would allow customers to more easily visualise the product, how they could use it and see the product's features. When combined with customer reviews on the product page, AR could help customers make better-informed purchase decisions.

Despite the novelty of a virtual experience, the hardware requirement does present a barrier for customers. As such, augmented reality may have greater immediate utility in the retail space. ABI Research forecasts that by 2022, over 120,000 stores will be using AR smart glasses.[169] However, as both AR and VR technologies advance, retailers will discover new ways to enhance the customer experience.

@Microsoft

Work faster and smarter

From AI to AR, retailers are leveraging new technology to meet evolving market needs. To meet these changing demands, retail leaders must leverage innovative, intelligent tools to optimise performance while fostering growth. At Microsoft, we're making retail faster and smarter with unified data that powers intelligent, automated systems.

Get predictive insights

To succeed in today's competitive business environment, retail leaders require more accurate forecasts and foresight into emerging market trends. With artificial intelligence and machine learning embedded, Dynamics 365 provides retail leaders with the data and knowledge to better predict trends, optimise processes and grow their businesses.

Streamline operations

To meet rising customer demands, modern retailers must streamline operations to provide greater transparency, improve delivery times and build better experiences for their customers. From productivity tools, like Office 365, to intelligent automation capabilities in Dynamics 365, Microsoft is helping retailers operate more effectively and efficiently.

Empower employees

Employees are a business's most valuable asset; today's retailers must empower their employees to do more. From tools such as Office 365 that help teams get more done to role-based workspaces in Dynamics 365 that deliver the right information, Microsoft is helping retailers empower their employees to deliver better experiences for their customers.

05 /
Supply chain becomes a competitive differentiator

Executive summary

As customer expectations around fulfilment and delivery have shifted, retailers are developing more agile warehouses and leveraging intelligent order routing to help stay ahead of the competition.

Highlights

- Consumer spending on e-commerce purchases is expected to reach USD $1.8 trillion by 2023.
- The average warehouse in the United States is 34 years old.
- 83% of executives see compelling reasons to use blockchain.

Supply chain becomes a competitive differentiator

From free shipping to two-day delivery, Amazon has reshaped customer expectations for fulfilment and delivery. While Amazon held a competitive advantage for years, retailers have made vast improvements to inventory management, warehousing and distribution to help increase transparency and ensure faster, more efficient delivery.

Supply chain management is no longer just a back-office concern, something to be streamlined in the pursuit of greater profit margins. In an Amazon Now kind of world, intelligent supply chains are critical to delivering the fast, flexible and reliable service that customers expect – and retailers are quickly realising they need to keep pace.

Advances in AI, sensor technology, data analytics and blockchain are making intelligent supply chains possible, and

"Supply chain management is no longer just a back-office concern."

they're revolutionising how retailers approach planning, inventory management, storage and fulfilment. AI and machine learning are powering intelligent, autonomous systems that can streamline processes at or in between any stage of the supply chain. Ubiquitous connectivity and computing are improving communication across the supply chain, and blockchain will provide greater transparency and trust.

Intelligent supply chains enable seamless synchronisation between supply, demand and fulfilment. Having greater visibility across supply chain and retail operations facilitates collaboration and helps companies improve forecasting, optimise inventory levels and make operations more efficient, saving time and money.

Intelligent planning capabilities improve product availability

Emerging technologies offer the ability to capture so much data from each phase of the value chain that the question on retail executives' minds is no longer "What can we track?" but rather "How do we make the best use of this data?". Today's retail leaders face dual challenges. First, they must contend with a supply chain that is evolving from a linear model to a dynamic network model powered by interconnected processes and systems. Second, they must figure out what to do with the flood of real-time and near-time data that's now available to them thanks to advances in IoT and AI. Fortunately for planning professionals, the same technologies that are rapidly transforming retail supply chains can be used to improve planning strategies.

AI, ML, IoT and sensor technology are among the most prominent buzzwords in the fast-evolving world of value chain management. These technologies, along with other technologies such as cloud computing and 5G, are collectively known as digital supply networks (DSNs), and they're revolutionising how retailers approach planning and fulfilment. The IoT serves as the linchpin of these DSNs and is proving fundamental to their overall success in the value chain. DSNs enable companies to optimise staffing for their retail workforce, warehouses and carriers based on projected demand; monitor real-time inventory levels and route products between locations as needed; offer flexible fulfilment and returns; and provide responsive customer care.[170] DSNs can also provide retailers with greater visibility into upstream operations, allowing them to project how fluctuations in the availability of supplier feedstocks and inventory could impact production schedules, product availability and variable costs. Amazon uses DSNs to monitor real-time customer shopping patterns, competitor's prices, profit margins, inventory and numerous other data points to set and adjust its product prices – pricing that can change every 10 minutes, on average – with an algorithm-boosted strategy that has helped lift the company's profits by 25%.[171]

With a business value-add-on expected to exceed USD $3 trillion by 2030, according to Gartner, blockchain is another emerging technology likely to prove valuable to retail supply chain planners. Blockchain's unique ledger structure boosts efficiencies in the supply chain through improved order accuracy, tracking and tracing and auditing.

The rapid pace of technological advancements combined with the right algorithms could lead to semi-automated supply chain planning – and one day, could possibly yield fully automated planning.[172]

> "Blockchain is expected to add USD $3 trillion of business value by 2030."

Inventory management becomes more intelligent and transparent

The business of retail is becoming more complex by the day, and for many retailers, inventory management can pose a serious challenge. Retailers must manage orders coming in from different channels, maintain a high enough stock level to avoid sellouts (but lean enough to prevent markdowns due to overstocking) and handle shipments to and from multiple distribution centres.

To handle these challenges, companies are turning to new technologies to make their inventory management more intelligent and transparent.

Much of this new technology allows retailers to make decisions based on real-time, streaming data. As the Internet of Things (IoT) continues to grow, anything that can be connected will be connected. The IoT allows retailers to tap into reliable, real-time data, which can increase the speed and accuracy of decisions and help minimise waste.

AI is also revolutionising inventory management. By improving sales forecasting, AI helps retailers anticipate stock demands at each store to avoid selling out of a product and losing sales.[173] AI can even be used to predict customer purchases before they happen, allowing retailers to stock items appropriately.

Walmart uses AI to better handle inventory management, leveraging internal and external data, such as weather forecasts, to make more accurate predictions. For example, if a hurricane is expected,

"By analysing data for patterns, AI can predict customer purchases before they happen, allowing retailers to stock items appropriately."

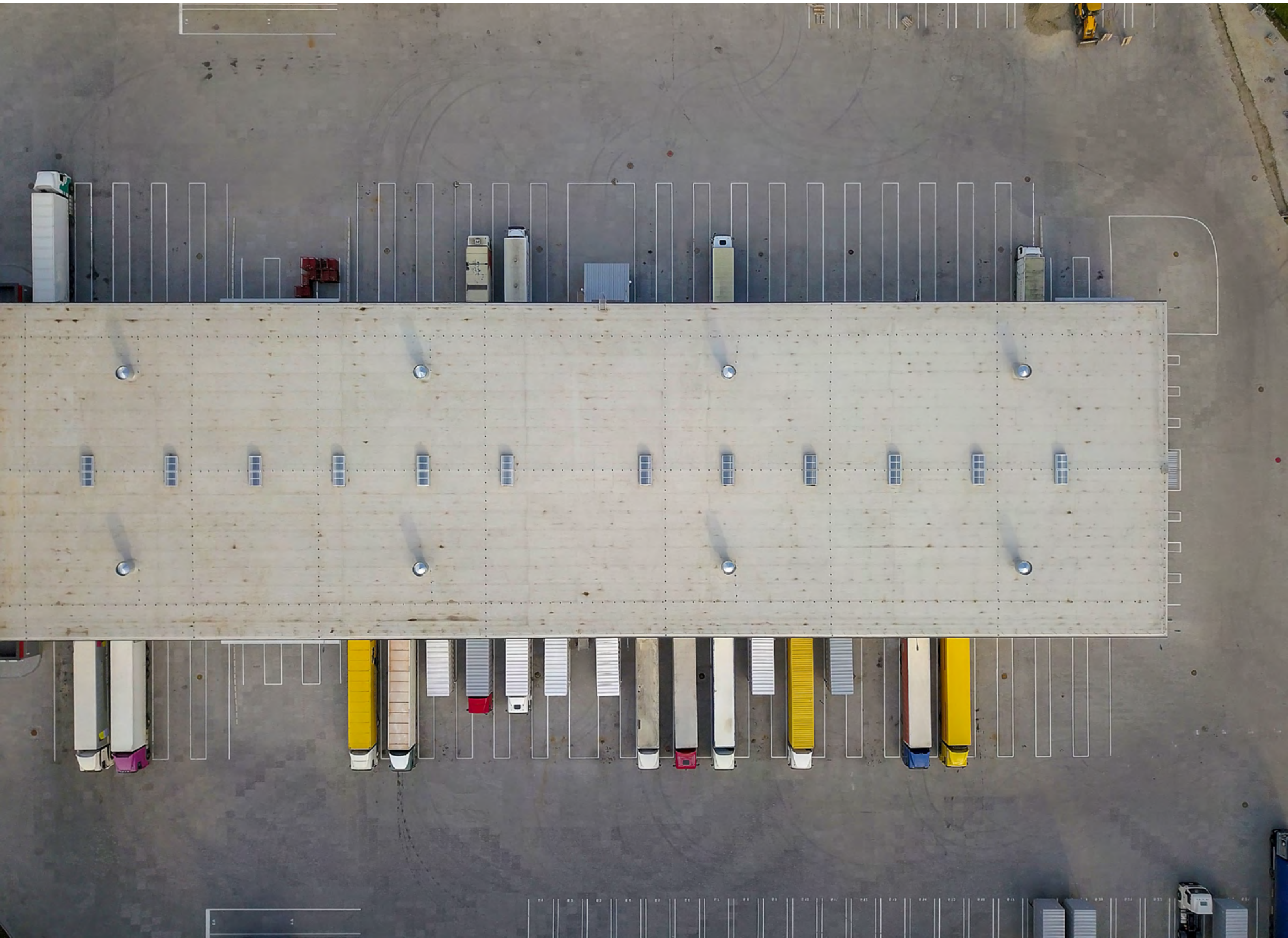
Walmart will stock products such as bottled water, sandbags and grocery staples.[174] AI can also make the movement of inventory throughout a warehouse more efficient. Ocado, an online British supermarket, uses AI in its warehouses. There, robots gather most of the groceries, but they struggle to understand how to handle some more delicate groceries, such as oranges. Ocado is using AI to train robots to handle these more delicate items. Based on the success of this program, other supermarket chains have purchased Ocado technology for use in their own warehouses.[175]

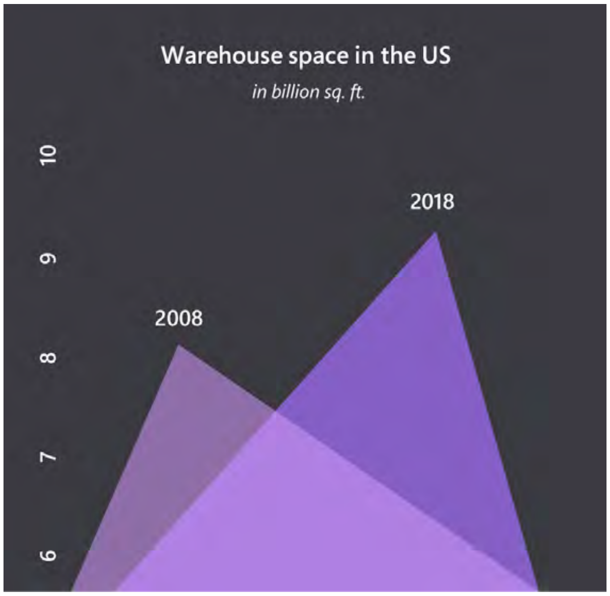
Retailers are using RFID tags to streamline the entire inventory tracking process, from receiving to inventory counting. RFID can also be used to track in-store product and customer movement, such as how an endcap display is performing, traffic patterns on different days, how often customers pick up items, but don't purchase them, and it can even help prevent shoplifting.[176] The result is improved inventory tracking across multiple channels and an in-store inventory accuracy of over 98%.[177]

Target, Lululemon and Levi Strauss have all implemented RFID and seen an increase in fulfilment and inventory accuracy.[178] RFID also gives retailers the ability to create 'magic mirrors'. These touchscreen mirrors reside in fitting rooms to track what's being tried on and can show shoppers product information, other colours or patterns the store has in stock, how these alternatives may look and other complementary items to complete their outfit. Other companies are combining RFID technology with blockchain for enhanced tracking. Citizens Reserve uses what it calls its SUKU system to tag and track livestock, increasing the efficiency and transparency of the livestock's entire journey.[179]

Warehouses become smart and agile

E-commerce is skyrocketing and doesn't appear to be slowing any time soon, with consumer spending on e-commerce purchases expected to reach USD $1.8 trillion by 2023.[180] Customers expect fast and accurate shipment and delivery, but one of the biggest obstacles in meeting customer expectations is finding warehouse space that meets e-commerce needs. The average warehouse in the United States is 34 years old[181] and is too small, too cramped and too far away from city centres to be practical for e-commerce purposes. Even facilities built as recently as the early 2000s are outdated and impractical for efficient e-commerce delivery since they typically feature low





> "The average warehouse in the United States is 34 years old."

ceilings, small spaces and poor docking access. As a result, the market for new warehouse construction is booming. From 2008-2017, about 100 million square feet of warehousing space was added each year in the US, and in 2018 alone, 183 million square feet were added.[182] This growth has been centred in and around cities to allow quick delivery to customers.

In recent years, companies have explored a variety of innovative solutions to help solve the e-commerce warehousing issue, including warehouse automation, third-party logistics, vertical warehousing, small format warehouses and on-demand warehousing. Today, 90% of Fortune 500 companies outsource parts of their warehousing, distribution and fulfilment[183]

The best example of warehouse automation comes from JD.com, a Chinese company that opened a fully automated storage and shipping facility in Shanghai in 2018. Without the 20 industrial robots that can pick, pack and transfer packages with no human oversight, the company would need 500 workers rather than the five technicians it relies on to service the robots.[184]

When it comes to e-commerce warehouses, the sky is the limit. Just ask Goldman Sachs, which has plans to build a three-story vertical warehouse in Brooklyn. Vertical warehousing is warehousing that is built up as opposed to out and then serviced by automated technology, such as drones. In the case of Goldman Sachs' warehouse, the second floor will be accessible to trucks via ramps, while the third floor will be accessible to forklifts via specially designed elevators. Amazon is taking the vertical warehousing trend to a new level by announcing plans to create an airborne fulfilment centre. Drones would fly into the blimp-like structure, gather packages, navigate out and deliver the packages.[185]

Due to many of the same market pressures faced in the United States, combined with China's high population density, Asian markets – especially China – have already adopted the vertical warehousing concept and the use of more automated delivery technologies. China has become the leader in drone technology, due in large part to Da-Jiang Innovations (DJI). DJI is responsible for 70% of the global market share of consumer drones.[186] China's automated technology has also surpassed competitors due to a massive amount of investment capital. Between 2014 and 2017, over USD $50 billion was invested in Chinese e-commerce platforms and automation technology. A lack of a regulatory framework keeps China's automated delivery technology from drastically pulling ahead of other countries; however, if a regulatory framework is put in place soon, it seems unlikely that other countries will have much chance of catching up in the near future.[187]

Percentage of Fortune 500 companies that outsource parts of their warehousing, distribution and fulfilment

'Small box' facilities, which are 50,000-200,000 square feet, are another warehousing option. Though small box facilities show potential in certain areas, the biggest trend in warehousing appears to be on-demand warehousing, which provides merchants with flexible, short-term storage. At any given time, up to 30% of warehouse space is not in use. The on-demand warehousing model seeks to take advantage of this massive amount of wasted space and creates a flexible option that's halfway between a warehouse and a distribution centre. Though the term may be new, the concept is not. Fulfilment by Amazon is a well-known example of on-demand warehousing. Other companies ranging from KFC to Exploding Kittens have used the on-demand warehousing model.

On-demand warehousing is still an emerging concept, but shows a lot of potential. One of its biggest selling points is that it gives smaller businesses a chance to compete with Amazon's fulfilment options.[188] Demand is high, but not many warehouses want to lease space short-term. UPS hopes to meet this need with its Ware2Go platform, which offers on-demand warehousing[189] that matches merchants with warehouses.[190]

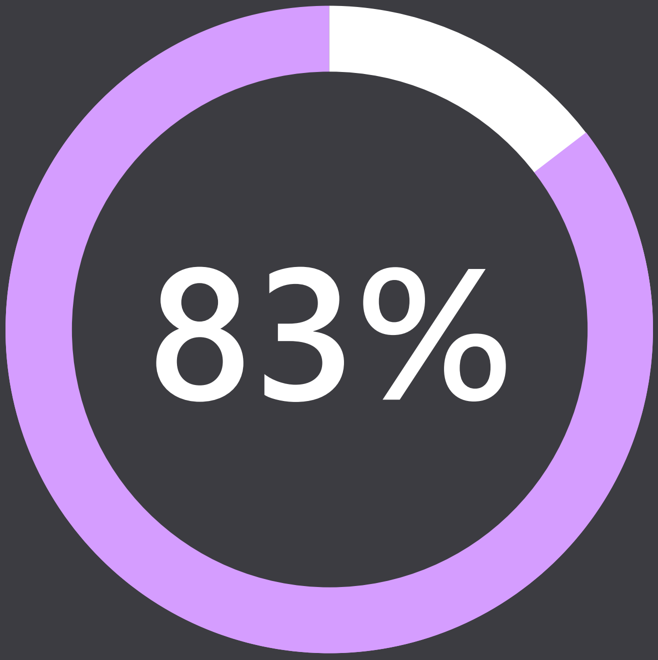
Percentage of warehouse space that is not in use at any given time.

Intelligent tracking provides visibility into supply chain performance

First described in 1991 by Stuart Haber and W. Scott Stornetta,[191] blockchains are decentralised, shared ledgers where all transactions are recorded securely by encryption in near real-time and are immutable (incapable of being altered or deleted). Despite being nearly three decades old, blockchain technology remains in the early adoption phase, but attitudes and spending are changing fast. More than half of the executives polled in Deloitte's 2019 blockchain survey felt that the technology was a critical priority for their company, and 83% saw compelling reasons to use blockchain.[192] Overall, the global blockchain market is projected to grow at a CAGR of 83% between 2018 and 2025, reaching an estimated value of USD $165.5 billion in 2025.[193]

While it's most commonly known as the technology at the heart of cryptocurrencies like Bitcoin, there are actually a number of other exciting use cases for blockchain. For example, a blockchain can connect ledgers from across an organisation's supply chain (supplier, manufacturer, distributor, shipper, retailer and end-consumer) to make tasks, like tracking a product's journey, much more accurate and efficient. Tracking a product's journey via blockchain can turn a manual process that once took days into

"83% of executives say they see compelling reasons to use blockchain."



> “Tracking a product’s journey via blockchain can turn a manual process that once took days into an automated process that can be done almost instantaneously.”

an automated process that can be done almost instantaneously and yield real-time information.[194]

Likewise, blockchain offers the potential to create continuously updated, incorruptible accounting ledgers – an exciting prospect that could help streamline processes, optimise data quality, improve transparency and achieve better internal controls.[195]
In 2016, KPMG partnered with Microsoft to introduce Digital Ledger Services, an offering designed to help companies realise the full potential of blockchain for their financial operations. Using Microsoft’s Blockchain Service platform, the joint service helps companies reduce costs, streamline and automate back-office operations and make transactions both faster and more secure.[196]

Companies are looking to blockchain to solve other business problems, too. One promising application of blockchain is with contract and document management – digitising and moving the governance of paper certificates, warranties and contracts into a blockchain – which can automatically update the documents when a triggering

event occurs. And testing has already been implemented in the food safety industry, where blockchain allows food to be granularly tracked, so when a producer identifies an issue like a tainted batch of spinach – they can contain the problem by isolating the source and issuing a recall for only the affected products.[197]

Along those lines, blockchain is also being used to help companies verify the provenance and authenticity of goods from raw materials to finished products. Other potential benefits of employing blockchain technology include reduced risk of fraud, fast and secure cross-border payments,[198] reduced time to complete transactions, better-networked loyalty programmes and increased customer trust.

Technology transforms fulfilment

Intelligent Order Management improves delivery speed while reducing costs

Today's empowered customers now expect more from businesses. They want to be able to see product inventory availability at stores and online, they want personalised products, they want flexibility in how they purchase – with cheaper and varied choices for fulfilment – and they want it all to be faster and less expensive.

To adapt to these modern demands, the supply chain of the past has morphed into a supply network, where data flows between participants and products can be purchased and fulfilled from multiple channels. Manufacturers may serve as the manufacturer and retailer, and a retailer may serve as the retailer and distributor. As these supply networks grow increasingly complex, Distributed Order Management (DOM) systems are making order management more intelligent and more efficient. By taking a global view of all inventory across the network, a DOM system can intelligently broker orders based on a defined set of rules, such as minimising shipping costs and optimising inventory availability. In doing so, it helps save money, improve fulfilment times and ensure inventory availability, all of which leads to happier customers.

There are several elements that need to be in place before a retailer can deploy a DOM system. The first involves centralising inventory from across the company into a single inventory management system. This provides visibility and access to inventory from across the organisation, regardless of its current location, which provides a critical input for the DOM to leverage when brokering orders. The second involves connecting the endpoints – purchase channels and fulfilment channels – to this unified system. This enables orders to be placed from any channel and fulfilled from any channel. It also enables inventory volumes to be properly tracked as products are purchased or returned.

DOM systems offer retailers a number of compelling benefits. With access to more inventory and fulfilment options, DOM systems enable retailers to more reliably promise delivery dates. Greater visibility into inventory and purchase patterns across the organisation allow retailers to more intelligently manage inventory volumes and distribution. By intelligently routing orders to the most efficient fulfilment channel and location, retailers are able to speed up the sales lead time and delivery time, reduce waste and save money on fulfilment.

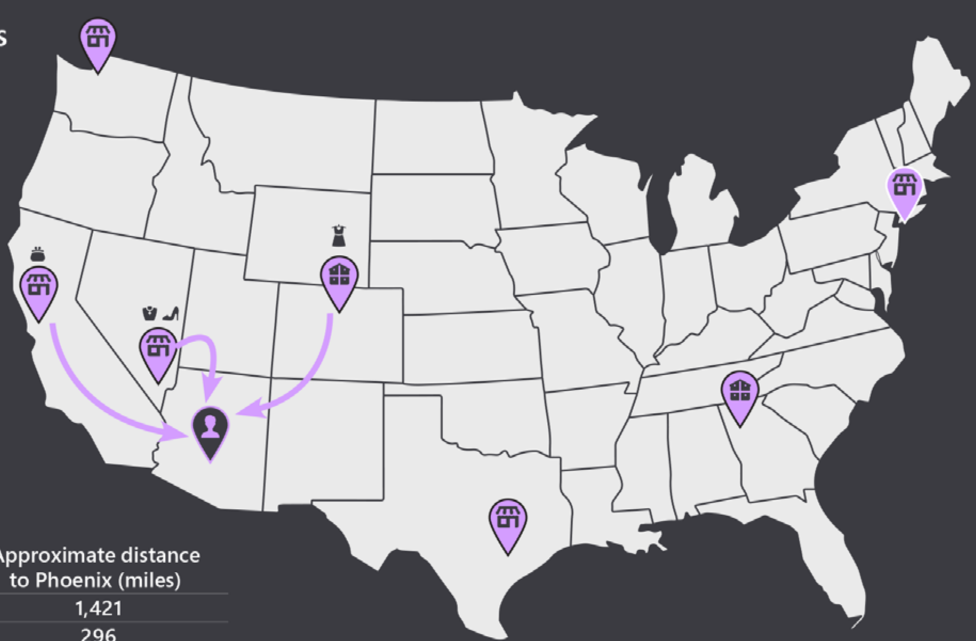
DOM also allows retailers to treat their best customers like royalty, optimising fulfilment for a given customer based on variables such as the lifetime value, loyalty and social influence. One of the biggest challenges for modern retailers is managing both their brick-and-mortar locations as well as all of the infrastructure required to operate an e-commerce business. With DOM, retailers can leverage existing brick-and-mortar locations as fulfilment centres both for shipping and pickup, to help maximise the value of existing assets,

DOM scenario

Minimum inventory constraints

All stores (dress: 1, handbag: 1)

Split orders: Yes
Location offline: No
Maximum orders: No constraint
Location priority: No



	Inventory (dress)	Inventory (handbag)	Inventory (shoe)	Inventory (necklace)	Approximate distance to Phoenix (miles)
SEA	2	3	1	1	1,421
LAS	1	1	1	1	296
SFO	1	2	1	0	752
DEN	20	14	5	7	850
IAH	1	3	2	4	1,174
ATL	10	7	20	20	1,806
NYC	2	3	1	2	2,405

Provide customers with more flexible fulfilment options and to improve delivery times and costs by shipping from a nearby store opposed to a warehouse in a remote location.

Regional distribution centres

Some of the largest retail brands are now providing services that have further increased customer expectations. Amazon now offers one-day shipping, Amazon Prime Air promises to deliver to customers in 30 minutes, and Post Mates can have any type of food delivered in a matter of minutes. With all these options, consumers no longer feel that it's reasonable to wait more than two days for a delivery. Smaller retailers are struggling to meet these expectations, but a number of companies are providing solutions to help these smaller retailers keep up.

FedEx and UPS have launched their own fulfilment solutions aimed at small and medium enterprises. Launched in 2017, FedEx Fulfilment offers warehousing, packaging, fulfilment and transportation. The service uses FedEx warehouses to handle storage, ship the inventory in packaging branded with the client's brand and handle returns.[199] In a similar vein, UPS Ware2Go matches merchants with available warehouse space with the goal of helping smaller businesses remain competitive.[200] A start-up called Darkstore turns underutilised retail locations into fulfilment centres for online sales. Darkstore rents out unused retail space in malls, bodegas and the like same-day fulfilment for brands that don't have warehouse space of their own.[201] This allows brands without local storage facilities to store inventory in a Darkstore location and then offer next-day shipping.

For businesses that are exclusively online, ShipBob promises to help. The order fulfilment start-up gives small and medium brands a chance to compete with Amazon on delivery speed and price. The Chicago-based start-up launched in 2014, and in 2018, it raised USD $40 million in funding.[202] ShipBob has five warehouses, all located in big cities. ShipBob allows over 2,000 e-commerce retailers to offer one to two-day fulfilment, and more than four million shipments have already been made.

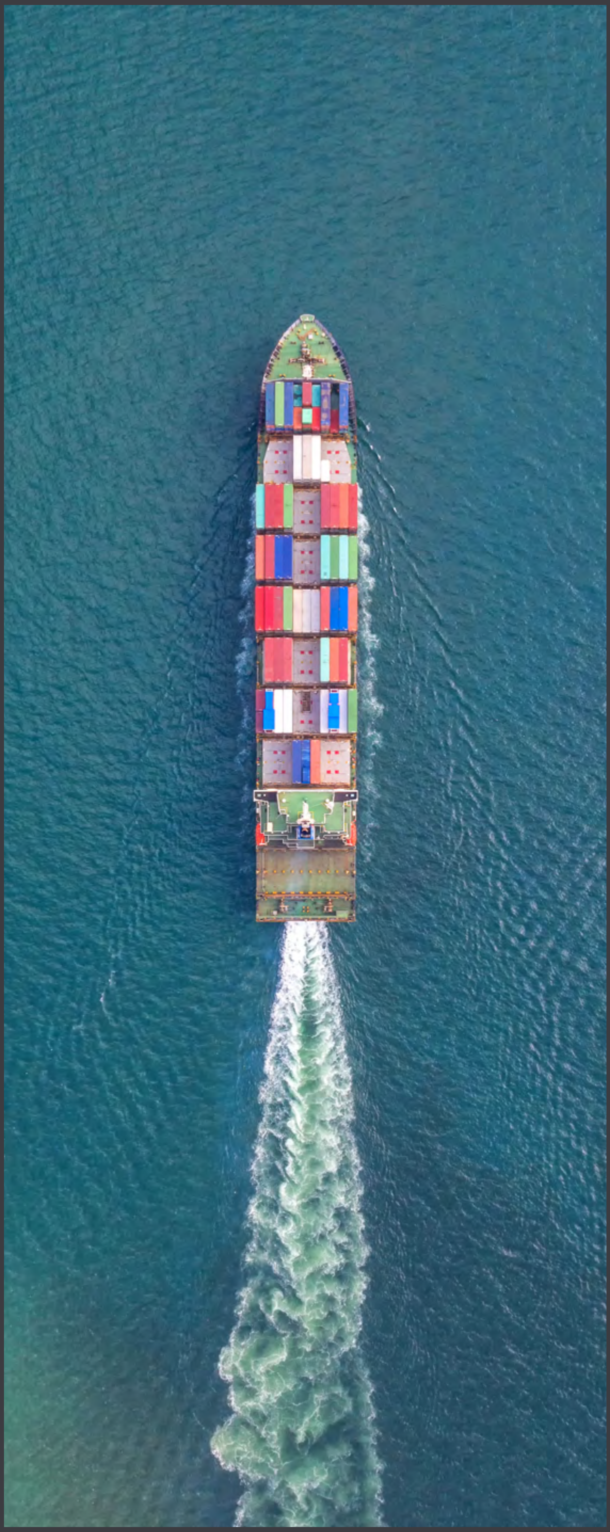
Customers include I Heart Keenwah, Interior Define and baKblade. ShipBob's software allows it to not only manage order logistics, but also to track customer demand, which it can then use to make recommendations on when and where inventory should be restocked. This allows for even quicker and less expensive shipping going forward.[203] As this trend progresses, more third-party logistics companies will likely enter the delivery space and start working with smaller businesses to help them stay competitive.[204]

Exploration in last-mile fulfilment

As a general rule, B2C residential deliveries tend to be less efficient and more expensive than B2B deliveries, because they require carriers to travel between many different destinations to deliver a small volume and value of packages at each stop. With the explosion of e-commerce, it's no wonder that retailers are exploring a variety of options to make last-mile fulfilment less expensive and more efficient.

Delivery is one of the last friction points in automation, but a number of companies are working to eliminate this friction using autonomous vehicles. In collaboration with TuSimple, an autonomous trucking start-up, UPS has begun a pilot programme featuring driverless semi-trailer trucks.[205] As part of the pilot programme, TuSimple autonomous trucks carried deliveries from UPS distribution centres in Phoenix, Arizona, to distribution centres in Dallas, Texas. Kodiak Robotics recently announced that its self-driving long-haul trucks would also begin making commercial deliveries.[206] Similarly, Waymo, a company that began as Google's driverless car project, is also piloting self-driving trucks.[207] Two of the team members behind Waymo are responsible for the development of another autonomous vehicle, Nuro,[208] which is currently being tested as part of a pilot programme for grocery deliveries in Scottsdale, Arizona. Autonomous delivery vehicles show a lot of potential, but the technology is still in its infancy. Companies experimenting with the autonomous trucks currently require a 'safety driver' behind the wheel of every autonomous truck. Delivery vehicles, such as Nuro, can go only 25 MPH, which limits their delivery capabilities – ice cream melts, hot food becomes cold. The cars are also quite small, holding only six grocery bags. And the consumer still must meet the car at the curb and carry all the groceries inside, limiting the potential uses for the disabled or infirmed.

Amazon Prime Air and Amazon Scout are Amazon's efforts to incorporate more automated technology into the delivery process. Amazon Prime Air has been in the works since 2013 and uses drones to deliver packages. Amazon's Scout is an autonomous, six-wheeled robot that drives on sidewalks. Since sidewalks pose even more of a technological challenge than roads for autonomous technology, Scout still requires a human chaperone for all deliveries.[209]



@Microsoft

Supercharge supply chain management

As demands on retailers increase, modern retailers must gain greater visibility and control into their supply chain. At Microsoft, we're empowering retail leaders with tools to help deliver more predictable performance and reliability through unified data and intelligent tools.

Improve operations

To compete in today's fast pace environment, retailers must work faster and smarter. With tools that streamline processes, provide greater visibility into operations and deliver actionable insights, Microsoft is helping retail leaders improve their operations so they can meet growing demands.

Be more proactive

To grow their businesses, retail leaders must look beyond the past and into the future. Microsoft empowers retail leaders with tools to help them identify emerging trends, predict outcomes and automatically optimise workflows. This allows retailers to become less reactive and more proactive with their business strategies and operations.

More intelligent fulfilment

To meet customer demands, retailers must not only work faster, but they must do it for less. Microsoft powers modern retail with intelligent tools that help optimise inventory, storage and fulfilment, improving delivery times while saving money.

06 /
Retailers place a renewed focus on ethics

Retailers place a renewed focus on ethics

Retailers today are paying more attention to issues of environmental stewardship and care for their customers and community, both as an ethical imperative and because the market is beginning to demand it. Consumers, especially Gen Z and Millennials, are voting with their wallets, seeking out retailers that demonstrate high standards when it comes to social and environmental issues. In the consumer packaged goods sector, 50% of sales growth between 2013 and 2018 came from products marketed as being sustainable.[210] In a recent study, nearly half of all respondents indicated that they were willing to pay more for sustainable products.[211] As a result, a new generation of sustainability-driven brands is gaining in prominence and popularity, including Allbirds, Rothy's, Summersalt and Everlane. As pressure from consumers, regulators and competitors mounts, more companies are looking for ways to eliminate waste, reduce their carbon footprints and improve how they handle excess inventory.

Executive summary

With mounting pressure from consumers, regulators and shareholders, retailers are investing in more ethical, sustainable practices.

Highlights

- 50% of sales growth between 2013 and 2018 came from products marketed as being sustainable.
- The secondhand retail market is expected to be worth USD $51 billion by 2023.
- By 2021, US consumers will spend between USD $142.1 billion and USD $150.1 billion on sustainable fast-moving consumer goods.

> "Blowback from angry consumers has forced companies to rethink their approach to managing waste."

Consumers push for less waste

Managing unsold inventory

In recent years, consumers have taken issue with retailers they perceive to be creating excessive waste. This has been exemplified by the negative publicity organisations have received regarding how they deal with their unsold inventory. In 2018, Burberry received intense backlash when it was discovered that the company was burning tens of millions of dollars of unsold products. The company claimed it burned goods in order to maintain its brand image of exclusivity. Ironically, to improve its brand image after the public outcry, Burberry announced it would stop burning unsold goods. Though the company received massive attention for setting its own products ablaze, the practice is far from unique to Burberry. Many other brands, including Louis Vuitton, Michael Kors, H&M, Urban Outfitters, Victoria Secret and JCPenney, also destroy unsold goods.[212 213] Even Amazon has been called out for destroying goods in Germany.[214] This blowback from angry consumers has forced companies to rethink their approach to managing waste.

Growth of online consignment

In an effort to reduce waste, some consumers, especially millennials, are joining the growing secondhand shopping trend. 'Recommerce', as it's now called, began gaining popularity between 2009 and 2011, when many of the largest second-hand apps got their start, including ThredUp, The RealReal, Poshmark, Depop and Vestiaire Collective.[215]

Recommerce adoption has been driven largely by ease. eBay and Craigslist have been around for decades, but the increasing desire and ability to complete tasks on smartphones helped fuel the move from websites to apps. Smartphone apps allow customers to sell just about anything on their phone – from clothes to cars. One of the companies that has had the most success taking advantage of this trend is ThredUp, which markets itself as 'the world's largest thrift store'. Other companies are also seeing heavy use Mercari has over two million active users each month and lists about 150,000 items every day, and the Poshmark app has over 50 million users.

Secondhand retail isn't only targeted to those looking for thrift store finds. High-end designer fashion is also making its way into second-hand retail, as seen with The RealReal, which offers designer styles at a fraction of the original cost.[216] The recommerce trend is not going unnoticed by more traditional retailers, either. Macy's and J.C. Penny have both partnered with ThredUp to offer in-store ThredUp departments, where customers can purchase second-hand retail.[217] Even H&M, known for its fast-fashion, has announced it will conduct a trial programme in Sweden for selling vintage goods online.[218]

The timing of the recommerce trend coincided with the 2008 financial crisis, but what may have begun for many as a way to save or make money has turned into a massive industry. According to a study by ThredUp, in the last three years, the resale market has grown 21 times faster than the overall retail market. The second-hand retail market is expected to be worth USD $51 billion by 2023.[219] Fuelled further by concerns over environmental issues, the growing trend of owning less and the ease of apps, second-hand shopping is changing the face of retail.[220]

Companies address waste in all its forms

Companies, including those outside the fashion industry, are addressing waste in all its forms. From packaging and in-store signage to the energy consumption of shipping and brick-and-mortar operations, companies are working to minimise waste in every part of their operations.

Subaru has limited its waste by creating the first landfill-free warehouse. Most car manufacturers have focused on the sustainability of a car once it's on the road, but Subaru's Lafayette, Indiana facility has not sent anything to a landfill since 2004. To accomplish this goal, the facility has done everything from eliminating plastic cutlery to working with suppliers to eliminate redundant packing.[221]

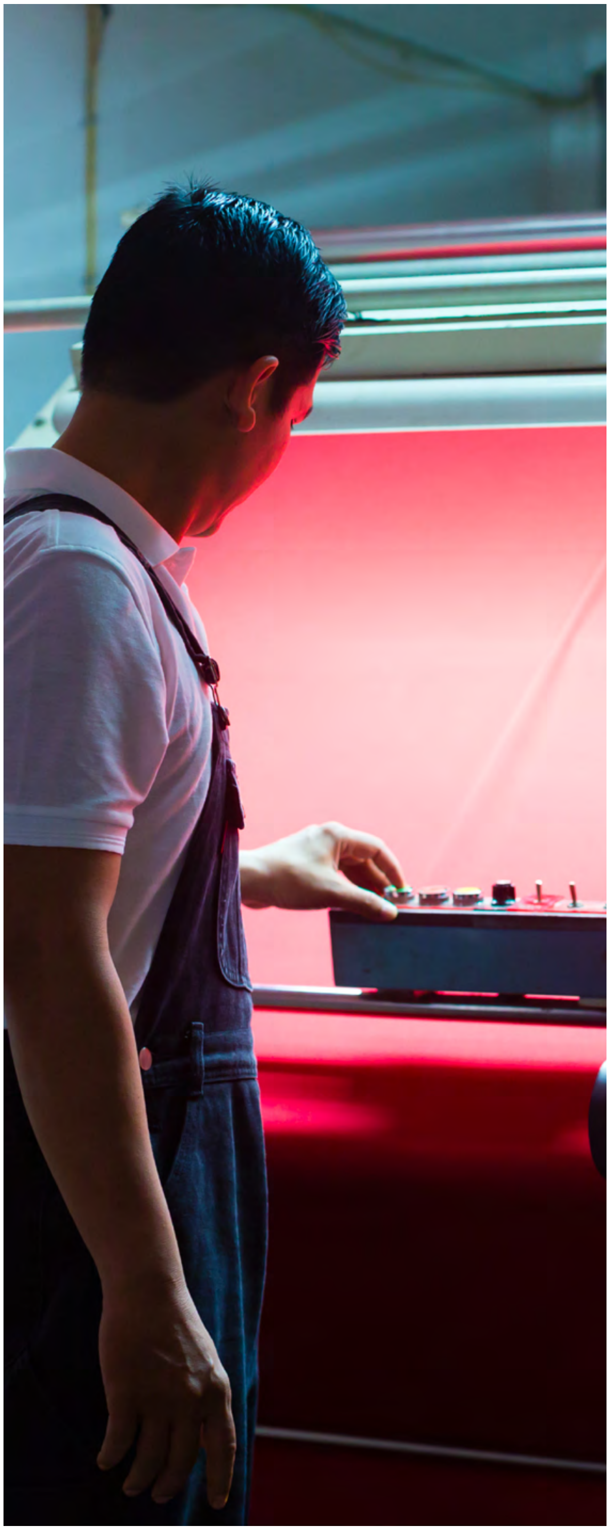
> "From packaging and in-store signage to the energy consumption of shipping and brick-and-mortar operations, companies are working to minimise waste in every part of the manufacturing process."

Led by UN Climate Change, leading brands from across the fashion value chain have rallied together to commit to reducing the climate impact of the fashion industry, with an emphasis on the energy required for the production and transportation of fashion goods. Together, they published the Fashion Industry Charter for Climate Action.[222] So far, 43 leading fashion brands and industry groups, plus the logistics firm Maersk and the NGO WWF International, have signed the charter, which outlines 16 principles and targets for reducing fashion-industry related greenhouse gas emissions and other climate impacts. In line with the goals of the Paris Agreement, Charter signatories commit to achieving net-zero emissions for the entire industry by 2050 and a range of other ambitious goals.[223]

Ethical sourcing and recycling become differentiators

Consumers are pressuring retailers not just to produce less waste, but to recycle and reuse. Millennials, in particular, are tiring of disposable fashion and are instead looking for more eco-conscious options.[224] One concept that's experiencing a resurgence in popularity is the circular economy, an idea that centres on limiting reliance on finite resources and eliminating waste. In a fully circular economy, any non-biological item (anything that can't be eaten or composted) is reused, repaired, remanufactured or recycled. Growing concern over climate change is partly responsible for the renewed interest in the circular economy, but recent technological advances have also made the model more feasible than it was in the past.[225]

Retailers are responding to consumers' desire for more ethical sourcing and recycling in a variety of ways. Patagonia's Worn Wear site offers customers a way to reuse or recycle clothing that otherwise would end up in a landfill. Similarly, North Face debuted a line of refurbished gear called The North Face Renewed, which sells like-new gear at less than retail prices.



Beyond being environmentally conscious, these e-commerce programmes provide companies with a way to increase profits, since the companies have already written off the cost of the products. They also build brand loyalty with existing customers while expanding the brand to potential new customers, such as those who wouldn't typically buy a product at retail prices but who would buy it refurbished. The brand establishes trust and goodwill with both new and established customers, who are then more likely to make repeat purchases over time – including at full price.[226]

Levi's, the most popular vintage clothing brand in the world, has created Levi's Authorized Vintage, which offers unaltered styles, as well as re-cut styles, and even some styles that have been customised by Vetements. Unaltered styles in the Levi's Authorized Vintage collection start at USD $198, which is considerably more than what consumers could find online or in a thrift store, but Levi's is hoping that customers will be willing to pay more for the authorisation and quality that come from buying directly from the retailer.[227] Levi's is also working to minimise waste through its creation of a line of jeans made from recycled water bottles.[228]

REI has a history of sustainability practices, such as its REI Used Gear programme, which offers gently used REI gear at reduced prices, both online and in select stores,[229] but REI's recently announced product sustainability standards have taken the retailer even further.[230] REI announced that it would no longer sell products that didn't meet its requirements, which include requirements in labour safety, chemical usage and environmental impact. These minimum standards apply to the over 1,000 brands that supply products to REI. Some of these requirements take the form of flame retardant tents without harmful chemicals, wool products from humanely treated sheep and sunscreens free of oxybenzone, a chemical that bleaches coral reefs.[231]

Ethical sourcing and recycling trends are not limited to outdoor companies or fashion retailers. Apple has worked to decrease the effects of the aluminium it uses in many of its products as part of its environmental responsibility standards.[232] Apple has announced that it will seek to manufacture all products using materials that are either recyclable or renewable. It will then return an amount equal to what it used back to the market through recycling or by regenerating supply. Apple also aims to remove toxins created during the manufacturing and recycling process.[233] Amazon, Apple, Walmart and Best Buy all have programs that give you store credit for turning in old electronics, but Best Buy goes the extra mile and also accepts electronics that customers would like to recycle.[234]

When it comes to verifying the origins of consumer goods, technology will be critical. More customers than ever are demanding to know how and where the products they consume were created. They want to know who grew their food and who sewed their clothes, how and where the materials were sourced and whether the workers received fair wages and safe working conditions. In today's complex, interconnected global marketplace, blockchain will be central to providing transparency and accountability to the supply chain practices of retailers everywhere.

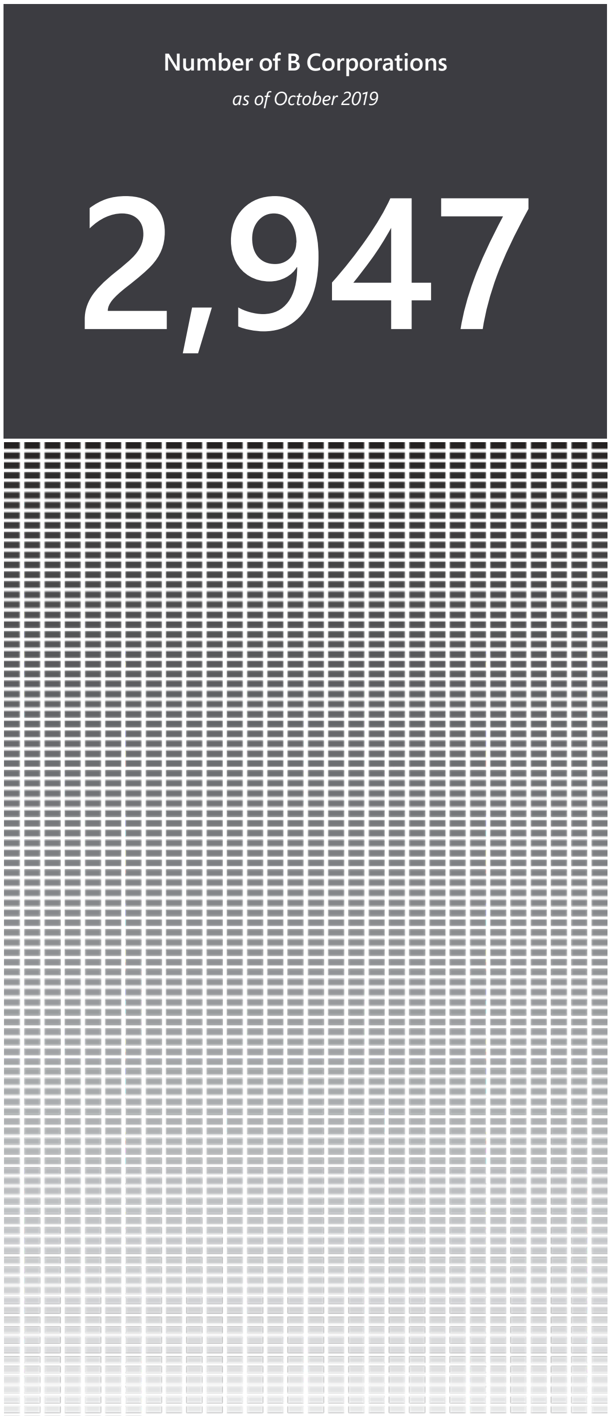
> **"More customers than ever are demanding to know how and where the products they consume were created."**

Corporate responsibility gains momentum

Since the publication of Milton Friedman's seminal article on shareholder theory in 1970, publicly held companies have been conditioned to equate profits with good, prioritising shareholder value over just about everything else. Today, we find ourselves in the midst of a sea change – both figurative and literal, as the accumulated impact of human activity causes global sea levels to rise – that has leaders in government and business re-evaluating the role of the corporation in society and questioning the idea that profits are the only good that companies should strive to attain.

In August 2019, the Business Roundtable – a coalition of CEOs representing some of the biggest companies in the United States, including Walmart, Apple and Pepsi – issued a statement contending that companies are responsible for more than just shareholder value. Instead, they argued, businesses' objectives should also take into account the good of their employees, their suppliers and the environment.[235]

While the coalition's statement didn't identify specific measures that the companies were planning to take, their general approach is consistent with the idea of the triple bottom line, a framework that encourages organisations to focus as much on people and the planet as they do on profits. One organisation that is helping to popularise this model is B Lab, which measures companies' overall social and environmental impact. In order to be certified, companies must meet high, verifiable standards for social and environmental performance and transparency and must demonstrate the ability to balance profit and purpose. As of October 2019, 2,947 companies around the globe had achieved B Corporation certification.[236]



There are many compelling reasons for companies to pursue a triple bottom line. Among them: consumer demand. A recent study conducted by Pew Research Centre found that 56% of American adults believe that protecting the environment should be a top priority for the President and Congress, with 44% feeling that climate change should be a top priority.[237] Similarly, Nielsen estimates that by 2021, US consumers will spend between USD $142.1 billion and USD $150.1 billion on sustainable fast-moving consumer goods, accounting for 25% of sales in that category.[238]

There's also evidence to support the idea that sustainability efforts can provide companies with a competitive advantage. Many experts agree that companies should willingly embrace the most stringent sustainability requirements that apply to their industry, even if they're not currently being enforced. When (not if) the bar for compliance is raised, companies that are already equipped to meet the new goals will have significant first-mover advantages over companies that did the bare minimum for as long as possible.[239]

Companies that are willing to take a hard look at their value chain, and ask what they can be doing to operate more sustainably, often unlock new ideas and possibilities. In some cases, they wind up creating products that are better than what they were making before – or that are so different than what any other company is producing that they invent a whole new niche for themselves. In that same vein, companies should involve their employees in their sustainability efforts. By challenging employees to identify ways to make operations leaner and more environmentally friendly, management may unleash insights that aren't apparent from the vantage point of the C-suite – while making employees feel more engaged and valued in the process.

The companies that succeed in becoming more sustainable are often the ones who approach their value chain with curiosity and a willingness to ask, "Why do we do it this way?" and "What if...?" The key is approaching sustainability not as a cost that must be borne, but as a driver of innovation.

One such organisation is Dutch manufacturer Fairphone, which touts its handheld as 'the world's most sustainable' phone. Fairphone's goal isn't to dominate the market for smartphones – the company has only sold 175,000 units since 2013. Instead, the company aims to show other device manufacturers what's possible if you reimagine the sourcing and production process. Fairphone's devices are constructed using sustainably sourced materials, and unlike other smartphones, they're modular, meaning consumers don't need to replace the entire device if one of the components fails.[240]

As green business practices move from the realm of regulatory and CSR imperative to a driver of profit, more and more companies are taking concrete steps to reduce the environmental impact of their operations. Businesses are making an effort to reduce the amount of energy they consume as well as the waste, greenhouse gases and other pollution created as by-products of their operations. They're investing in alternative energy sources, such as wind and solar, to power their operations, and using recycled, recyclable and reusable materials whenever possible.[241] Forward-looking organisations are also harnessing technology to reduce their environmental footprint.

"As of the writing of this report, 672 companies around the world – including Microsoft – have adopted science-based targets for reducing greenhouse gas emissions related to their operations."

Cloud-based collaboration tools – from shared documents and video conferencing to digital twins and mixed reality training – make it easier for teams to work together no matter where they're located.

As of the writing of this report, 672 companies around the world – including Microsoft – have adopted science-based targets for reducing greenhouse gas emissions related to their operations.[242] Many of the world's most valuable companies have gotten in on the action. In late 2019, Amazon announced that it intends to achieve net-zero carbon emissions by 2040 and to power its operations using 100% renewable energy by 2030. The company hopes that other organisations will follow their lead and pledge to meet the same goals.[243]

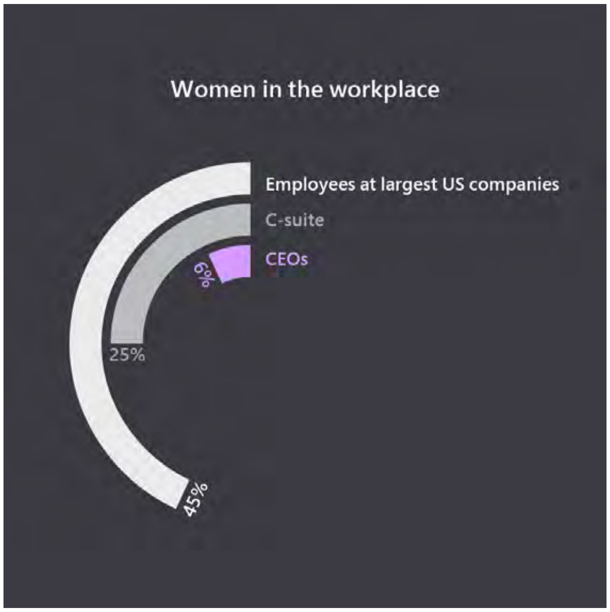
Microsoft is proud to be a leader in sustainability. We have been operating at 100% carbon neutrality since 2012, and even though our data centres are already 100% powered by renewable energy sources, we continue to work to improve our energy sourcing. Additionally, we continue to invest in new energy technology, from biogas to fuel cells, to accelerate the availability of new types of clean energy.

Diversity and inclusion are at the forefront

Data from the 2018 Census indicates that Gen Z is more racially and ethnically diverse than any other generation of Americans.[244] By the year 2045, fewer than half of all Americans will identify as white.[245] The face of the American population is changing, and with it, our expectations of who should occupy positions of influence and authority.

Representation matters, but in the media, the halls of government and corporate America, change has been sluggish.

A study by UCLA showed that on average, movies and TV shows that feature diverse casts gross more, are more profitable and get better ratings. Despite the findings, women and minorities are still under-represented in the cast and crew of television and film productions.[246] The story is the same in government. As of January 2019, the number of women and minorities in the US Congress is at an all-time high, but both groups are



under-represented by about 50% when you consider their share of the overall population.[247]

The stats for the business world are similarly skewed. Despite the fact that women account for 45% of all employees at the nation's largest companies, they occupy just 25% of C-suite positions in the United States and only 6% of CEOs are women.[248] According to the Alliance for Board Diversity, women and minorities are on track to occupy 40% of all board seats at Fortune 500 and Fortune 100 companies[249], but they lack similar levels of representation among the ranks of executives responsible for day-to-day operations.[250]

Thankfully, that's all changing, albeit slowly. Companies like Accenture, Diageo, Medtronic and Gap have each attracted attention for their recent efforts to ensure that women and minorities are better represented at all levels of their organisations.[251] Goldman Sachs has also generated waves for its efforts to become more diverse and inclusive. In March of 2019, the company announced new hiring targets aimed at ensuring that half of all new analysts and entry-level associates – two positions which comprise 70% of the company's new hires each year[252] – would

"Companies with greater levels of diversity reported that 45% of their income came from new products and services, compared to only 25% at less diverse firms."

be women, 14% would be Latinx and 11% would be black. CEO David Solomon has also said that the company has goals to recruit more members of the LGBTQ, veteran and disabled communities.[253] The new policy is a laudable effort to increase diversity in a notoriously male-dominated industry and the bank has made it clear that these are more than vanity targets. Solomon has indicated that managers' pay increases and promotions will be partly contingent on their ability to make progress toward the firm's diversity goals.[254]

Other companies should take note, as there is substantial financial justification for pursuing workplace diversity. A study by BCG found that companies with above-average levels of diversity in their senior leadership experienced 9% greater EBIT than companies with more homogenous leadership teams. In addition, BCG discovered a strong correlation between diverse leadership and innovation. Companies with greater levels of diversity reported that 45% of their income came from new products and services, compared to only 25% at less diverse firms.[255] Similarly, a 2018 study by the International Monetary Fund found that the presence of women on the boards of banks was associated with greater stability and improved ability to weather stress.[256]

Digital ethics (consumer privacy) approaches a tipping point

Every digital interaction leaves a trail of some sort. With so much information available in the global data universe, and much of it potentially sensitive, companies around the world are grappling with how best to use and protect the data entrusted to them by their customers.

3,813 data breaches were reported in the first six months of 2019, impacting more than 4.1 billion records, an increase of more than 50% compared to the same period in 2018. Three of those breaches rank among the ten largest data breaches ever.[257]

While data breaches remain a persistent and costly threat for companies and consumers alike when it comes to data, there's another question weighing on the minds of CIOs and CFOs around the world. One of the biggest issues facing corporations today is fair and appropriate use of data. What types of customer data is it okay for companies to seek, gather and keep? Does it matter how the company is using the data? Does the greater access to customer data that large companies possess give those companies an inherently unfair advantage over smaller businesses? Can companies be trusted to make impartial decisions with personal data? What information is fair game, and what's off-limits? And who gets to decide?

In the first six months of 2019

3,813
Data breaches

4.1B
Records impacted

50%
Increase over same period of 2018

While companies have historically had a fair amount of latitude when it comes to setting and enforcing their own data privacy policies, a wave of new legislation may take those decisions out of companies' hands. Currently, more than 80 countries around the world have enacted comprehensive data protection laws. Here in the US, California passed the California Consumer Privacy Act in 2018, and several other states are now considering legislation of their own. GDPR is already forcing companies based outside the EU to rethink how they handle consumer data, regardless of where those consumers reside.[258] In May 2019, Google announced a new autodelete feature that will allow users to adjust their Google settings to automatically delete app, web browsing and location history once every three or 18 months.[259] This move was likely in response to a 50 million euro fine imposed by data protection authorities in France over what they deemed a lack of transparency and insufficient justification for processing user data for advertising reasons.[260]

The issues surrounding data privacy only become more complicated when it comes to third-party apps that access data via an API. Through the Amazon Marketplace App Store, Amazon sellers can purchase third-party apps that use data from the Amazon Marketplace Web Services APIs to help them run their stores. However, at least some of these apps appear to disregard the company's data protection policy, and Amazon has begun cracking down on violators and rescinding their access to customer data. In one example, ZonTracker used customer data to allow Amazon sellers to create ads on Facebook that would target both existing customers as well as similar audiences using Facebook's Lookalike Audience tool. To exert tighter control over the apps its sellers use, Amazon has since instituted a new policy stating that any developer who creates apps using Amazon Marketplace Web Services APIs must apply to list their apps in the Marketplace Appstore.[261]

Number of countries that have enacted comprehensive data protection laws

80

With so much uncertainty surrounding future legislation as well as the risk of exposure due to data breaches, the smartest thing a company can do is to adopt a proactive stance towards data protection. For companies looking to incorporate data security into their business in a sustainable way, Privacy by Design (PbD) offers one potential path forward. PbD is a framework that originated with the Information and Privacy Commissioner of Ontario, the Dutch Data Protection Authority and the Netherlands Organisation for Applied Scientific Research, and which was subsequently adopted by the International Assembly of Privacy Commissioners and Data Protection Authorities.[262] The framework aims to build privacy into the way that companies build, operate and maintain the systems, processes and products that they create.[263]

PbD Framework

1. Proactively protect customers' privacy, instead of only reacting when there's been a breach or other problem.

2. Extend privacy as the default, without requiring action from the customer.

3. Incorporate privacy into the initial design process, not as an afterthought.

4. Ensure full privacy without compromising functionality.

5. Observe end-to-end security and destroy data when no longer needed.

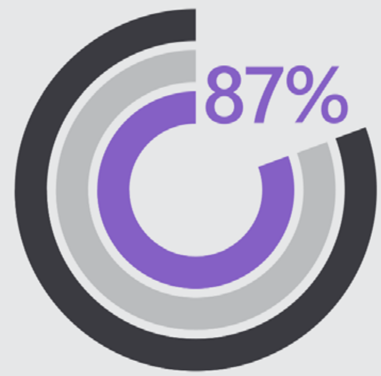
6. Communicate security measures to stakeholders, and ensure that there's a way to independently verify compliance.

7. Maintain clear and user-friendly communication with customers about privacy policies.

Shareholders demand greater transparency and better stewardship

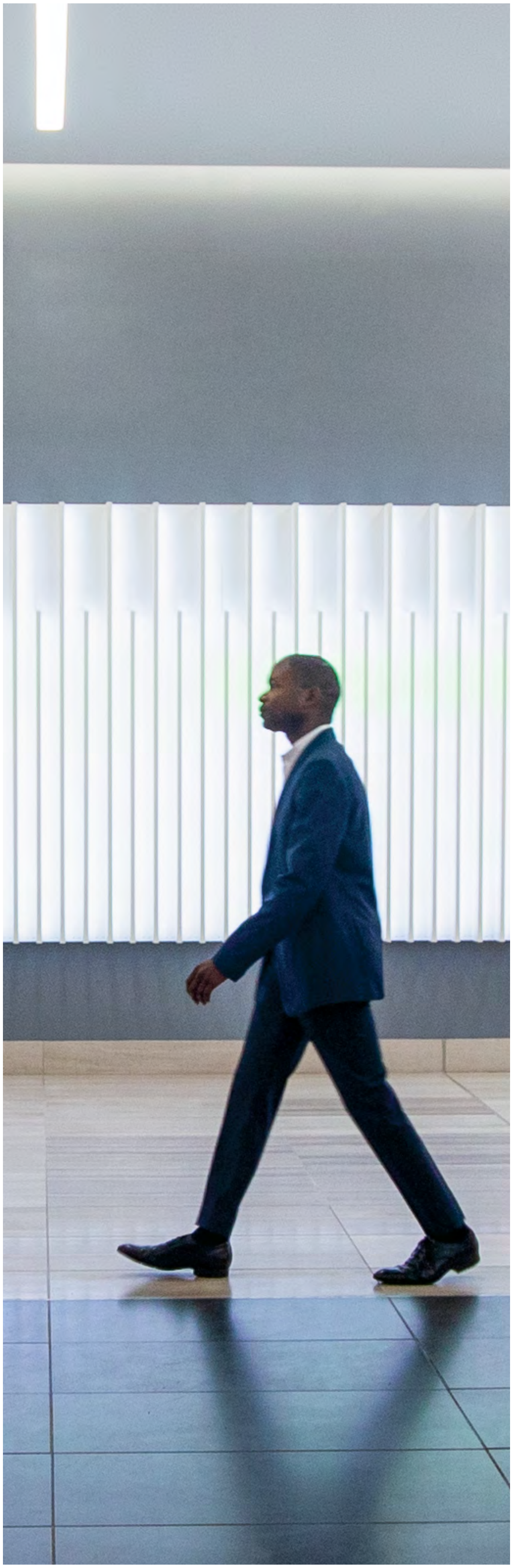
In recent years, shareholders have become more vocal about what they expect from a company – beyond profits. A special edition of Edelman's Trust Barometer focused on institutional investors revealed that 98% of investors believe that companies have an obligation to address societal issues – such as cybersecurity, income inequality, workplace diversity, national security and immigration – to maintain a stable global business environment.[264] A second survey conducted by Edelman showed that 87% of institutional investors would consider investing in a company or fund that offered a lower rate of return if the investment promised a strong sustainability or social impact angle.[265]

It seems that individual shareholders concur. In 2018, investors demanded greater transparency from Nike about its political spending (contributions to political campaigns, funding of direct or indirect lobbying efforts, and financial support for organisations involved in legislation



Percentage of institutional investors would consider investing in a company or fund that offered a lower rate of return if the investment promised a strong sustainability or social impact angle

design). Nike, which already discloses some information about its political spending, pushed back against the request, saying that further disclosures could compromise the company's market strategy.[266] In March 2019, nearly a third of shareholders voted in favour of a resolution that would require Northrop Grumman to detail what the company is doing to uphold its human rights policy. The resolution was prompted by Northrup Grumman's work on a Department of Homeland Security contract designed to capture biometric and other personal data.[267] At Alphabet, shareholders introduced 14 different proposals demanding transparency and accountability on a range of issues, including the human



rights impacts of Google's policies in China, executive compensation, diversity and inclusion targets, sustainability goals and concerns over the power that the company's executives wield. While all of the proposals were rejected, their introduction underscores a growing expectation among employees and other shareholders that the global tech firm uses its reach and influence for good.[268]

Across industries and issues, shareholders expect more from the companies they own. If the Business Roundtable's new stance on public companies' responsibility to society is any indication, the business world is taking notice. That said, the dawning age of enlightened, socially responsible organisations isn't entirely free of hazards. Experts warn that if shareholder value is no longer the primary measure of success, companies need to be clear on what values they do stand for or else they risk being swayed by whichever activist group vies loudest for their attention.[269]

> "The corporate world has reached a tipping point when it comes to values."

Reputation management becomes more complicated in the social media era

As we've explored previously in this report, the public is holding companies to a higher standard than ever before. Increasingly, consumers expect companies to be responsible corporate citizens, to speak up about social issues and to ensure that their operations have a positive impact on customers, employees, suppliers, the environment and society as a whole. Even if a company is doing all the right things, it can be challenging to create the public perception of good stewardship. In an age where anyone with an internet connection can create a message or image that could potentially go viral, it's nearly impossible for companies to be the sole (or even primary) authors of their brand image. Companies' attempts to shape public perception of their brands usually takes one of two forms: proactive communications, including corporate social responsibility (CSR) programmes and other marketing efforts, and reactive communications, most often in the form of crisis communications plans.

CSR is nothing new, but judging by the Business Roundtable's September 2019 statement, the corporate world has reached a tipping point when it comes to values. Today, more and more companies are attempting to inject purpose into their businesses. The challenge is to do so in a way that's both genuine and relevant – and which doesn't come across as 'purpose-washing', as the PR industry publication PRWeek terms it. In October 2019, PRWeek announced the inaugural edition of its Purpose Awards, which recognises organisations that are creatively and authentically driving change around a positive cause.[270] Among the initial round of winners were Etsy (for its carbon offset campaign), Procter & Gamble (for its initiatives around changing table equality and access to feminine hygiene products), PepsiCo Foundation (recycling), LUNA Bar (equal pay), Gillette (redefining masculinity), Aflac (paediatric cancer), WNBA (support for women-focused non-profit organisations) and Heineken (drunk driving). In each of these cases, the initiatives worked both because they were well aligned with the company's business and with customers' expectations of the brand and because they appeared to stem from a genuine desire to make a difference.

Crisis communications is a sub-specialty of public relations that focuses on how companies respond in the event of an emergency. While companies can't plan for the unknown, they can establish processes that dictate what steps will be taken in the event of a crisis and who will be responsible for communicating to the public, the media and other stakeholders. One company that recently demonstrated both calm under pressure and sterling character amid a crisis is Southwest Airlines. Following a 2018 flight during which an engine explosion killed one passenger and necessitated an emergency landing, Southwest's handling of the difficult and frightening event, both during the flight and afterwards, resulted in a surge of positive press and goodwill towards the brand.[271]

What if a crisis isn't due to an accident or a corporate misstep, but to customers' deliberate misuse of a product? That was the situation that Procter & Gamble faced in 2018 when teenagers filmed themselves eating detergent packs as part of a viral challenge. In response, the company issued a firm, but humorous response on social media, following it up with a series of media interviews. Procter & Gamble also successfully convinced both YouTube and Facebook to remove all videos of detergent-eating teens.[272]

The gig economy complicates employee/employer relationships

New technologies are enabling innovation and growth in alternative work arrangements in the US and around the world, but those innovations are also raising legal and ethical questions about the relationships between companies and the people who do work for or through them.

Alternative work arrangements now encompass an array of employment situations, from independent contracting and freelancing to so-called gig workers, who are paid by the task, and even outsourced networks known as crowds. These roles can be hard to define and even harder to measure, but surveys and economists' estimates suggest that alternative workers' share of overall employment is growing, not only in wealthy countries but also – maybe even especially – in emerging economies. In 2017, the US Bureau of Labor Statistics conducted its first survey on alternative work arrangements in more than a decade, and, to the surprise of many, it estimated that less than 4% of

the US workforce counted as what it calls contingent employees.[273] Around the same time, however, a survey commissioned by Upwork and Freelancers Union estimated that roughly one in three working Americans, some 55 million people, were freelancing. Many of those freelancers were working as independent contractors, but many others were blending traditional and non-traditional work arrangements through moonlighting, 'side hustles' and other combinations of traditional and freelance or gig work.[274] Meanwhile, in some parts of Europe, growth in freelance employment has outpaced growth in overall employment in recent years.[275]

The expansion of these alternative employment arrangements and the new platforms enabling them is forcing employers, workers and regulators to revisit old questions about the nature and ethics of employment, and to confront some new ones, too. Among the most important issues are who should count as an employee, and what obligations does a company have to people it pays to work?

In April 2018, the California Supreme Court ruled that a worker should be considered an employee if he or she does work that is part of a company's 'usual course' of business, and that companies wishing to classify workers as independent operators must show that they really don't control or direct those workers' actions. This decision was significant because it implied that companies like Uber, which depends heavily on alternative employment arrangements, would eventually have to comply with minimum-wage and overtime laws and other regulations that could significantly increase their operating costs.[276] In September 2019, California's State Assembly codified that court ruling with the passage of a new bill that supporters hailed as an important step toward protecting workers and some detractors criticised as an innovation killer.[277]

Businesses confront the human impact and ethics of artificial intelligence

Many organisations are now turning to AI in an attempt to lower operating costs, inform decision-making and discover new profit centres, among other things. These efforts are driving rapid growth in the adoption of AI, but the rush to adopt and apply these new technologies is also

> "Algorithms may be impartial, but they are built by humans, and the choices made in the development and application of those algorithms are often complex and subjective."

heightening concerns about the risk of unintended consequences and the ethics of algorithmic judgement and decision-making.

Most current applications of artificial intelligence use algorithms – sets of rules for converting information into relevant outputs – to perform time-consuming or challenging repetitive tasks like pattern recognition, document classification, object detection and forecasting. Algorithms may be impartial, but they are built by humans, and the choices made in the development and application of those algorithms are often complex and subjective.

Bias can enter the process at every step, including the choice of which problems to solve, the identification of features to consider, the selection of training data and the use of the output. AI systems can also exacerbate concerns about the privacy and security of customer data, and they raise new questions about who bears responsibility when software makes or drives choices that have undesirable consequences.

Many businesses and governments are trying to mitigate these risks by establishing – and, ideally, following – guidelines for the ethical use of AI. In late 2018, the

European Union published a first draft of its guidelines for 'trustworthy' AI that identified seven requirements all AI systems should meet, including transparency, non-discrimination, accountability, safety, human oversight and respect for privacy.[278] These requirements echo the themes spelled out by corporations such as Google[279] and Microsoft[280] in the principles guiding their development and application of AI.

Some organisations are also looking to do the right thing by sharing or applying their AI expertise for social good. In a late 2018 discussion paper, McKinsey compiled a library of 160 AI social-impact use cases ranging from tracking wildlife poachers to aiding disaster relief. It observed ongoing efforts in about one-third of those cases and concluded that existing AI capabilities had the potential to improve the lives of hundreds of millions of people in both wealthy and developing countries.[281]

@Microsoft

Our inclusive design principles

Exclusion happens when we solve problems using our own biases. As Microsoft designers, we seek out those exclusions and use them as opportunities to create new ideas and inclusive designs. There are 7.4 billion people in the world. Our ambition is to create products that are physically, cognitively and emotionally appropriate for each of them. It starts with seeing human diversity as a resource for better designs. When it comes to people, there's no such thing as 'normal'. The interactions we design with technology depend heavily on what we can see, hear, say and touch. Assuming all those senses and abilities are fully-enabled all the time creates the potential to ignore much of the range of humanity.

Recognise exclusion

Designing for inclusivity not only opens up our products and services to more people; it also reflects how people really are. All humans grow and adapt to the world around them, and we want our designs to reflect that.

Solve for one, extend to many

Everyone has abilities and limits to those abilities. Designing for people with permanent disabilities actually results in designs that benefit people universally. Constraints are a beautiful thing.

Learn from diversity

Human beings are the real experts in adapting to diversity. Inclusive design puts people in the centre from the very start of the process, and those fresh, diverse perspectives are the key to true insight.

07 /

Businesses adapt to global uncertainty

Executive summary

With new cyber risks, geopolitical shifts and new regulations, retail leaders are looking for ways to navigate the uncertainty.

Highlights

- 64% of consumers have opted not to do business with a company with which they have data security concerns.
- A statistical index the World Trade Organization uses to measure uncertainty in economic policy around the globe hit its highest level ever, more than three times as high as the average for the period 1997-2015.

Technology creates new challenges

More data means more problems

The universe of data is growing steadily each day. A recent study by Deloitte showed that data management and data integrity topped executives' lists of concerns and challenges when it came to managing cybersecurity.[282]

With more potential sources of data than ever – and more systems both inside and outside the organisation that can potentially access that information – many companies find themselves either improvising or managing patchwork efforts when it comes to data security. The executives surveyed by Deloitte reported that although digital transformation and cybersecurity are both high priorities for their companies, the two functions typically aren't well integrated.[283] The result is that, by and large, companies aren't addressing the impact that introducing new technologies could have on their – and their customers' – data security.

Evidence shows that consumers are beginning to demand change. In a study conducted by the Harris Poll for IBM, 83% of people surveyed said that companies should be doing more to protect consumers from cybersecurity threats, and 64% said they have opted not to do business with a company if they have doubts over whether their data would be secure.[284]

Adopted by the EU in May of 2018, the General Data Protection Regulation (GDPR) is one of the most ambitious efforts to date to guarantee the privacy of individuals' data in all formats. Among other things, GDPR obliges companies and other organisations to 1) explain how they collect and use data on individuals, 2) grant those individuals the right to access and correct data that is collected about them, 3) be informed of data breaches and 4) have their personal data deleted (a.k.a. the right to be 'forgotten').[285]

GDPR had an immediate global impact because it applies to any company or organisation that offers goods or services in the EU or that monitors the behaviour of individuals there. The full extent and nature of that impact remain unknown, however. One obvious outcome of the law is the privacy notices that seem to pop up on most websites these days. It's unclear whether these pop-ups are effective; anecdotal evidence suggests that most consumers either ignore them or don't know what they can do with the information. Corporations and the EU itself have mostly responded by adding new bureaucracies. GDPR obliged companies to establish data protection offices, but those new offices' mandates often overlap or conflict with existing corporate functions, such as cybersecurity or legal, and many organisations are still struggling to draw clear lines.[286]

"As new and existing technologies mature, they will continue to reshape how companies relate to their suppliers and customers."

EU regulators have seen a sharp jump in the number of data breaches reported to them, but the threat of large fines against companies that violate the GDPR has mostly remained just that. In the policy's first year, regulators only levied 55 million euros in fines, and a single 50 million euro fine imposed on Google in January 2019 accounted for nearly all of that total.[287]

In 2019, California adopted an ambitious new data-privacy law partially modelled on GDPR; however, the law does not go into effect until 2020, and companies – including Google – continue to lobby for ways to curtail its scope.[288]

Competition increases as technology drives industry convergence

As new and existing technologies mature, they will continue to reshape how companies relate to their suppliers and customers – with companies most likely facing competition from businesses in previously unrelated sectors.[289]

A recent report from PwC argues that tech-driven industry convergence isn't anything new. In fact, they say, such convergence is actually cyclical, pointing to similar patterns of cross-industry activity during periods of economic expansion in 1998-2000 and 2004-2007. According to their analysis, the most recent wave of convergence, which began in 2016, has affected companies in technology, telecom, media, automotive, retail, manufacturing, healthcare, consumer goods, transport and logistics, energy and financial services.[290] Of these industries, the coming decade will largely be defined by seismic changes in insurance, healthcare and consumer products.[291] Clusters of industries tend

to converge around particular market opportunities, such as how changes in the transportation sector have opened up new avenues for automotive companies as well as businesses in the energy, tech and logistics industries.[292]

There's reason to feel hopeful, not fearful, about the unpredictable shifts that industry convergence will bring. Unconventional partnerships and cross-industry collaboration will be key to addressing issues like healthcare, global warming and the rapid growth of urban centres around the globe.[293]

"Unconventional partnerships and cross-industry collaboration will be key to addressing issues like healthcare, global warming and the rapid growth of urban centres around the globe."

Leaders try to navigate a highly politicised environment

In August 2019, a statistical index the World Trade Organization uses to measure uncertainty in economic policy around the globe hit its highest level ever, more than three times as high as the average for the period 1997-2015. From Brexit negotiations and shifting trade alliances to changes in immigration and environmental policies, the unpredictability of today's political and economic landscape can be daunting for businesses to navigate.

How leaders can help their companies succeed during periods of elevated risk depends on a number of factors.[294] To respond effectively to an uncertain or politicised environment, leaders must first consider whether the market for the company's products and services is strong or declining. They also need to consider whether the company is poised for growth or whether it faces strong challenges from competitors. Additionally, they must assess if the risk is time-limited or ongoing and determine whether the element of uncertainty is specific to the company or industry or whether it's a global concern. By understanding these factors, business leaders will be better positioned to develop strategies to thrive in uncertain times.

Regulation changes create uncertainty

Interest rates become more dynamic

In 2019, concerns about the sustainability of US economic growth prompted the Federal Reserve to cut interest rates for the first time since the financial crisis of 2008. The initial reduction came in July when the Fed trimmed the federal funds rate by one-quarter point. The Fed acted again in mid-September, lowering rates by another quarter of a percentage point to a range of 1.75 to 2.0%. In announcing that second cut, the Fed also said that it was prepared to take further action if signs of a slowdown in the US economy start to accumulate. At the time, many officials expected the Fed would make one more move on interest rates in 2019, but few anticipate rates falling below 1.5% before 2022.[295]

Across the Atlantic, the European Central Bank (ECB) took even more aggressive action in 2019 as fears mounted of a recession in some of the continent's largest economies. In September, the ECB cut its interest rate for deposits to -0.5%, a level meant to prod banks to lend their cash instead of sitting on it. At the same time the ECB announced it would restart other stimulus programs it had halted less than a year earlier, including printing more money and buying more than USD $20 billion in bonds and other financial assets each month.[296]

Tariffs

Despite repeated rounds of bilateral talks, tensions between the US and China remain high, with widespread impacts on global trade and production. By September 2019, the US had imposed tariffs on more than half a trillion dollars' worth of Chinese exports, while China had reciprocated with tariffs on nearly USD $200 billion in US products.[297]

These tariffs have driven up the prices of raw materials and reduced real income in many affected countries.[298] Since January 2016, the prices of many raw materials have risen at double-digit rates, reversing a years-long deflationary spell, and tariffs on things like steel and aluminium have contributed to this upturn.[299] Meanwhile, the International Monetary Fund estimates that American and Chinese tariffs will reduce global economic output by about 0.3% in 2019[300] and by as much as 0.5% in 2020.[301]

The trade fight and its fallout have prompted many US companies with operations in China to scale back or deprioritise that part of their business.[302] Some manufacturers have shifted supply chains out of China entirely, while others have redesigned products to reduce dependencies on manufacturers there. In cases where neither of those approaches is an option, producers are often passing the price increases associated with tariffs along to their customers.

More broadly, the persistence of sharp tensions between the world's two largest economies has exacerbated uncertainty about the future contours of the global economic landscape. In McKinsey's September 2018 Global Economic Survey, one-third of all respondents identified uncertainty over trade policy as their top concern, and three-quarters of the surveyed companies said they were adjusting their strategies in light of this trend.[303]

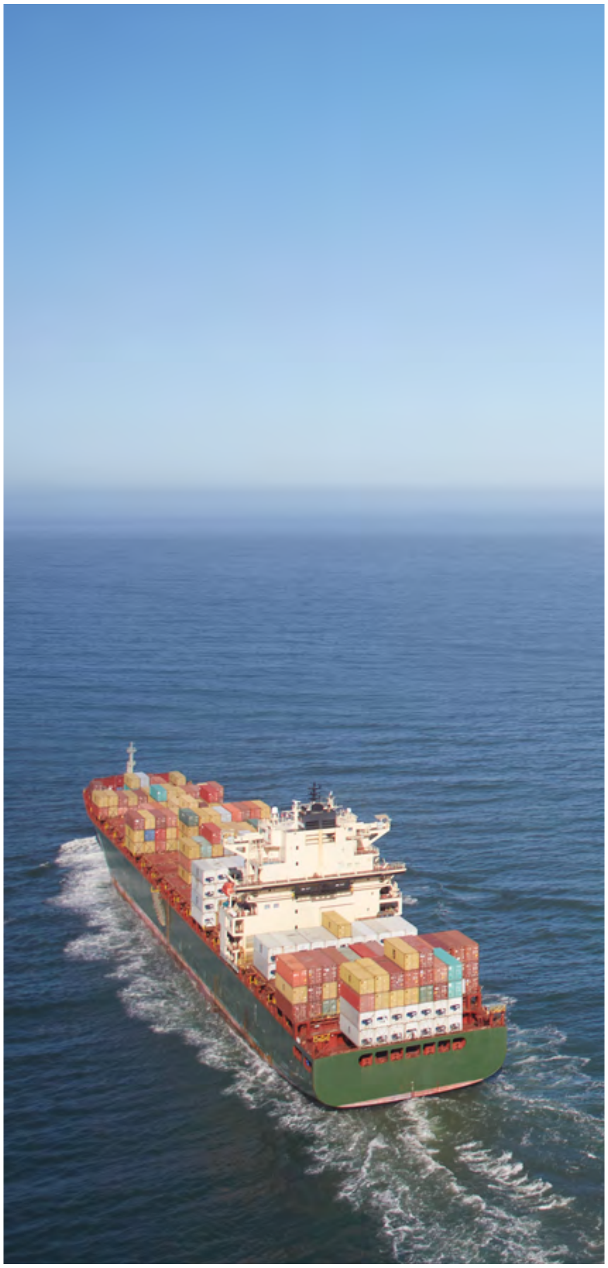
Many businesses are responding to this heightened uncertainty by delaying or trimming investments in their factories and workforces.[304] Manufacturers are also looking to increase their resiliency against this 'new normal' by making their supply chains more flexible, more local or both. A recent McKinsey report notes that many companies are moving supply chains closer to key markets as the costs and risks of global operations continue to increase, partially reversing the globalisation of manufacturing that occurred in the preceding two decades.[305] Others are inking contracts with suppliers who produce their goods in multiple countries, allowing them to quickly shift production as conditions change. New digital technologies are also playing a role, giving manufacturers ways to manage more complex workflows and allowing them to generate more accurate forecasts of local demand.[306]

Brexit uncertainty continues

In a June 2016 referendum, the UK stunned the world by voting narrowly in favour of leaving the EU. As of January 31, 2020, the UK has officially exited the EU, as the tumult sparked by the Brexit referendum continues to reverberate through the global economy.

The defining feature of the Brexit process so far has been uncertainty – over what kinds of new relationships the UK might forge with its neighbours and trading partners in a post-Brexit world and how that transition will affect the economies of the UK, the EU and the globe. In a recent iteration of the Decision Maker Panel, a monthly survey of thousands of UK CFOs, nearly 60% of respondents identified Brexit as one of the three most important sources of uncertainty for their businesses – about as high as that figure has risen since the referendum and much higher than in 2016 and 2017.[307]

As negotiations continue, the economic consequences of the Brexit vote are already substantial. An academic paper published in late 2019 reported that, over the three years since the referendum, Brexit had reduced investment by 11% and shrunk UK productivity by 2% to 5%. And in the July 2019 update to its biannual World Economic Outlook, the International Monetary Fund identified a no-deal Brexit as one of the 'adverse developments' that could dent growth in the global economy in 2020.



International cooperation wanes

In 2019, rising tensions between powerful nations reinforced the sense that international relations have become less cooperative and possibly more dangerous than they were just a few years ago. The struggle between China and the US over trade continued to heat up. Meanwhile, relations between the US and Russia eroded further in August 2019, when both countries withdrew from a key nuclear arms–control treaty.[308] In South Asia, long-standing tensions between nuclear-armed rivals India and Pakistan flared into numerous border skirmishes in 2019, and, in the words of Pakistan's foreign minister, threatened to slide into an 'accidental' war.[309] And in the Middle East, the United States and Iran traded threats and accusations after oil tankers were attacked in the Straits of Hormuz and Iran downed a US drone.[310]

Even if the likelihood of open warfare between major powers remains low, these tensions represent a form of political risk that can hurt corporations in other ways. The rise of protectionism and nationalism in the wake of the 2008 financial crisis have eroded the international cooperation that helped soften the last crash, meaning future crises might be even more pronounced.[311]

Global and regional tensions can hamper economic growth, drive up the price of commodities and other goods and impede or foreclose business opportunities in affected countries. They also hinder cooperation on transnational problems that require a collective response, such as counter-terrorism, nuclear proliferation and climate change.

Organisations prepare for an election year

Some of the world's largest economies are holding elections in the next two years with potentially significant consequences for businesses within and outside their borders. In the United States, the next presidential campaign cycle is well underway, and control of both houses of Congress remains up for grabs. The outcomes of those contests could produce substantial changes in domestic and foreign policy.

In the UK, national elections are not due again until 2022, but discord over Brexit has already cost Teresa May the job of Prime Minister, and her successor, Boris Johnson, is pushing for an early vote in a gambit to solidify parliamentary support for leaving the EU.[312] Across the channel in Germany, long-time chancellor Angela Merkel announced in late 2018 that she would not seek re-election to that post in 2021, and speculation that she will step down before the end of her term continues to bubble up in the press from time to time.[313]

@Microsoft

Pivot and adapt

Today's retail leaders face many difficult decisions as they navigate through a time of considerable ambiguity and uncertainty. At Microsoft, we're empowering these leaders with greater visibility into their business operations and performance to help them identify emerging hazards and the flexibility to adapt quickly and scale with ease.

Better manage risk

From cybersecurity to compliance, retailers must address a wide range of threats to their business. With Azure's security, privacy, transparency and industry-leading compliance coverage, retail leaders can better manage cyber risks, and with unified data in the cloud, retail teams can improve reporting speed and accuracy.

Scale with ease

Businesses face many challenges as they look to scale at home, abroad and into new verticals. Dynamics 365's cloud deployment options make scaling easier than ever, whether a company is looking to scale up or down to better manage seasonal demands or duplicate a Dynamics 365 instance on a server in a new country they're entering.

Increase agility

To succeed in a world of uncertainty, retailers must be flexible to quickly pivot and adapt as market conditions change. With Azure and Dynamics 365, retailers have the flexibility to deploy how and where they want, leverage extensions to quickly add new capabilities and easily manage system updates and new features across the organisation.

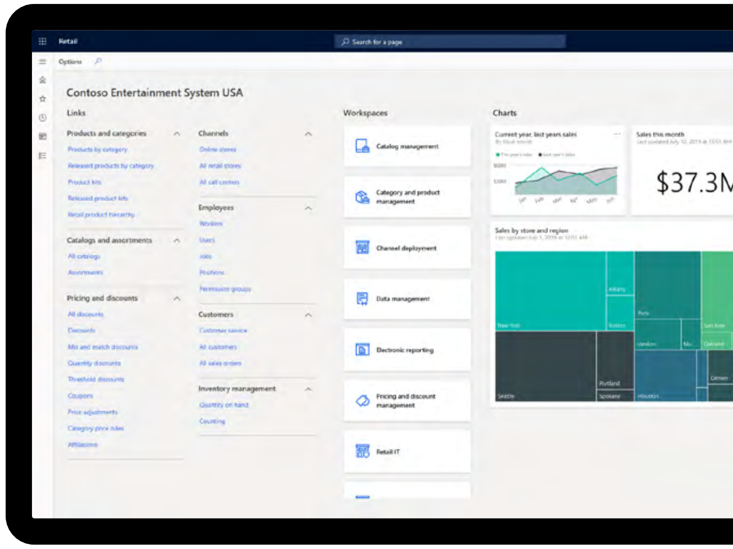
Create exceptional shopping experiences

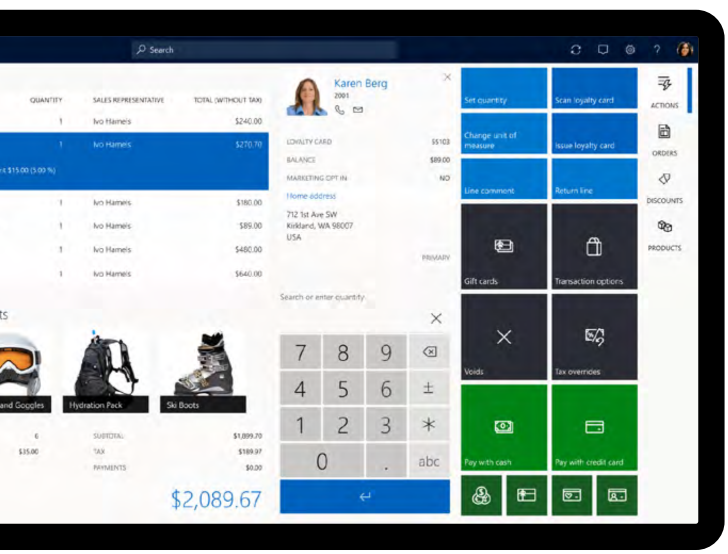
Elevate your brand by delivering personalised, seamless shopping experiences across physical and digital channels with Dynamics 365 Commerce.

Commerce

Modern retailers face many challenges, from managing daily operations at their stores to transforming business for future growth. Dynamics 365 Commerce helps retailers get ahead in today's competitive environment with the best of digital and in-store to deliver personal, seamless and differentiated customer experiences.

Transform your business through an intelligent, modern platform. Empower your people to deliver maximum business impact. Personalise your customer engagement by using advanced analytics to understand, predict and better serve customers.





Build brand loyalty with omni-channel experiences

Gain customers for life by engaging shoppers with personalised service, both in stores and online.

Simplify retail operations

Increase collaboration and get the insights you need to improve the way you manage staffing, inventory and fulfilment.

Strategically plan and merchandise

Increase your sales and profitability by ensuring that the right products appear in the right stores at the right time – and at the right price.

Optimise your supply chain

Keep up with consumer demands worldwide and reduce operating costs with a data-driven supply chain.

How Microsoft can empower your business

01 / **Unified data, intelligence everywhere**	Customer Insights · Power Platform · Cognitive Insights · Azure IoT Hub · Cognitive Services · Dynamics 365 Platform · IoT Intelligence · Artificial Intelligence · Process automation
02 / **Customer experience is everything**	Assisted sales and clienteling · Call centre operations · AppSource · E-commerce · Omni-channel experiences · Quality management · Dynamics 365 Customer Service · Store inventory · Bot Services
03 / **Retailers experiment with new formats**	Azure · Inventory management · Xamarin · Call centre operations · Computer vision · GitHub · Catalogue management · PowerApps · Centralised channel management · Merchandising · AppSource
04 / **Operations drive retail excellence**	Dynamics 365 Platform · Dynamics 365 Finance · Process automation · AI-builder · Machine Learning · Centralised channel management · Daily operations · Human Resource Management · Microsoft Teams
05 / **Supply chain becomes a competitive differentiator**	Procurement and sourcing · Transportation and route mgmt · Supplier relationship management · Warehouse and inventory mgmt · Vendor collaboration · Dynamics 365 Supply Chain Management
06 / **Retailers place a renewed focus on ethics**	Blockchain Service · HoloLens · Workforce management · Mixed reality · Azure Active Directory · Cognitive Services · LinkedIn Talent Solutions · Azure · Cognitive Insights
07 / **Businesses adapt to global uncertainty**	Dynamics 365 Platform · Master planning · Blockchain Service · Azure Active Directory · Dynamics 365 Finance · Office 365 · Power Platform · SharePoint · Microsoft Teams · Azure

Create exceptional, insightful shopping experiences with Dynamics 365 Commerce

Visit the Dynamics 365 website to learn more about how Dynamics 365 Commerce can help you create exceptional shopping experiences.

http://dynamics.microsoft.com/commerce

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