McKinsey & Company

Rebooting Retail

How technology will shape the future of retail

Preface

Technology is rewriting operating models across every sector of the economy, but nowhere do we feel this more in our day-to-day lives than in retail. Here, we — as consumers — see the impact of our own changing behaviours and shopping preferences on the shape of the retail landscape.

The UK is at the forefront of this change, both driving it and experiencing its impacts most sharply:

— The UK has the highest adoption of online shopping amongst Western peers (20 per cent of UK consumers shop entirely or mostly online) — reflecting broader digital behaviour as well as population density and infrastructure, which simplify logistics

— Retail margins have declined by almost 2 percentage points since 2013, because of increased competition, the high cost of running omnichannel operating models, declining space productivity, and inflationary headwinds on the cost base

— Retail is the largest private sector employer in the UK, accounting for 13.8 per cent of all jobs

Technology is therefore a strategic imperative for UK retailers if they are to stay relevant and profitable: the retail experience of the future will be propelled by physical technology and advanced analytics to meet changing consumer expectations, whilst allowing retailers to reset the operating model and economics. (For more on how the coronavirus outbreak has affected our analysis, see sidebar, "A note from the authors.")

By 2030, we see technology (both through channel shift and automation) affecting a third of tasks in UK retail. To prepare for this, retailers will need to rethink all tasks and roles, and also make data-driven decisions about the order in which they roll out new technologies across regions that vary in their dependence on retail employment. At the same time, this level of change also offers UK retail an opportunity to lead the charge on new labour models that enable employees to take more control of their schedule and task-orientation, whilst remaining part of a workforce and community.

A holistic, technology-enabled 'reboot' could lift UK retailers' margins by 280–600 basis points. Achieving this will require retailers to define a master plan and set up a 'control tower' so that they avoid launching a series of unconnected pilots and roll-outs. Their choices around technology will be completely entwined with those around consumer value propositions, operating models, people and, for larger retailers, the impact on and their responsibility for the wider community.

A note from the authors

The thinking behind this report was done before the outbreak of the COVID-19 pandemic. We have considered whether the observations and recommendations remain valid in this turbulent time and have concluded that the direction outlined still fits with the 'next normal' we expect retailers to navigate, and is now even more pertinent with the acceleration of shopping trends.
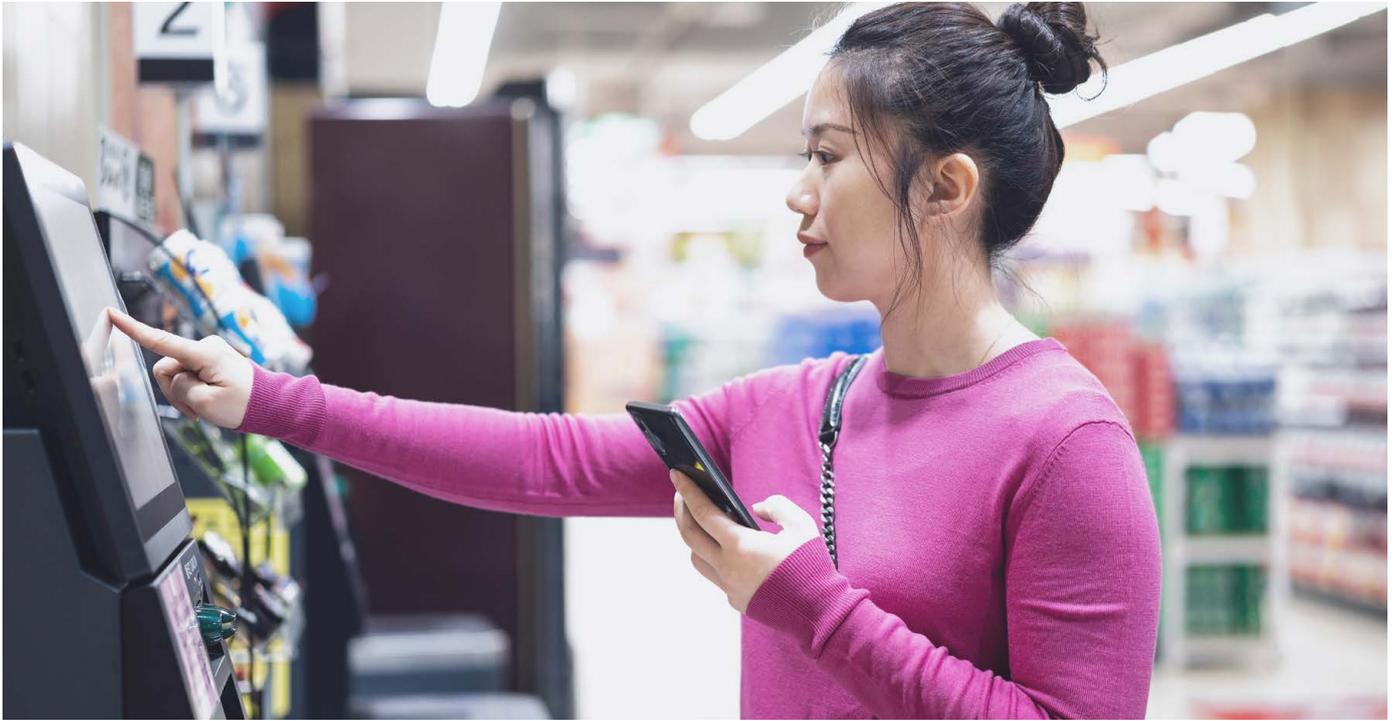
We have seen a fundamental step-change in the shift towards online shopping and home-delivery during the COVID-19 'lockdown' period in the UK, which we expect will be sustained through to post COVID-19 and accelerate channel shifts the mid-term. Shoppers are trialling new ways to shop – 10 per cent tried Grocery delivery, 6 per cent instore click-and-collect and 10 per cent drive-through collection – and 12 per cent expect to shop less at non-essentials stores once they reopen.[1] We expect a level of long-term 'stickiness' from these changes – with lessons from China suggesting retailers should still be expecting 10 to 20 per cent year-on-year growth online in most categories as the market moves towards the 'next normal'.[2]

Additionally, many of the opportunities referred to in this report (for example, platforms that enable flexible working hours or locations, and home delivery fulfilment propositions) would have been extremely useful for retailers and enabled greater resilience during the crisis. The situation has given businesses a stronger sense of what they need in order to deliver for customers, to be more productive, and to have the flexibility to operate in downtimes or when demand surges beyond usual capacity.

The expected ongoing impact on the UK economy and consumer confidence puts further pressure on retailers to find new ways to combat inflationary headwinds. If anything, COVID-19 is a reminder that Retail may need to Reboot faster than anticipated.

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[1] McKinsey UK consumer sentiment survey, 30 Apr to 3 May 2020: 'Have you used or done any of the following since COVID-19 started?'; 'What do you think you will do more or less compared to before COVID-19?'

[2] McKinsey China consumer sentiment survey, 5 to 11 May 2020: 'Where do you expect to shop more or less?', by product category

UK retail is at the forefront of technology disruption

Retail in the UK is at the forefront of a technology revolution, driven by two forces. One is consumers' behaviour, as they embrace e-commerce, turn to smaller store formats, and interact with retailers in new ways across channels. The other is the intense pressure on legacy retailers' margins from the cost of meeting new expectations while fending off competition from digitally native retailers and discounters.

To thrive in a future of proliferating technology, retailers will need to re-imagine the very nature and role of physical retail. Technology can enhance the customer experience and lower retailers' costs but will also change the set of tasks required to run a store. Rather than simply automating the current operating model, retailers should rethink their entire value propositions for customers and employees alike.

Throughout this report, we use 'retail' to refer to sales made in the UK across chains (multi-national, national and regional) and independents, in all formats (e.g., department stores, grocers, e-commerce, specialists and convenience). We dive more deeply into 'grocery' stores, including discounters, selling primarily food and drink, and traditionally stocked non-food categories such as household, pet care, and electronics.

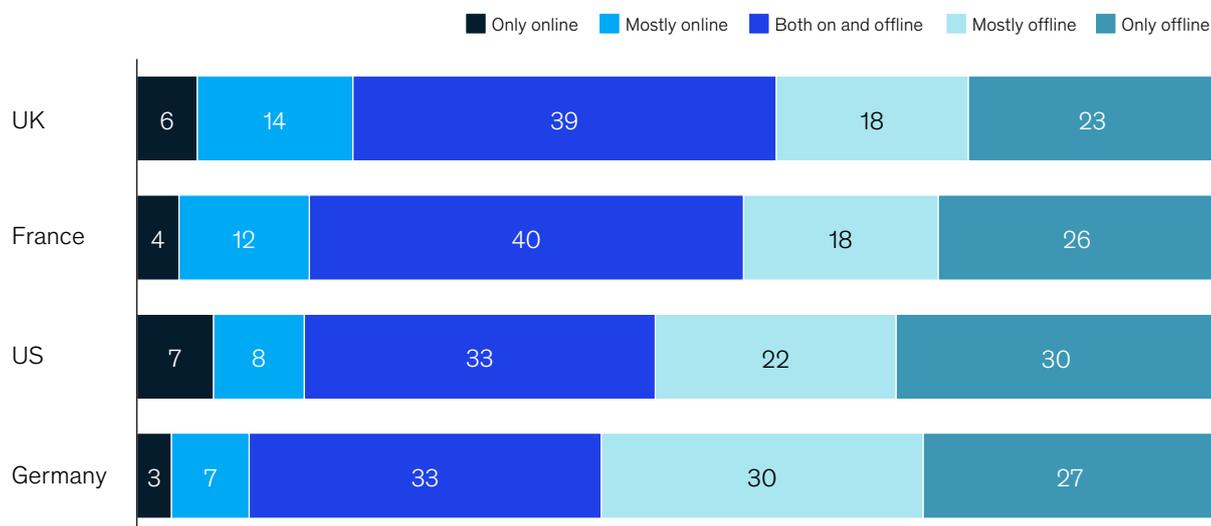## Consumers are purchasing more through e-commerce and smaller store formats

In the UK, nearly one fifth of consumers are doing "most or all" of their shopping online – a 33 per cent higher share than in the US (Exhibit 1).[3] Since 2013, UK online sales have been growing nearly ten times faster than offline sales, raising the online share of total sales from 12 per cent to 19 per cent in 2018, and putting them on track to reach almost 30 per cent by 2023 (Exhibit 2).[4]

The migration online is visible across all retail, but has been faster in general merchandise and more gradual in grocery, where online sales were just 6 per cent of total purchases in 2018.[5]

Customer preferences are also evolving within physical retail, towards smaller store formats. In UK grocery, all growth since 2013 has been driven by discounters and convenience formats, while sales in supermarkets have declined (Exhibit 2).

Exhibit 1

The UK consumer is at the forefront of the technology revolution, ahead of Western peers

	Only online	Mostly online	Both on and offline	Mostly offline	Only offline
UK	6	14	39	18	23
France	4	12	40	18	26
US	7	8	33	22	30
Germany	3	7	33	30	27

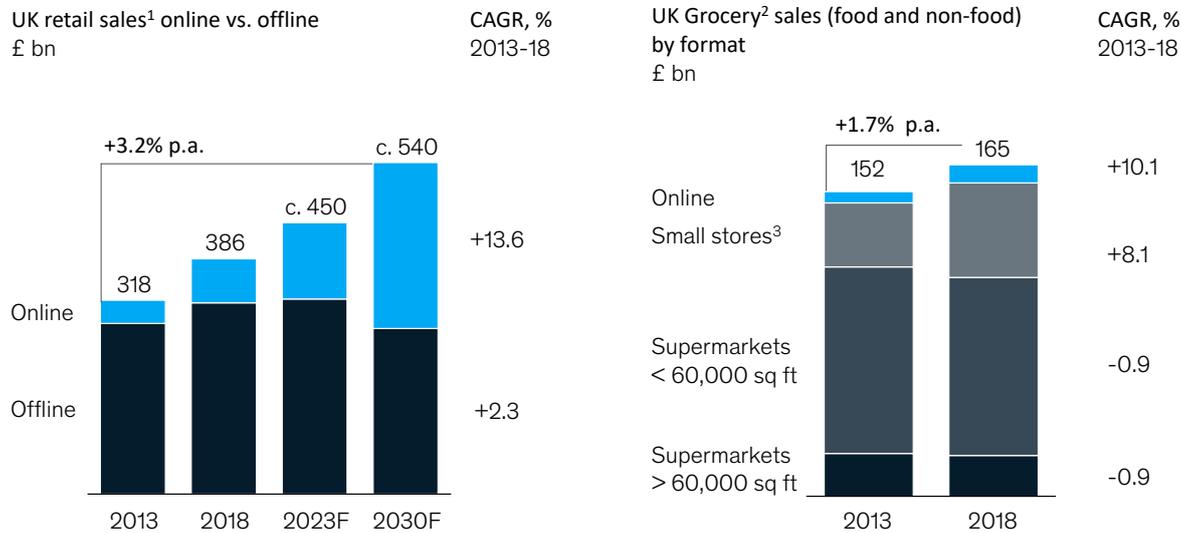Source: Periscope By McKinsey Consumer Survey Report "CPG Goes Omnichannel: Shoppers Grasp the Digital Opportunity", March 2018

Exhibit 2

Across retail, shoppers are shifting online, and in Grocery, they are also moving to smaller, more convenient stores

UK retail sales[1] online vs. offline
£ bn

CAGR, %
2013-18

+3.2% p.a.

c. 540

c. 450

386

318

Online

Offline

2013   2018   2023F   2030F

+13.6

+2.3

UK Grocery[2] sales (food and non-food)
by format
£ bn

CAGR, %
2013-18

+1.7% p.a.

152   165

Online

Small stores[3]

Supermarkets
< 60,000 sq ft

Supermarkets
> 60,000 sq ft

2013   2018

+10.1

+8.1

-0.9

-0.9

1 Across multinational, national, and regional chains as well as independents, including all formats (department stores, grocery, category specialists, e-commerce, convenience).
  Figures for years beyond 2018 are projected
2 All stores primarily selling grocery – includes sales of food and beverage, alongside non-food categories traditionally stocked (i.e., pet care, household, hardlines, electronics)
3 Covers convenience and discounter stores
Source: Forrester, IGD

Retailers have had to respond to channel shifts against a backdrop of margin pressures

The investments required to deliver on customer expectations, the extra cost of managing e-commerce supply chains, and increasing competition have put retail margins under pressure.[6] Between 2013 and 2018, the average retail EBIT margin eroded by almost 2 percentage points, from 5.1 per cent to 3.4 per cent. The trend applies in both grocery and non-grocery, albeit at different paces (Exhibit 3).[7] The pressure is taking a toll: by 2018 there were 5,600 fewer stores in the UK than in 2013 (1.3 per cent of the total) and many venerated household names – across categories – have gone into administration or face challenging times.

Competition has intensified with the rise of digitally-native firms such as Amazon and Ocado that are inherently optimised for e-commerce. Legacy retailers aiming to defend themselves must spend heavily to build out e-commerce arms. Additionally, digitally-native firms – together with discounters in some categories – are able to drive down prices across the industry, further squeezing margins.

Managing an e-commerce supply chain adds cost through complexity, and last-mile transport is more expensive than in-store fulfilment. Transport costs will fall, first as AI-enabled delivery algorithms optimise routes, and later with the arrival of autonomous vehicles, but for now, a cost difference remains.

6   Automation in retail: An executive overview for getting ready, MGI (2019)
7   Retail Week Prospect, with adjustments on exceptional items that affect margins
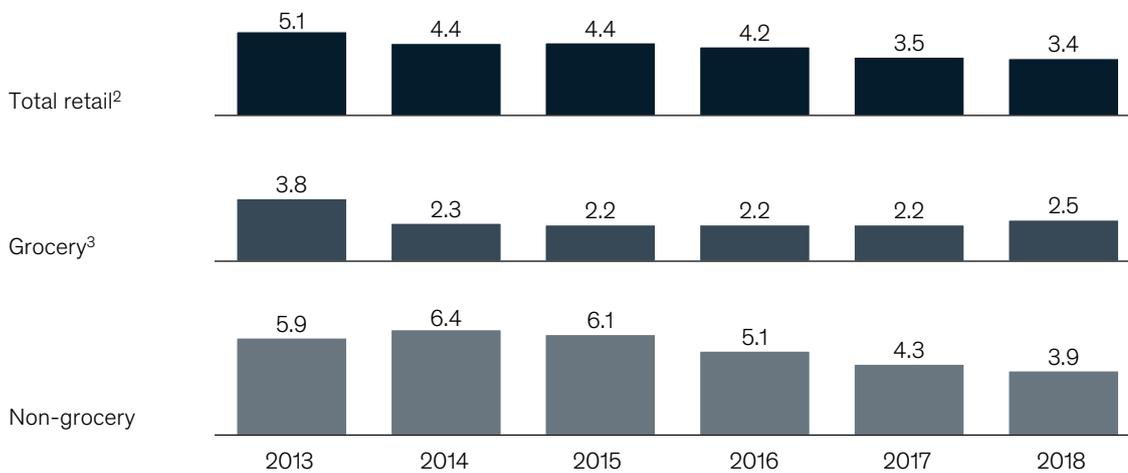
The challenge from competitors comes on top of considerable inflationary pressure on the cost of labour, which rose in 2020 at more than three times the rate of CPI inflation.[8] This pressure includes a minimum-wage increase ranging from 4.6 per cent to 6.5 per cent for workers aged 16–24 – especially relevant in the retail sector, which relies heavily on entry-level workers – and

a 6.2 per cent increase in living wage guidance for those over 25 (expected to rise with a 4.8% CAGR to 2024[9]). This is likely to squeeze overall retail margins more tightly still because consumer pricing remains highly competitive and it will have further impact on smaller chains or independents that may already pay below today's living wage.

Exhibit 3

Retailer responses to channel shifts are constrained by margin pressure

Retail EBIT margin, top UK retailers,[1] %

	2013	2014	2015	2016	2017	2018
Total retail[2]	5.1	4.4	4.4	4.2	3.5	3.4
Grocery[3]	3.8	2.3	2.2	2.2	2.2	2.5
Non-grocery	5.9	6.4	6.1	5.1	4.3	3.9

1 Includes data from the top 95 UK retailers that have continued operations over this period and have consistent data
2 Across multinational, national, and regional chains as well as independents, including all formats (department stores, grocery, category specialists, e-commerce, convenience)
3 All stores primarily selling grocery – includes sales of food and beverage, alongside non-food categories traditionally stocked (i.e., pet care, household, hardlines, electronics)
Source: Retail Week Prospect, McKinsey Global Institute Analysis 2019

8   UK Government published national minimum and living wage rates, 2019 versus planned 2020; Office for National Statistics, Consumer Prices Index excluding Housing, January 2020
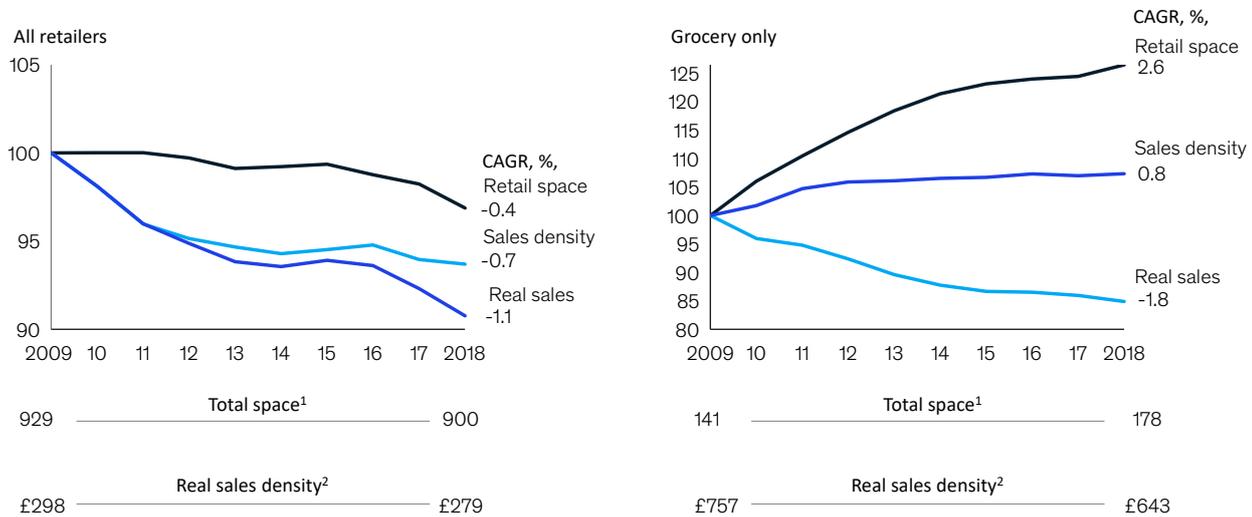9   UK budget announcement March 2020

Additional challenges are presented by the cost of surplus retail space. Even though space is coming out of the market, sales are moving online faster, and so the productivity of UK retail space – the profit retailers make per square foot of store – is falling. Channel shifts have led retailers to reduce physical space at a rate of 0.4 per cent a year since 2009, but inflation-adjusted sales

density has fallen at 0.7 per cent. Productivity decline is especially acute in grocery, where new format needs have increased overall space, at the same time as sales have been shifting online (Exhibit 4). If the trend continues, retailers will feel even greater pressure to use space more productively or else re-evaluate their property portfolios.[10]

Exhibit 4

Space productivity is a major challenge, which UK retail has not been able to fully address

UK retail real estate footprint, real sales and sales density
GBP per sq ft, indexed to 100, base year = 2009

All retailers

CAGR, %,
Retail space −0.4
Sales density −0.7
Real sales −1.1

Total space[1] 929 — 900

Real sales density[2] £298 — £279

Grocery only

CAGR, %,
Retail space 2.6
Sales density 0.8
Real sales −1.8

Total space[1] 141 — 178

Real sales density[2] £757 — £643

1 Real estate footprint (million sq ft);
2 Real sales density (£ per sq ft), calculated as inflation-adjusted sales divided by total space
3 Across multinational, national, and regional chains as well as independents, including all formats (department stores, grocery, category specialists, e-commerce, convenience)
4 All stores primarily selling grocery – includes sales of food and beverage, alongside non-food categories traditionally stocked (i.e., pet care, household, hardlines, electronics)
Source: Euromonitor Passport, McKinsey Global Institute Analysis 2019

[10] Euromonitor Passport

Retailers need to re-imagine the nature of physical retail

The changing consumer landscape is forcing an evolution in the role of stores from single-use self-service buildings to multi-use click-and-collect touchpoints. Combined with mounting market pressure, this is driving retailers to join the technological revolution.

Technology can both enrich the offer to consumers and reduce costs in the long run, but capturing these benefits means reimagining the operating model. For instance, adding click-and-collect may initially increase costs as labour replaces the customer shopping trip, but the upside from an improved value proposition and savings from automation elsewhere could soon outweigh this.

Automation and technology will change both customers' and employees' experience in the store (Exhibit 5). The exhibit explores a "retail experience of the future", showing what is possible (and already appearing), such as new ways for consumers to find and pay for items, information systems for workers, and changes to how items travel from the distribution centre through the store to customers.

Elsewhere in the supply chain, big-data and advanced analytics are essential to optimising processes. Retailers can forecast demand more precisely (and minimise inventories), improve distribution routes, and minimise trips from the store warehouse to replenish shelves. Combining process optimisation with automation is especially powerful – demand forecasts can trigger an order from the procurement function for stock that is sent to an automated warehouse, where robots distribute and store the items until they are needed. At that point, when a shop sends an automated order – potentially generated by a smart shelf – the product is automatically picked, moved across the warehouse, and loaded into a truck for delivery.

How far a retailer goes in adopting technology both in-store and along its supply chain will depend on its size, sophistication, and capacity to invest. But any change presents a retailer with strategic choices about how its operating model should evolve. Rather than simply automating their current operating model, retailers must determine how to improve their value proposition, and invest accordingly.

The next section will examine how the choices retailers make will shape the future of the UK workforce.

Exhibit 5

The retail experience of the future will leverage technology to truly enhance consumer experience

Seamless checkout

1. **Self.-checkout tills**
   Customer self-scan, best for smaller basket sizes and quick-stop missions

2. **Tunnel and mobile-scanning checkout**
   100% automated with customers handling conveyor and payment

3. **Automated check-in and out and fraud detection**
   Customer identification through facial recognition or other identifier, and automatic payment

Personalized shopping experience

4. **Personalised product info & recommendations**
   Customer receives product info, recos and offers as they browse via smartphone

5. **Interactive customer devices**
   Improve customer experience and collect feedback

Expanded ordering and pick-up options

6. **Click and Collect**
   In-store pick-up for goods ordered online, via drive-through or walk-up window

7. **Self-service delivery lockers**
   Parcels for pick-up that can be groceries and/or items from online retailers

8. **Take-away delivery**
   Kitchen preparing ready-to-eat/ home-delivery food

In-store technology will raise productivity and drive change for employees through task mix, and operating and labour models

Technology-enhanced store tasks

9. **Cleaning robot**
   Handles routine tasks

10. **Employee wearables**
    Interact with in-store technology to receive alerts (e.g., out of stocks)

11. **Electronic shelf labels (eSELs)**
    Enable digital price-setting (and potentially dynamic pricing), reducing need to check manually

12. **Individual product ID and/or data-enabled barcodes**
    Allow one-touch treatment of stock, tracking a product through the supply chain, store and check-out – triggering replenishment or automated promotion

New labour models

13. **Automated workforce planning**
    Based on dynamic demand forecast and inventory in store

    Platform-based work scheduling
    Access to shifts via self-serve online platform (either internal or 3P), underpinned by 'anywhere, anytime' contracts

Omnichannel fulfilment

14. **Dark kitchen for take-away food**
    Use of old kitchen space instead for dark or ghost kitchen (3P) for production of hot food for ready-to-eat or delivery

15. **Automated fulfilment centre and online picking**
    Use of space to non-customer facing activities, i.e., automated picking of high-volume items for online orders

16. **Delivery**
    Online customer order fulfilment leaving from stores, staffed by either company employee or third-party contractor

Technology will reshape retail employment

All jobs will be impacted by technology; in its automation research across sectors, McKinsey Global Institute has found that over half of current retail tasks are technically automatable.[11] However, while technology makes some current labour unnecessary, demand for human skills will grow elsewhere in the system as new activities emerge.

Workers will need more socioemotional and problem-solving skills to provide enhanced customer experience, as well as new technical skills to work alongside and operate automation machinery. There will be a premium on adaptability and the ability to master a wider range of tasks and handle responsibilities across departments or even stores.

First-order impacts of technology will be consistent and widespread, but this diverges as we reach second-order impacts such as community effects. These are likely to vary geographically, so retailers will need to consider the local context in decisions about where to test and implement technological solutions. Additionally, automation can protect

retailers against reductions in the availability of relevant labour because of changes in immigration policy, for example, or the shifting ambitions of the next generation of workers.

As tasks and skill requirements change, retailers must rethink how work gets done. In response to the questions raised by job automation, technology can create new labour-model solutions, through which retailers can improve their workforce's access to shift work. New ways of working can give employees more agency and improve arrangements to fit individual preferences.

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[11] See two earlier McKinsey Global Institute reports: *A future that works: Automation, employment and productivity* (January 2017) and *Jobs lost, jobs gained: Workforce transitions in a time of automation* (December 2017). We analyze the automation potential of every occupation by looking at the extent to which its constituent activities and associated capabilities can be handled by currently demonstrated automation technologies.

Automation will diminish some tasks, expand others, and create some altogether new ones

The retail industry is so large and widespread that its evolution, and particularly the way retail jobs change, makes impacts on a national level. In the UK, retail is the largest private employer, with close to 4 million workers – 13.8 per cent of the nation's employees (Exhibit 6). Yet it is growing more slowly than the rest of the economy and has yet to recover fully from the great recession: retail employment today is 4.4 per cent lower than in 2008, whereas overall employment has grown by 9.2 per cent in the same period.[12]

By 2030, we estimate that technology – through channel shifts and automation – is likely to displace up to a third of current retail tasks,
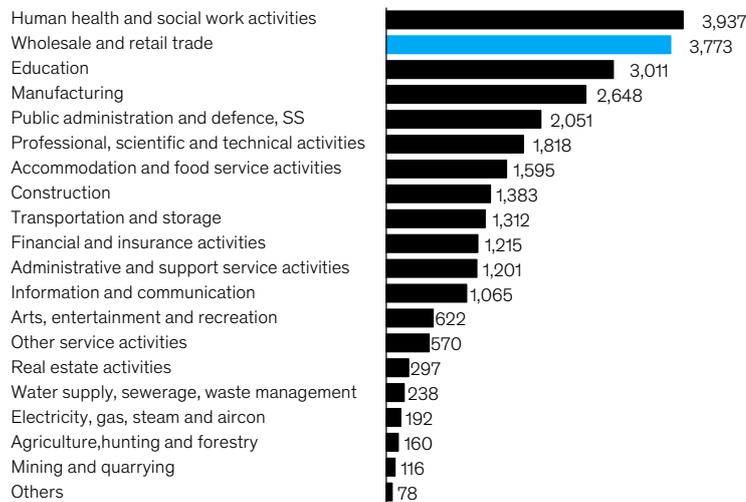
across roles (Exhibit 7).[13] In theory, the figure could be even higher, but in practice, automation adoption rates are typically below 100 per cent, for three main reasons. First, deploying technology often makes less economic sense at store level – at least in the short or medium term – than employing human labour (for example, for replenishment). Secondly, rolling out automation may be delayed by regulation or consumers' scepticism – over autonomous vehicles, for example. Lastly, technology adoption will look different between large, more capitalised firms and smaller retailers: 44 per cent of current retail employment is in companies of fewer than 100 people, and 39 per cent in firms of fewer than 50 – these smaller businesses are considerably less able to invest in technology at scale than the 'big box' players that make up the rest of the industry.

Exhibit 6

Retail is the largest private sector employer in the UK
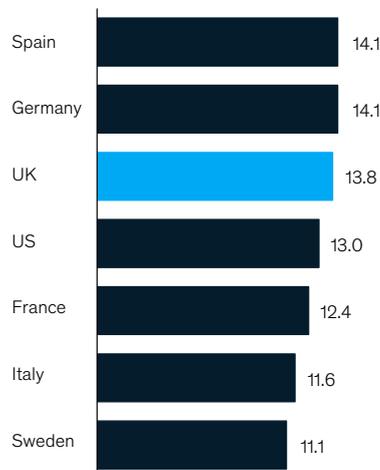
UK employees by industry, 2018
Thousands

Industry	Value
Human health and social work activities	3,937
Wholesale and retail trade	3,773
Education	3,011
Manufacturing	2,648
Public administration and defence, SS	2,051
Professional, scientific and technical activities	1,818
Accommodation and food service activities	1,595
Construction	1,383
Transportation and storage	1,312
Financial and insurance activities	1,215
Administrative and support service activities	1,201
Information and communication	1,065
Arts, entertainment and recreation	622
Other service activities	570
Real estate activities	297
Water supply, sewerage, waste management	238
Electricity, gas, steam and aircon	192
Agriculture, hunting and forestry	160
Mining and quarrying	116
Others	78

Weighted average employees   27,284

Employees in retail, 2018[1]
No. retail employees per 100 employees

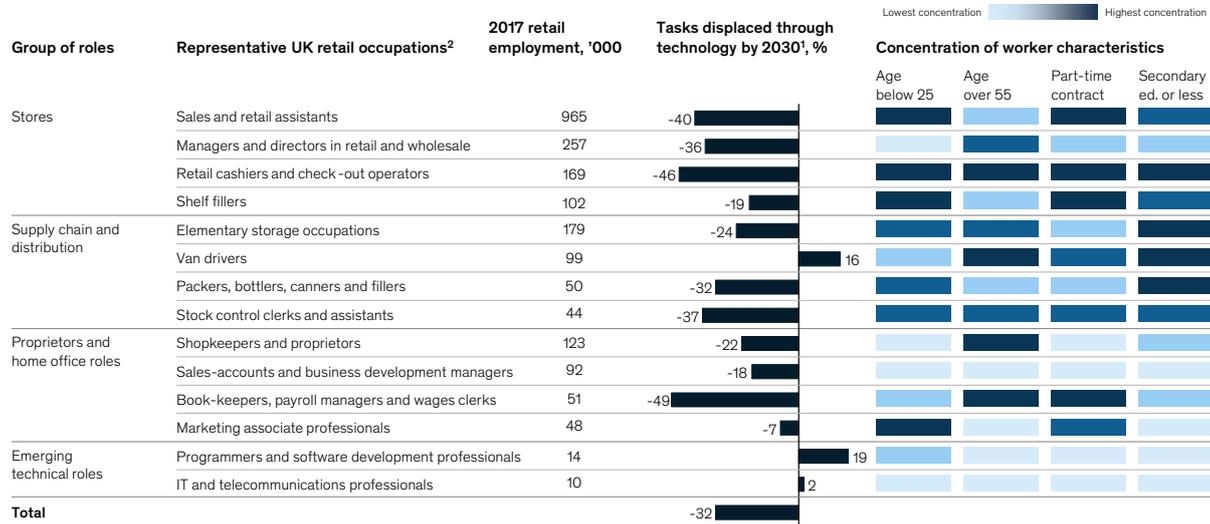| Country	Value
Spain	14.1
Germany	14.1
UK	13.8
US	13.0
France	12.4
Italy	11.6
Sweden	11.1

1 We use OECD stats for comparison across countries. Small discrepancies with UK numbers in other pages are due to differences between OECD and ONS stats
Source: OECD, BLS

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[12] ONS Annual Population Survey; retail employment in "Wholesale, retail & motor trade" as defined by the Office of National Statistics (ONS)
[13] The pace of disruption will depend on how rapidly companies adopt the new technologies. We model a range of different adoption scenarios based on historical experience that take local wage differentials into account. Our modeling is not intended to produce a forecast; it is a mechanism for assessing and sizing a range of potential outcomes resulting from automation and channel shift.

Exhibit 7

Impacts of technology could displace a third of retail tasks by 2030

Includes impacts of channel shift in the UK and likely task automation[1]

Lowest concentration ▭ Highest concentration

Group of roles	Representative UK retail occupations[2]	2017 retail employment, '000	Tasks displaced through technology by 2030[1], %	Concentration of worker characteristics			
				Age below 25	Age over 55	Part-time contract	Secondary ed. or less
Stores	Sales and retail assistants	965	-40				
	Managers and directors in retail and wholesale	257	-36				
	Retail cashiers and check-out operators	169	-46				
	Shelf fillers	102	-19				
Supply chain and distribution	Elementary storage occupations	179	-24				
	Van drivers	99	16				
	Packers, bottlers, canners and fillers	50	-32				
	Stock control clerks and assistants	44	-37				
Proprietors and home office roles	Shopkeepers and proprietors	123	-22				
	Sales-accounts and business development managers	92	-18				
	Book-keepers, payroll managers and wages clerks	51	-49				
	Marketing associate professionals	48	-7				
Emerging technical roles	Programmers and software development professionals	14	19				
	IT and telecommunications professionals	10	2				
Total			-32				

1 Tasks displaced through technology include likely (note: what is technically possible is higher) impacts of channel shift and task automation by 2030, midpoint adoption scenario (reflecting likely adoption of technology relative to cost of workers)
2 Represents the top sub-occupations in each group of roles

Source: ONS, Forrester, IGD, McKinsey Global Institute Analysis 2019

The impact of technology will differ in its extent and nature across groups of occupations:

— **Store occupations** from managers to sales assistants, cashiers to shelf fillers- account for around two thirds of retail jobs. For these roles, automation is likely to handle repetitive tasks like doing checkout or changing price labels, freeing up time for customer service. However, not all front-end jobs are the same – specialists are likely to have fewer automatable tasks, as their work requires topical knowledge and more precise actions (for example, a butcher must know about different cuts of meat). Additionally, channel shift (e.g., the growth of online) is likely to mean more tasks are replaced in the future.

— **Supply-chain occupations** form two distinct groups, which face different levels of displacement. The first consists of typical warehouse roles that involve highly automatable manual tasks, such as moving or packaging goods. The second group is roles that involve planning, managing, organising and dealing with technology; this group is around a quarter the size of the first. These jobs are held by higher-skilled employees and are less likely to be automated by 2030. The impact of channel shift here is likely to be mixed – van drivers for example may have more work because of online sales.

— **Proprietor and headquarter occupations** include jobs in management, marketing, finance, and other central departments. They generally involve more cognitive tasks such as building strategies and policies or structuring reports and presentations. Their automation potential is lower, but these jobs will change as advanced analytics and big data streamline processes, optimise outcomes and create new opportunities. Other white-collar jobs will feel a heavier impact from this wave of automation than from previous technologies and up to 49 per cent of workers in more basic functions involving data-entry, such as book-keepers, payroll managers and wages clerks, could be displaced.

— **Emerging technical occupations** include programmers, software developers, IT professionals, and engineering talent to design, deploy, and maintain automation technologies in stores. Technology tends to be highly complementary to their skills, which puts retailers in direct competition for top talent with more traditional technology firms.

As Exhibit 7 shows, roles vary in their demographics, and some may be more vulnerable to technology and automation, and struggle for alternative employment. This includes sales assistants or cashiers starting out in employment (over 1 million jobs), as well as mid-career workers in supply-chain (such as stock control clerks), who may struggle to adapt to more complex combinations of tasks. However, those with "people skills" may enjoy greater scope, and part-time work could become even more common as scheduling technologies make work-weeks more flexible.

Just as automation reduces the need for some tasks, it will increase the prevalence of others. Historically, waves of technological innovation have created more employment opportunities than they have destroyed, although often in different sectors. One reason is that economic growth increases employment demand across sectors. Another is that the automation of repetitive tasks frees up workers' time to add value in ways that are potentially more enjoyable. Non-automatable tasks in retail, such as those around customer service, are likely to expand, and completely new tasks will emerge working alongside technologies.

There are many examples of a technology replacing legacy jobs but leading to a host of new opportunities. In recent years, the personal computer has reduced the number of typists, secretaries, and book-keepers, but created jobs such as IT support specialist and computer programmer that today make up more than 10 per cent of the workforce. An older example is automobiles, which were originally feared as likely to displace manufacturers of wagons and carriages as well as many railway and equine occupations. They did, but this change created over 10 times as many jobs as it destroyed.

Not only does technology create new occupations, but it can also change existing ones in unforeseen ways. After ATMs were introduced, for example, the number of cashiers went up, as banks competed to offer customers better service and their role changed from dispensing cash to providing advice and other services. The reduction in the number of cashiers per branch enabled banks to open more branches and make retail banking more convenient for customers, which drove up the overall demand for cashiers.[14]

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[14] James Bessen, Toil and Technology: Innovative technology is displacing workers to new jobs rather than replacing them entirely, 2015.

Shifting tasks will require new skills and greater flexibility

Automation-driven transitions will require employees in all occupations to adapt if they are to thrive in the jobs of tomorrow. Technology will impact all jobs to some extent, creating opportunities to learn new skills and take on different tasks – in some cases tasks that do not exist today. Roles will be redefined to encompass larger, more complex and varied work than today's narrower, more siloed retail jobs. Even tasks that are not replaced by automation will change because they will involve more frequent interaction with technology, and the workers doing them will need new skills. For example, people may still analyse data, but the data will be richer and more complex, from different sources, and the analysts will need more sophisticated skills to extract all that it offers. To illustrate the potential shifts, we examine three common retail roles, in store, in the supply chain, and in headquarters:
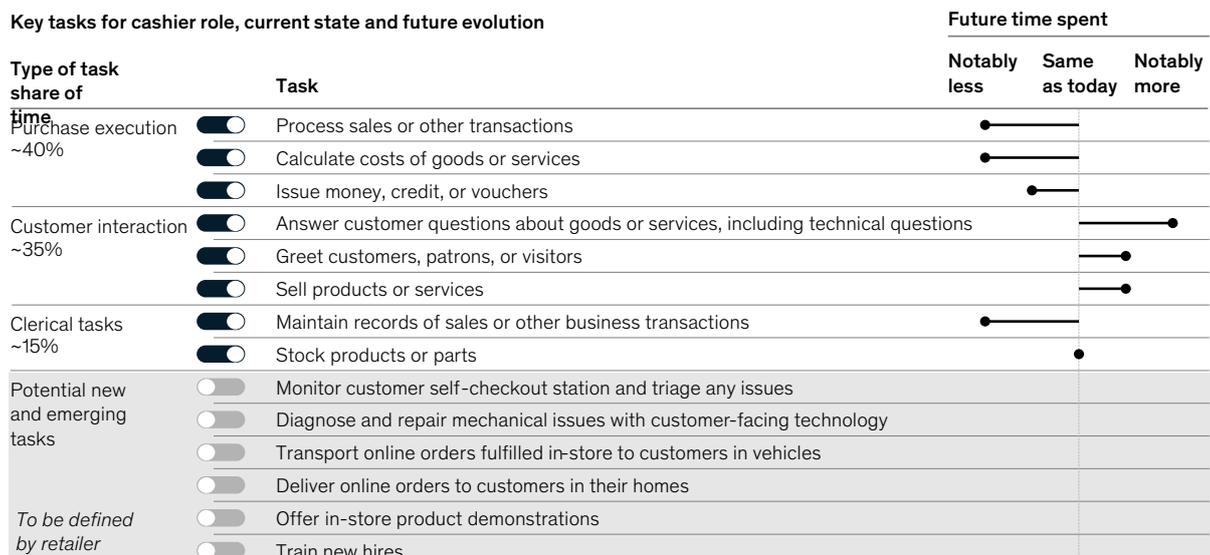
— **Cashiers** today need a balance of customer-service and basic physical skills. As the more manual elements of the role are automated by checkout technologies, the balance will shift and they will transition to more social and emotional skills, such as greeting customers and answering questions (Exhibit 8)[15]. But these activities will not be the same as today – technology will give workers more and better information on customers and products, so they will be able to target their interactions better. They are also likely to perform completely new tasks, such as troubleshooting in-store technology, demonstrating products, or training new hires.

Exhibit 8

Retailers must reimagine how work gets done as task requirements change within roles

Cashier role illustrates evolving tasks and potential for more flexible use of time

Tasks done · Tasks not done today

Key tasks for cashier role, current state and future evolution

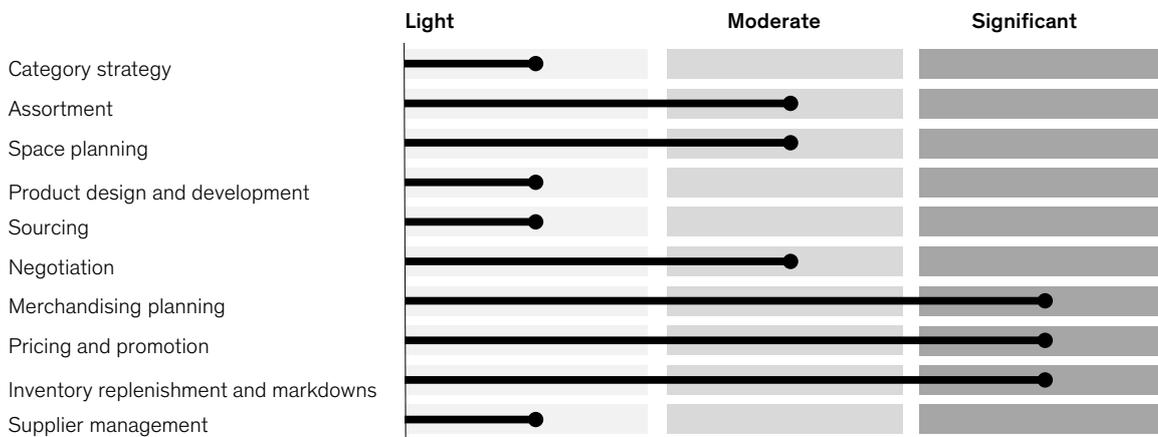| Type of task share of time	Task	Future time spent		
		Notably less	Same as today	Notably more
Purchase execution ~40%	Process sales or other transactions	●		
	Calculate costs of goods or services	●		
	Issue money, credit, or vouchers	●		
Customer interaction ~35%	Answer customer questions about goods or services, including technical questions			●
	Greet customers, patrons, or visitors			●
	Sell products or services			●
Clerical tasks ~15%	Maintain records of sales or other business transactions	●		
	Stock products or parts		●	
Potential new and emerging tasks	Monitor customer self-checkout station and triage any issues			
	Diagnose and repair mechanical issues with customer-facing technology			
	Transport online orders fulfilled in-store to customers in vehicles			
	Deliver online orders to customers in their homes			
To be defined by retailer	Offer in-store product demonstrations			
	Train new hires			

[15] MGI, Skill shift: automation and the future of the workforce, 2018.

— **Stock control clerks** manage inventory manually today but in future will see automated inventory-tracking systems handling many tasks. For example, tasks like labelling and packaging products, which take 20 per cent of their time, are expected to be automated. In the future, stock clerks will perform more tasks directly related to technology, such as supervising robotic processes, so they will require a higher level of technological skills to work with the machines and programmes that manage these tasks. Additionally, the growth of online shopping will require more picking and delivery of goods, so stock clerks could devote part of their time to these tasks.

— **Merchandisers** today spend 32 per cent of their time on technically automatable activities, such as merchandise planning. Advanced planning systems can automate historical analytics and generate predictive scenarios, reducing the time it takes and empowering merchandisers to make faster decisions. Similarly, dynamic systems with web-scraping and predictive impact analytics could automate pricing and promotions. Automating these and other time-intensive processes will give merchandisers more time for strategic activities that create more value for the enterprise (Exhibit 9).

Exhibit 9

Technology will impact the store support centre through advanced analytics and systems

Projected impact of automation and advanced analytics by core merchandising activity

Source: McKinsey retail practice, US example

Technology can also enable new labour models and worker arrangements

Just as technology changes the tasks and skills required in retail jobs, so it also opens new possibilities for how firms organise their employee relationships. The clearest illustration so far is the growth of the gig economy, in which workers who are not employees provide labour through on-demand digital platforms. In 2016, the share of UK adults doing this at least once a week was 4.7 per cent – in 2019 it had doubled to 9.6 per cent, and it is still rising.[16] Retailers can diversify their labour models (to encompass gig workers or new relationships with employees), but they will need to adapt their talent practices, such as how they match people to work and review performance. For workers, it could mean greater agency and a better fit.

For example, technologies that accurately forecast demand will allow companies to create more precise, predictable schedules for workers. When adjustments are needed, companies can digitally offer workers last-minute shifts, and workers can even trade amongst themselves to create schedules that suit them. The ability to assign marginal shifts digitally can also allow part-time colleagues who want more work to get enough hours to reach full-time.

Entrepreneurs are already exploring how technology can transform human resources, from recruiting and talent management to scheduling and compensation. Humanity, for example, is a cloud-based employee-scheduling platform that helps firms optimise their daily staffing and offers workers a way to shape their schedule by setting their availability and trading shifts without involving managers. Other platforms, such as Gig, Coople, Syft, and Catapult, connect workers who want hourly shifts with employers in hospitality, retail, warehousing, security, and other sectors.

These third-party platforms help smaller retailers find registered, retail-trained staff to take on shifts doing standard tasks (e.g., shelf replenishment, cashier work). For larger retailers, the question is whether to build or buy an inhouse platform, offering gig-style employment within their network but across stores and roles; this would allow the retailer more control over basic training and standards, and offer workers more flexibility still within a strong community. In addition, all retailers may consider whether to allocate some individual tasks through a more 'crowd' style, cross-industry gig network. A taxi driver could, for example, collect and deliver an online order on their way home, or a cashier could pick a couple of personal shopping missions after their shift.

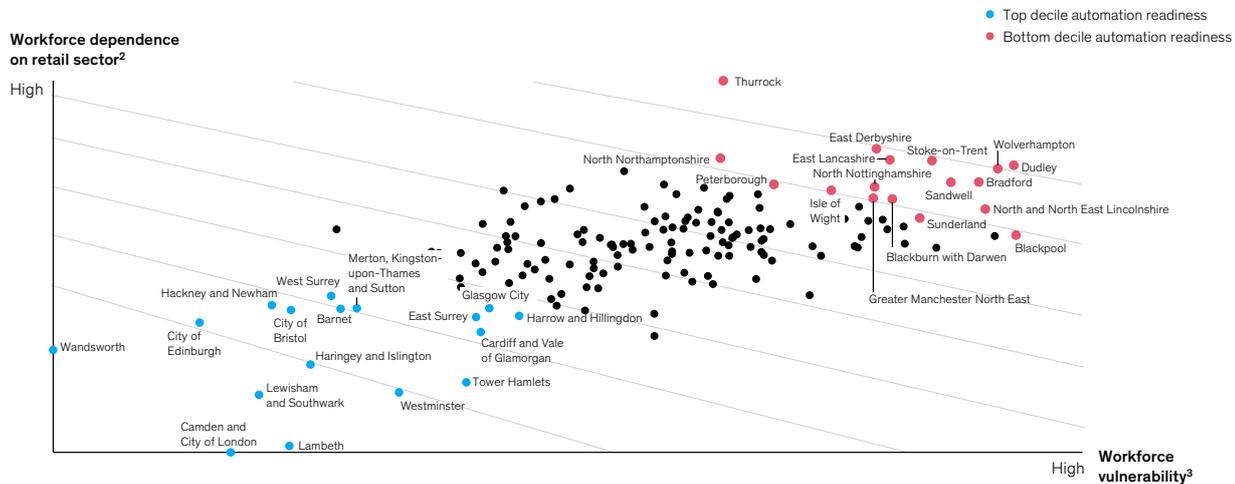## Retailers need to consider local contexts in their decisions

We have already highlighted the disproportionate impacts that automation technologies are likely to have on certain types of worker, including early-career, store-based workers stepping into employment and mid-career individuals working in the supply chain who are typically less well educated. Technology is also likely to affect regions unevenly across the UK. Retailers need to be conscious of where they implement new technologies, especially when short-term consequences such as lay-offs disrupt local communities and displaced workers have few other economic options.

Exhibit 10 shows how local dependence on retail (i.e., share of local employment in the retail industry and growth in retail employment) and gauges of workforce vulnerability (i.e., unemployment, business dynamism and educational attainment) could suggest how ready regions are for automation. Retailers considering automation should review all available indicators to make data-driven decisions that reflect both the broader workforce context and their own retail footprints.

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[16] *Platform work in the UK 2016–2019*, Statistical Services and Consultancy Unit (SSCU), University of Hertfordshire and Hertfordshire Business School (HBS).

Exhibit 10

The impact of changes to the retail workforce will vary geographically

Highest and lowest[1] regions for automation readiness

1 Indicators are normalised, based on equal weighting between vulnerability and dependence
2 Normalised based on the following indicator: total retail as percentage of local employment; Retail Employment Growth 2017 to 2030
3 Normalised and averaged across the following indicators: unemployment rate, new jobs added in 2012-18 over working age population and percentage of population with higher education
Source: ONS UK data, McKinsey Global Institute 2019 Analysis

Take Dudley as an example. Nearly 20 per cent of its population works in retail and forecast retail employment growth is 1.4 per cent (2017–30), so any disruptions would be felt by an outsized share of people. The absolute number of local jobs is falling at 2 per cent a year. Finally, it has low educational attainment – only 24 per cent of the population have some higher education versus a UK average of 37.5 per cent – complicating the challenge of retraining displaced workers.[17] A similar example is Thurrock, where unemployment is lower, but more than a quarter of the workforce is employed in retail, and only 24.6 per cent of the population has higher education. In regions like these, firms should consider whether to delay change whilst rolling out concepts elsewhere – or to move at speed to test solutions in context. Either way, vulnerable regions will require dedicated transition support for employees.

Regions that may be good candidates for testing and early implementation of automation technologies include Bristol, which has a highly educated population (54.1 per cent with higher education) and strong local job prospects. Another example is Cambridgeshire, with one of the lowest unemployment rates in the country (1.8 per cent), a low share of citizens employed in retail (12.9 per cent), and well-above-average education (42.6 per cent with higher education).

Retailers will need to base their decisions on data, not gut-feelings, and create local plans that fit their footprint (both store and labour).

17 All numbers from ONS; "Higher education" is defined as a level NVQ4 or more of people aged 16–64.

Embracing technology is a strategic imperative for retailers

Given the margin pressures within the industry, retailers that want to remain competitive in the coming years must consider technology and automation a strategic imperative.

The money they save may then become available to overcome inflationary headwinds or contribute towards strategic re-investments. However, achieving this will require greater capital intensity in the UK retail sector.

Creating the future of work in retail will take a truly complex transformation effort and navigating the multitude of changes it involves will require coordinated planning on a range of fronts.

Technology is a strategic imperative for retailers striving to combat margin pressures

A comprehensive technology and automation programme across store, supply-chain, and headquarter functions can unlock 280−600 basis points of incremental margin (Exhibit 11).

Technology will both simplify and personalise shopping for customers and make the operating model more productive for retailers. Savings from technology could be crucial to offset increasing COGS and labour inflation, or used to improve or differentiate the value proposition in several ways:

1. **Reinvest in human customer service:** Technology is used to shift workers from repetitive and manual tasks (e.g., inventory and price checking), to interacting more directly with customers to answer questions and help with sales. Technology complements workers where helpful (e.g., wearable technology that provides them with information to assist customers).

2. **Enhance digitized customer service:** Technology is deployed throughout the shopping experience to provide detailed information and personalised touchpoints to consumers (e.g., digital signage), as well as convenience (e.g., automated dispensers). Human labour complements technology where required in the digitally-forward shop.

3. **Product and price differentiation:** Technology reduces labour (e.g., self-checkout directly substituting for cashiers), lowering overall costs for retailers. Savings can be invested in product differentiation or passed along to the consumer in the form of lower prices.

Exhibit 11

Technology is a strategic imperative for UK retail, with the potential to re-shape the P&L

Example of UK Grocery P&L with gross savings from technology roll-out by 2030

Income statement line	Current[1] % of revenue	Gross saving from tech,[2] ppt	Key drivers
Revenue[3]	100.0%		Potential revenue upside not included but could come from personalized offers, dynamic pricing, omnichannel fulfilment[4]
COGS[5]	70.0%	0.5−1.0%	Reduction in inventory costs (shrink, markdowns) from precision forecasting and omnichannel fulfilment
Freight	2.5%	0.0−0.5%	Reduction in distribution costs from autonomous DC and fleet solutions
Warehousing	1.0%	0.3%	Automation of key warehousing processes
Store Labour	11.0%	1.5−3.0%	Optimization of store labour required from automated front-end, data-optimized replenishment, improved scheduling etc.
Occupancy	5.0%	0.0−0.2%	Optimization of real estate management
Marketing	0.5%	0%	NA
Other (incl. SG&A)	7.5%	0.5−1.0%	Automation of merchant functions Tech-enabled business services
EBIT	2.5%	2.8−6.0%	

1 Breakout of income statement line items based on typical grocery retailer benchmarks and interviews
2 Excludes the impact of next-horizon ideas
3 Potential revenue growth not considered for EBIT impact in this analysis;
4 Multiple use cases have revenue growth impacts. Impacts from Frontline Store Worker of the Future and Omnichannel fulfilment considered redundant
5 Multiple use cases that impact spoilage and markdowns. All use cases summed, and opportunity taken at 50% to avoid double counting of impact
Source: Expert interviews, Food Marketing Institute: "The Food Retailing Industry Speaks Report 2016"

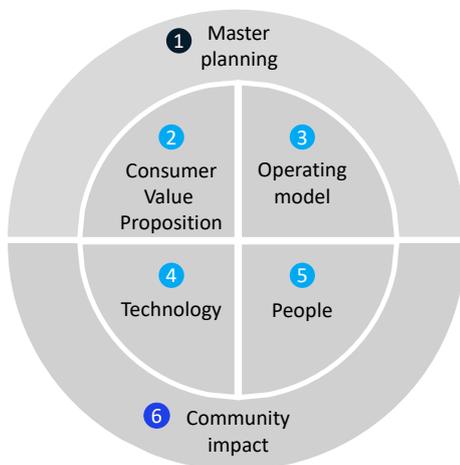## A 'retail reboot' has six essential elements

Technology may underpin the future of retail, but it would be a mistake to think that responsibility for the necessary changes sits solely with the technology and operations team. The change must be considered and managed as a long-term transformation, with a direction set by the corporate strategy, and choices and implications across the retail organisation. We see six essential elements that firms must consider when navigating the effects of technology (Exhibit 12).

Master planning: integrated governance, sequencing, and measurement enables coordination across workstreams

As with any transformation effort, planning and governance are vital. Retailers will need to establish a cross-functional steering group to govern the transformation and manage trade-offs. The steering group will decide what needs to be done, when, to realise the vision. This will involve championing the effort that most retailers have already made a start on; corralling existing initiatives and supplementing them with new; recognizing any interdependencies; agreeing the sequence of investments; and managing the roll-out of changes to the operating and labour models. Finally, companies will need to establish varied KPIs and track return on investment – both the financial return of the automation investments, and the impact on colleagues and company culture.

Exhibit 12

Retailers need to think beyond technology, to the six essential elements of a 'reboot'

1 Master planning
2 Consumer Value Proposition
3 Operating model
4 Technology
5 People
6 Community impact

1
Run cross-functional steering group plus 'control tower' to manage planning across departments
Create clear business case(s) and decide capital allocation
Map interdependencies and sequencing for tech roll-out, operating and labour model change
Define KPIs across financials, consumer and employee satisfaction

2
Set transformation goals with dual focus on ambition and future consumer value proposition (e.g., convenience, service levels, price investment)
Outline omnichannel fulfilment offering, by region
Build out design-led perspective on new, tech-enabled customer models

3
Define core enablers of the value proposition (labour and tech)
Create new SOPs for those working alongside technology
Agree locations for technology piloting and sequence roll-out
Scope how systems and analytics will enable flexible scheduling and productivity enhancements

4
Select best-fit technology, including vendor assessment
Support People team in building or buying new platforms/systems for scheduling and accessing work
Embed AI-enabled reporting
Step-change data capture and usage for real-time performance improvement

5
Redesign how labour is matched to work, including job families and new job platforms
Select and set up new employee platforms for accessing work
Define strategy for building most critical future roles and skills
Set up a transition plan for shifting labour force to meet ambitions (incl. training and communications)

6
Co-ordinate sector-wide response on future of work
Plan for mitigating community impact of decisions, e.g., redeployment of impacted workers
Create re-hiring training plan for colleagues transitioning externally
Outline at-risk areas and create community-specific plans to address

Consumer value proposition: technology changes the shopping experience

Companies should be thoughtful about how each potential technology can affect their consumer value proposition – which ones are introduced primarily to deliver against expectations, and which may aid productivity but impact on service levels. The balance is likely to differ by channel and format – in small stores, for example, consumers may embrace the added convenience from more front-end automation. Additionally, retailers could set up test-and-learn plans to decide how elements like omnichannel fulfilment should evolve – and how it will vary across geographies. Retailers should also make sure that the infrastructure is in place for customers to transition seamlessly between channels. For example, a loyalty card account can be a unique identifier of a customer across physical and digital interactions, and provide additional insights to increase personalisation – but requires both in-store equipment and a strong digital UX for customers to be willing to adopt it.

Operating model: technology creates new ways of working and of accessing work whilst simultaneously driving down operating costs

Companies need to calibrate the ideal mix of labour and technology to deliver their desired service levels in store. This is likely to require phasing – the ultimate goal may be frictionless checkout, for example, but that might take a decade or more to realize, so there will be interim steps on the way. The sequencing will need to be decided for each element of technology and how it relates to labour. Retailers should get ahead of the changes by defining ways of working in parallel with new standard operating procedures. As work becomes more flexible, companies should aim for a scheduling system that helps them match employees to work in the optimal way.

Technology: automation is the core, and data capture an essential enabler

Many potential external vendors can help design, deploy, and maintain technologies, and retailers will need to review their options thoroughly. Sequencing of capital investments is paramount, along with plans for testing systems across both stores and supply chains, probably starting with a holistic regional pilot project. Once technology is deployed, AI tools should be put to work on the data captured online and in stores to amplify its benefits.

People: Labour models will change, and the transition will require active management

As technology changes both tasks and the mix of them within jobs, companies must develop talent-management plans to support the desired end-state. First, frontline workers most affected by the changing landscape will require training across different areas of the store, upskilling in customer relations, and new ways of accessing work. Secondly, retailers must have a plan for filling critical jobs in digital, automation and AI. Given tight labour markets, this will require a combination of internal and external hiring. Finally, an infrastructure must be built for lifelong learning for all workers, providing access to future skills, delivered by their employer or through partnerships with colleges. Against this backdrop, companies must also understand which employees are candidates for particular roles based on their needs. Students, for example, might want to work part-time in limited shifts, whereas career workers will be more oriented to full-time work, with broader, more elaborate skill-development.

Community impact: colleagues and communities affected by automation will need support

Changes caused by automation are likely to bear most heavily on vulnerable workers; companies will need to decide how much they want to help displaced employees find new work. This is especially pressing because of the high turnover rates in retail. Where they wish to support communities, companies may find partnerships a helpful approach – for example with education providers that can offer training programmes for workers. Companies may also want to create community-specific roll-out plans that reflect regional characteristics, the trajectory of local economies, and their own footprint in the area.

The successful retailers of tomorrow will weave these strands together in bold strategic plans that build long-term advantage. They will reap the rewards of creating operations that delight customers, provide a stimulating, supportive environment for workers, and rework their economic model.

The future of retail has arrived in the UK; executives should be excited about the potential of AI and automation to transform both core functions and the store operating model. Technology can unlock new levels of customer engagement, a more sustainable P&L, and unprecedented employee flexibility. Success requires a holistic and long-term approach, to be started now – the longer companies wait to develop and implement their strategy, the greater the risk they will not catch up. Technology and workforce transformation should be at the top of the agenda for every retail management team in the UK.

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