AI IN ACTION

EXCLUSIVE INSIGHT FROM 75 RETAILERS ON THEIR AI STRATEGIES

RWRC CONNECT BY ASCENTIAL

In association with pwc

AT A GLANCE

Artificial intelligence (AI) has moved rapidly from proof of concepts with lots of potential to a major business focus. Retailers know that to thrive they must fundamentally rethink the way in which technology and humans interact across every core process within their organisation.

AI implementation needs, quite simply, to be one of the central strategies retailers deploy to win in the digital economy.

This realisation is evident within this report, *AI in Action*, produced in partnership with PwC, for which we conducted interviews with 75 retailers. The research gauges the level of understanding of AI among retail c-suite and managers, its potential application, the budget being allocated and the key areas that retailers are identifying for investment.

The results are striking. Despite being at a nascent stage in the UK, the majority of retailers understand what AI is and how it can be applied, and have clear investment requests. They are, however, facing budget constraints and, in some cases, struggling to put together a business case for previously untested technology.

The other big challenge concerns people, whether that is a lack of digital skills internally or in ensuring cultural adoption of transformation strategies across the wider business.

This report also looks at the early-adopter global leaders in AI – from Alibaba to Walmart – which have proven the business case, to identify learnings for a UK audience.

There is, however, little doubt that retailers stand at the precipice of great change. In the final chapter of this report, we look at how AI will impact every business function, and why retailers will need to be careful to balance their use of AI with the human element.

WHAT IS AI?

It would be wrong to describe AI as a technology. Instead, it is a family of technologies, spanning the entire spectrum of retail, from analysing big data to personalised communications, through to automation in stores and warehouses, customer-service chatbots online, natural language processing in the form of voice technology and even driverless cars, among many other uses.

There is no widely accepted definition, but essentially AI means systems that are able to sense and observe the environment around them, and then act and learn. The House of Lords Select Committee on AI's Report of Session 2017-19, *AI in the UK: Ready, Willing and Able?*, described three key terms:

ALGORITHMS

These form the basis of everything computers do, and are a series of instructions for performing a calculation or solving a problem.

MACHINE LEARNING

This gives computers the ability to learn through action, without being explicitly programmed. When programmed with data, they can learn to make predictions or solve problems.

DEEP LEARNING

This is a more recent variation of neural networks, which are loosely inspired by the human brain, in which layers of processing nodes attach weight to data to make decisions. A step on from neural networks, deep learning uses many layers of artificial neurons to solve more difficult problems. It is often used to classify information from images, text or sound.

RETAIL WEEK CONNECT: AI IN ACTION

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PwC

VIEWPOINT

EUAN CAMERON

UK ARTIFICIAL INTELLIGENCE LEADER, PwC UK

AI is growing up. The technologies are at an important stage in their journey: use cases are becoming well established, and businesses are starting to see the potential benefits for both quality and efficiency.

Retail is ahead of some industries in adoption, and not far behind financial services or the technology sector itself, but in the grand scheme of things it is still at the start of the process.

So, where are the bottlenecks and how can retailers take advantage of the potential?

Firstly, it is important to remember that AI is a collection of technologies that have applications up and down the value chain – not just in customer-facing applications, such as service and personalisation, but in broader use cases such as store layout, roll-out planning, buying and logistics, to name just a few from a very long list. The impact is likely to be profound.

Secondly, retailers must avoid shiny toys, and AI for the sake of having AI. They need to make sure that their AI investment meets their business objectives and that this guides their investment priorities.

Thirdly, retailers need to be acutely aware of the scarce assets in this landscape. In most cases, this will not be software and hardware, but data and people.

Most sophisticated algorithms are of limited use without high-quality data to fuel them. Retailers need to ensure the data foundation is robust first.

They also need to get the right team and skills in place, but there is hot competition. If retailers want to get these people on board, it is important to provide challenging work and an environment that offers the ability to experiment, as well as execute.

However, successful deployment of AI is not just about expert data science and engineering talent, but also the skills base across the business.

Retailers need to ensure there is a basic understanding of the use cases and opportunities afforded by the multiple technologies within the AI family.

Finally, power is nothing without control. AI offers a huge value opportunity, but the capability must be exercised with the right level of governance in order to capitalise while avoiding pitfalls – especially important when customer data is involved.

With the right strategy in place, however, the opportunities are endless.

> **Retailers need to ensure there is a basic understanding of the use cases and opportunities afforded by AI**

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METHODOLOGY

To produce this report, Retail Week conducted interviews with

75 retailers with an annual turnover of more than £50m

15 in-depth interviews with CEOs and directors

30 additional c-suite and other directors

30 retail managers

Which sectors did we speak to?

- 30% GROCERY
- 17% HEALTH & BEAUTY
- 8% DEPARTMENT STORES
- 13% HOME & DIY
- 12% ENTERTAINMENT
- 22% GENERAL MERCHANDISE
- 10% ELECTRICALS
- 5% SPORTS & LEISURE
- 23% FASHION
- 25% OTHER

Some retailers sell across more than one category

What do their business models look like?

15%

BRICKS AND MORTAR

23%

ECOMMERCE

62%

MULTICHANNEL

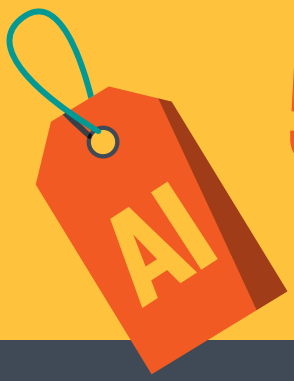
SURVEY SNAPSHOT

Our survey of 75 retailers shows a good understanding of AI in the industry, with those planning to invest having a clear plan. However, concerns persist over the digital skills gap internally limiting progress and the difficulty in recruiting and retaining the right talent

65%

of retailers say they understand AI well or very well

72% understand how AI can be practically used within their business



50% of retailers are currently using AI within their businesses

67%

of those that are planning to invest in AI are clear or very clear on their investment plan

21%

plan to invest anywhere between £1m-£20m in AI within the next 12 to 36 months

33%

of retailers have between 11 and 25 employees working on AI, while 23% have AI teams of 51 to 100

28%

of retailers see AI as one of their **top three investment priorities**

The TOP 3 areas in which retailers will invest in AI are:

- **60%** Ecommerce
- **56%** Data and analytics
- **46%** Customer service, such as chatbots

They also expect to see the biggest ROI in these areas

47%

of retailers say a **lack of skills internally**

is the biggest barrier to their AI implementation

CHAPTER 1:

AI: RETAIL'S BIG GAME-CHANGER

The technology may be at an early stage in the UK, but the direction of travel is clear

AI has become the tech priority *du jour* and is under an intense amount of focus as retailers seek to extract maximum value out of a wealth of consumer data and find ways to automate processes and drive efficiencies.

PwC forecasts that AI has the potential to add a 10% boost to the UK economy of £232bn by 2030, highlighting the significant growth expected in the use of these technologies and their potential for retail.

Retail stands to benefit greatly from the incoming age of AI. Better use of data is widely recognised as the key to unlocking growth, by ensuring products get to where they need to be, are available in the right channels at the right time, are presented to the consumer in a way that feels personalised, and are delivered in a fashion that is speedy and convenient.

These are the ways retailers will drive conversion on- and offline, as well as brand loyalty in an increasingly price-driven and promiscuous market.

Chris Oxborough, partner and emerging technology leader at PwC, says retailers need to begin by investing in cleaning up their data. "The issue is retailers don't always have clean data, and they need to spend money to improve the quality of that data."

He questions whether some retailers have the right technology platforms to give them the appropriate "springboard", adding: "Their approach to running tech programmes needs to be different. It is going to require agile technology investment sprints that run weeks or months, rather than the traditional programmes that stretch years."

The chief technology officer of a furniture retailer is currently using machine learning and has around 100 people working in this area. The retailer also plans to invest between £1m and £2m in AI across departments such as ecommerce, marketing, buying and merchandising, and logistics.

The business case is clear: "We believe there are a large amount of optimisation problems within the data we have; therefore, by using machine learning and AI, we can become more efficient, and grow market share and sales."

The head of ecommerce at a footwear retailer currently has around six to 10 people using AI tools internally, and is already using AI to some extent across areas such as ecommerce, warehouse stock management and logistics. And the retailer plans to invest more heavily in these areas.

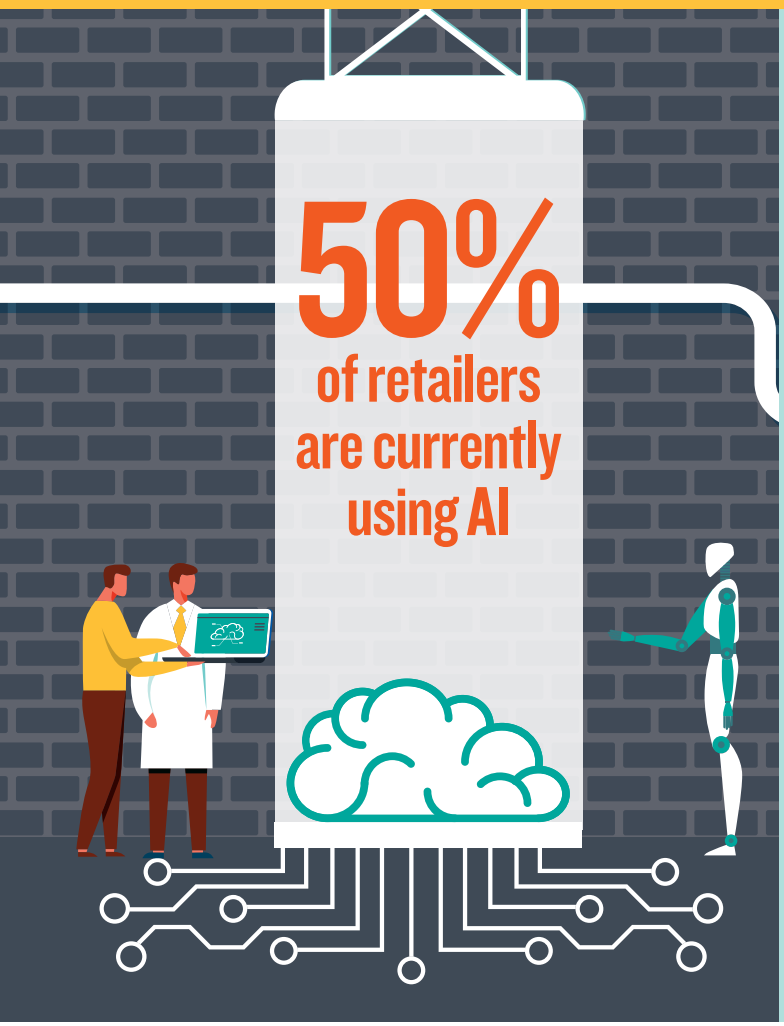
"I believe it is the future of all commerce, that we're going to be using AI machine learning to make complex decision-making more straightforward for humans."

Baby steps

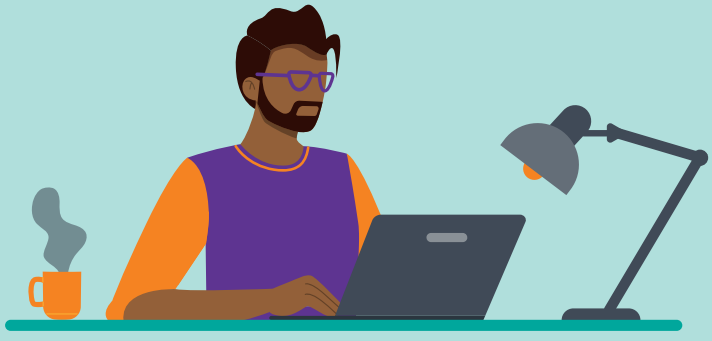
However, it is early days for AI in the UK. As explained in the methodology for this report, Retail Week conducted a quantitative survey with 60 retailers, evenly split between c-suite/directors and managers, and a further 15 more in-depth interviews with purely c-suite retailers. The latter proved to be a challenge.

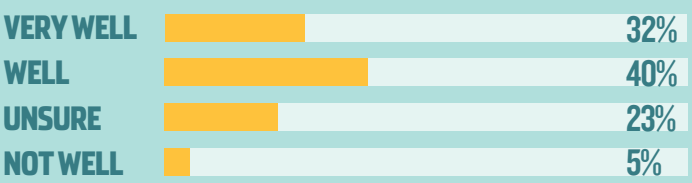
Despite inviting the UK's 180 top retailers to participate in the research, the common response was that the retailers were not yet working with AI technologies or, if they

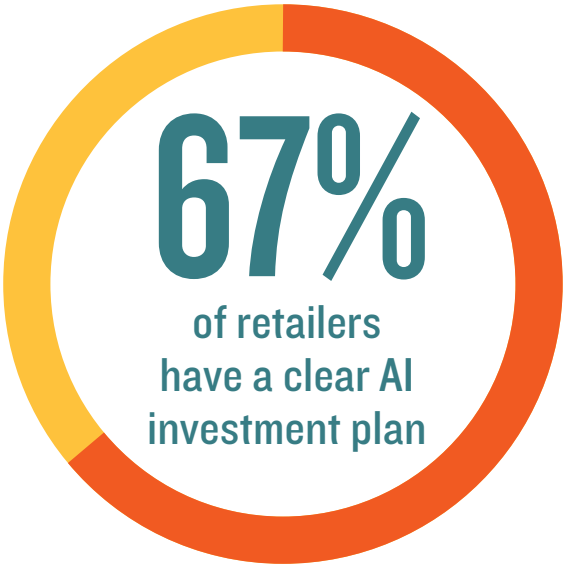
How well do retailers understand AI?



How well do retailers understand how AI can be practically applied?







were, this was at too early a stage to talk about it in any great detail. Tellingly, they all said it was an area of keen interest.

But interest might be about to turn into action: 65% of retailers tell Retail Week they understand AI 'well' or 'very well', with a further 27% saying they 'somewhat' understand it. And 72% say they understand 'well' or 'very well' how AI technologies can be practically used in their businesses.

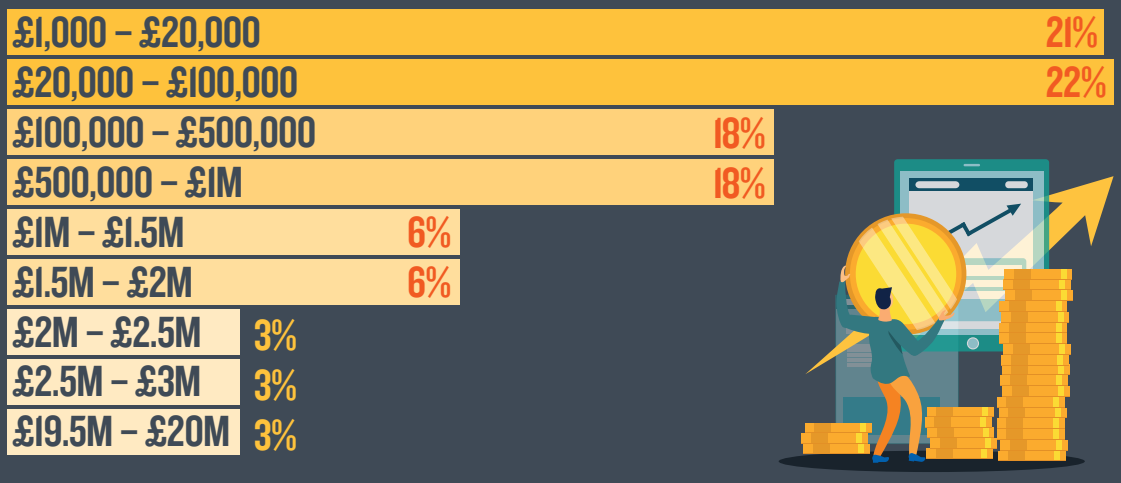
Furthermore, 50% say they are already using AI within their businesses – although we suspect the majority are at an early stage – and, perhaps more interestingly, a further 33% have plans to. This means AI is on the agenda for a staggering 83% of the retailers surveyed, with a wavering 10% currently unsure. So the direction of travel is clear.

The respondents become a little more divided when asked if they know how much they plan to invest in AI in the next 12 to 36 months – 59% know, 41% don't. There is no stopping those that know, however: 67% are 'clear' or 'very clear' on their investment plans, while a further 21% are 'quite clear'.

Their immediate investment areas are well defined: ecommerce is at 60%, data and analytics at 56%, customer service in the form of chatbots at 46%, and personalisation at 36%. They also expect to see the biggest ROI in these areas. However, it is worth noting that new technological areas are not far behind; warehousing stock management receives 26%, product or service innovation/ design 24% and in-store robotics 24%.

These are all areas the global retail leaders in AI are already exploring (see chapter 3), and where the most disruption is likely to occur in the longer term (see chapter 4).

How much do you plan to invest in AI?



Test and learn

A significant hurdle AI projects come up against is the harsh everyday commercial realities of retail trading, which often dictate a quick return on investment to avoid being shelved.

Euan Cameron, UK artificial intelligence leader at PwC UK, says retailers need to remember that AI can be used across their businesses: "AI has such broad application and benefits that it's important retailers don't solely focus on the customer-facing elements – like customer services and personalisation. AI technologies can be employed up and down the value chain to achieve maximum benefits."

It can be used across varied areas including store layout, roll-out planning, purchasing, logistics, resourcing and recruitment, to name just a few.

The managing director of a DIY specialist says they are currently using AI across the business and want to invest between £3m and £5m over the next 12 to 36 months in departments such as customer service, warehouse logistics, and buying and merchandising.

The managing director says: "I think it's potentially the biggest area of investment for us across the next five years. Using modern ways of analysing data, sending out data and measuring performance will be very helpful to us."

The chief executive of a lingerie retailer agrees. The business currently has between six and 10 people working on AI, and uses it across buying and merchandising, HR, data and analytics, and ecommerce. "The amount of data that we go through is too complicated. It's too complex for people to try to analyse without help."

Indeed, if retailers want to thrive in our increasingly digital and ever more global economy, where the likes of Alibaba, Amazon and Walmart dominate, then they need to balance a test-and-learn approach with a longer-term strategic vision.

> **The amount of data that we go through is too complicated. It's too complex for people to try to analyse without help**
>
> CHIEF EXECUTIVE, LINGERIE RETAILER

TOP 10 areas retailers are currently using AI

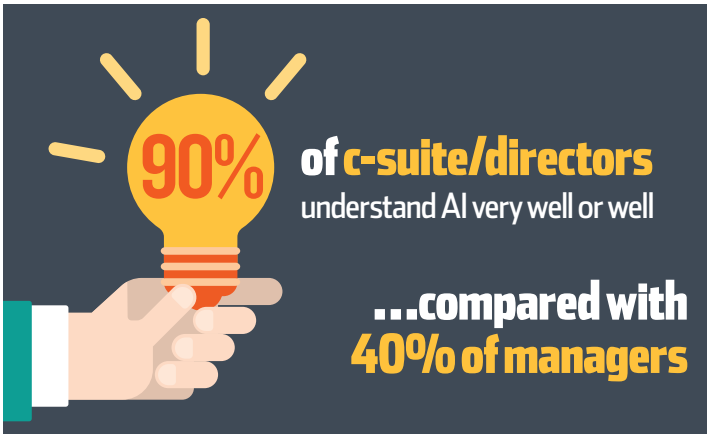
DATA AND ANALYTICS 100%	**ECOMMERCE** 83%	**CUSTOMER SERVICE** (chatbots) 77%	**PERSONALISATION** (ecommerce or marketing) 60%	**WAREHOUSING STOCK MANAGEMENT** 57%
FINANCE 53%	**PRODUCT OR SERVICE INNOVATION/DESIGN** 50%	**WAREHOUSING ROBOTICS** 47%	**HUMAN RESOURCES OR STAFFING** 47%	**LOGISTICS** 47%

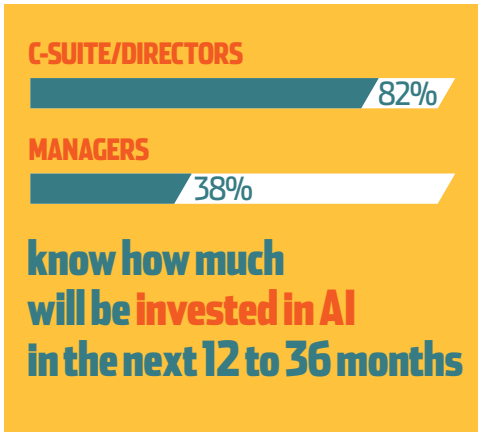
TOP 10 AI areas retailers plan to invest in

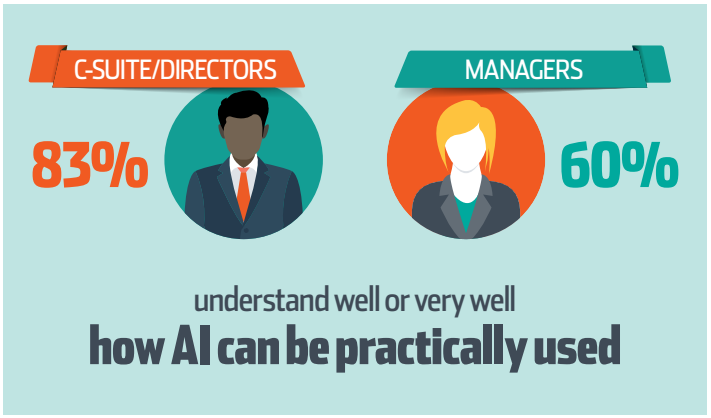
1	ECOMMERCE	60%
2	DATA AND ANALYTICS	56%
3	CUSTOMER SERVICE (chatbots)	46%
4	PERSONALISATION (ecommerce /marketing)	36%
5	WAREHOUSING STOCK MANAGEMENT	26%
6	PRODUCT OR SERVICE INNOVATION/DESIGN	24%
7	IN-STORE ROBOTICS	24%
8	HUMAN RESOURCES OR STAFFING	22%
9	LOGISTICS	22%
10	WAREHOUSING ROBOTICS	22%

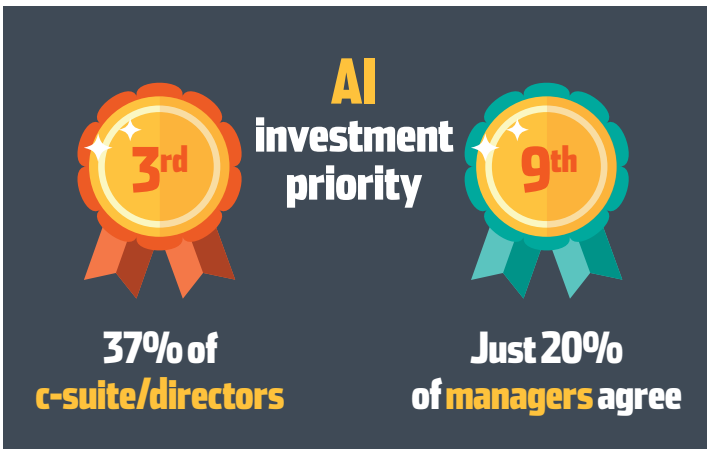
ON THE SAME AI PAGE?

5 KEY DIFFERENCES IN THE VIEWS OF THE C-SUITE/DIRECTORS VS MANAGERS









CHAPTER 2:

HOW BUSINESSES NEED TO ADAPT

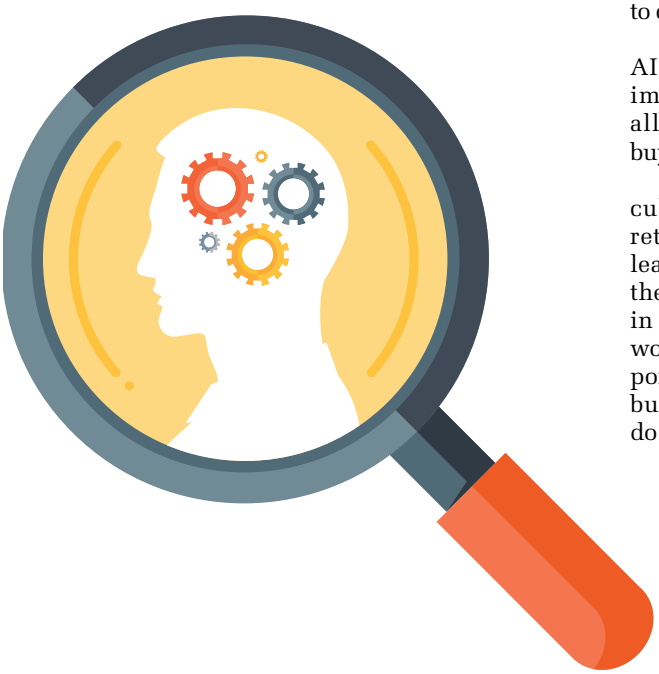
Retailers will need to radically reshape their team structures and acquire new skills to stay ahead

AI doesn't just mean a revolution in what retailers can do with customer data, the experiences they offer them and the efficiencies they can drive. It also necessitates big structural changes and a shift in people requirements.

PwC forecasts 44% of UK wholesale and retail jobs are at potential risk of automation from robotics and AI by the mid-2030s. Meanwhile, figures from Gartner suggest that, while 1.8 million jobs will be lost globally as a result of AI by 2020, as many as 2.3 million will be created (for more on what type of roles, see chapter 4).

The signs from the research conducted by Retail Week are that work has begun in earnest to hire for these new roles. When we asked retailers how many people they had allocated to work on AI, the most common response was 11 to 25 employees at 33%. However, 20% have allocated 26 to 50 employees, and an even greater number, 23%, have tasked 51 to 100 staff with working on AI-related projects.

Barriers to AI implementation persist, though, and the research indicates that they can be split into two distinct camps. The first is the people challenge.



Recruiting the right workfroce

The chief technology officer of the furniture retailer we spoke to in chapter 1 agrees. "The biggest challenge for any organisation is recruiting the right skill set of people to be able to give us the greatest chances of success. It will be challenging for a retailer of our size and in our location. And, therefore, accessing and finding the right partners is absolutely fundamental."

This was one of the key future digital transformation trends identified in *Brave New World: Leading Through Digital Transformation*, a report published by Retail Week and PwC in September 2018.

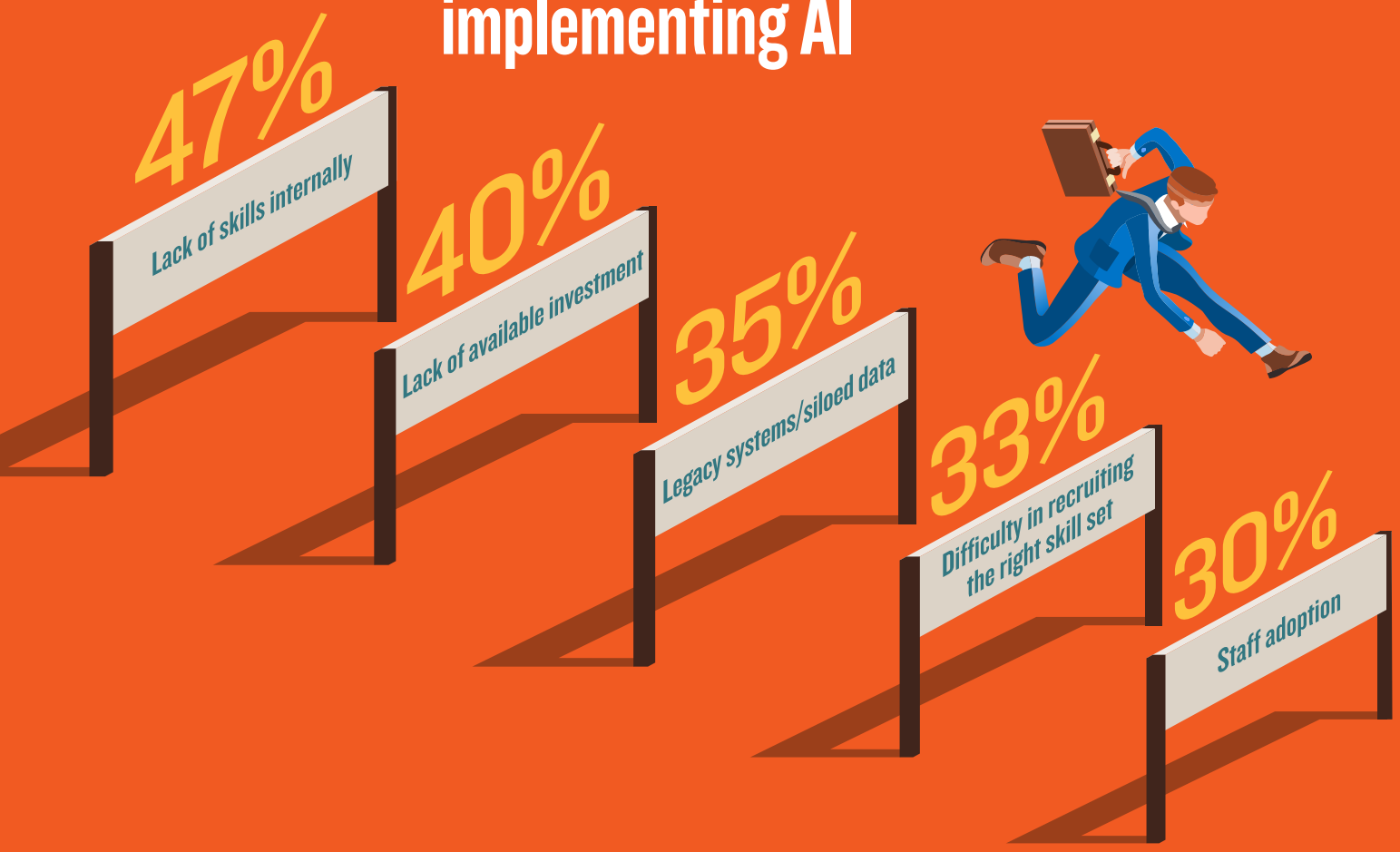
Related to this, a lack of internal skills is cited as the main challenge by 47% of retailers. However, not far behind is the difficulty in recruiting the right skill set at 33%, staff adoption at 30% and a lack of buy-in from senior stake-holders at 27%.

Euan Cameron at PwC UK says: "The scarcity of people with the right skill set means it's a jobseekers' market. To find and keep the right talent, retailers need to demonstrate how the roles they offer are better than their competitors – with a culture that embraces the importance of AI, and encourages and empowers all employees to continually learn and innovate."

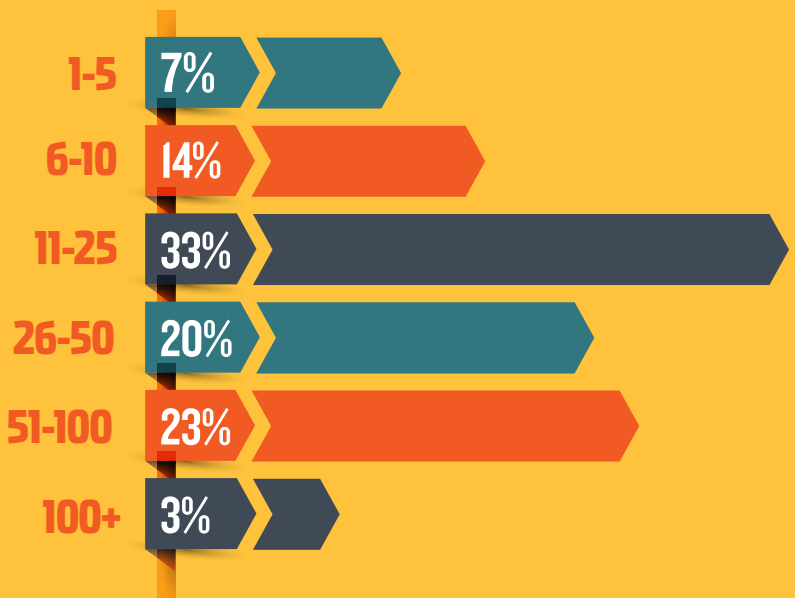
A specialist retailer, which does not use AI at present but has plans to start in the immediate future, with up to 10 people allocated to the project, agrees that staff buy-in is a challenge.

Its group IT director says: "It's also a cultural thing – we're quite a traditional retailer. So, as the technology function leader, I could force the technology into the organisation without any kind of buy-in from the rest of the business, but then it wouldn't have any effect. So, from a cultural point of view, we need to understand the business-wide opportunities before we do anything."

The 5 biggest barriers to retailers implementing AI



How many people do you have allocated to work on AI?



However, the IT director says AI adoption is something the business needs to get on board with. "Data is the key. It's the enabler to correct decisions in lots of areas.

"Things like cost reduction, improving efficiency, being more accurate, personalisation and improving communications, handling customer contact correctly, making predictions about what we think consumers might want, improving experiences – it is all derived from data and the analytics around that data."

Megan Higgins, director of customer and retail analytics at PwC, agrees that data will unlock a greater lifetime value in customers.

"At PwC, we work with a lot of retailers to help them better understand customers by using machine learning segmentation models. We create customer segments to identify groups with similar behaviours and look at what they buy, and then what they typically go on to buy after that, to help retailers work out what will keep them shopping, improve loyalty and reduce churn."

Some 75% of the retailers surveyed say they have no plans to create new roles as a requirement of AI implementation. And the 25% that do foresee the need for new roles say these will largely be at manager level. Although these businesses are hiring, they are increasing capacity across existing roles instead of creating new ones.

Charting the unknown

The challenges retailers face around the digital skills gap and the cultural adoption of transformation priorities are compounded by a second tranche of hurdles: those of a technological and financial nature.

A lack of investment was cited as a barrier by 40% of retailers – no doubt made more difficult by the need for a quick return on investment, outlined in chapter 1 – alongside ageing legacy systems and siloed data, with 35%.

The chief data officer at another specialist retailer says the business has big plans for AI, with investment between £5m and £10m planned over the next 12 to 36 months in machine and deep learning, robotics and customer service.

No employees are currently allocated to this drive, but the chief data officer plans to create a team of 10 to 15. The fact it is a new area made putting the business case together a challenge: "We've got a proposal together for initial investment, but the nature of what we do in AI, and the way that AI will manifest itself, means we don't know what we will subsequently go and ask for. I don't think anyone could be very clear in their investment plan, because you don't know which direction it's going to take you in."

The customer and digital director of a womenswear retailer – which has 25 people working with AI across ecommerce, logistics and finance, and plans to invest further in customer service, product and service design, and returns management

> **I don't think anyone could be very clear in their investment plan, because you don't know which direction it's going to take you in**
>
> CHIEF DATA OFFICER, SPECIALIST RETAILER

AI IN ACTION

75%

DO NOT PLAN TO CREATE NEW ROLES TO IMPLEMENT AI

...AND ANY NEW ROLES WOULD BE AT MANAGER LEVEL

30% **ARE CENTRALISING AND MANAGING THE AI IMPLEMENTATION PROCESS INTERNALLY**

18%

ARE USING THIRD-PARTY SUPPLIERS AND CONSULTANTS

12%

ARE DOING A MIXTURE OF BOTH

– agrees that putting the business case together is a challenge. "Around 25 to 30% of our investment is based around tools that have machine learning capabilities.

"However, if you're going to go ahead and launch voice search, for example, it's how you do that when no one else has done that, you know? That would be difficult for anyone."

The customer and digital director adds: "The biggest challenge for me is talent and money. In any business case, you've always got competing pressures for capital investment. The attraction, recruitment and retention of talent is always going to be in the top three priorities for any organisation."

However, the chief executive of a food and beverage retailer says the cost [of implementation] has actually come down. The business has between 11 and 25 people working in AI, and plans to further invest £100,000 in areas including customer service, marketing, buying and merchandising, and HR among others, within the next 12 to 36 months.

"AI tools are so much cheaper to use than they used to be, which means that we're in a position to be able to deploy powerful tools, where previously it would have been very cumbersome."

Partner collaboration

Another challenge retailers face is difficulty in finding the right supplier or partner to manage the transformation process with them. While around 30% are planning to manage their AI strategy internally, 18% are working with – or planning to work with – third-party suppliers and consultants, with 12% planning to do both.

The footwear retailer we spoke to in chapter 1 is working with an external partner. The partner told Retail Week: "I think, as we move forward, more and more people will see retailers as interesting businesses to take an AI role in, but perhaps the market isn't that mature for talent yet. So, working with a third party allows flexibility and lets them get hold of those skills that would otherwise be difficult to attain."

Clearly, forward-thinking retailers are busy behind the scenes putting together the investment cases and building teams to carry out their AI strategies.

CHAPTER 3:

RETAIL'S AI LEADERS

Learning from the global trailblazers

AI has gone beyond theory and is now in action across the globe, with leading retailers showing how the technology can transform the sector. Whether it's checkout-free Amazon Go stores in the US, Morrisons using it to improve demand forecasting and analyse data to inform buying decisions, or ASOS using it to improve the fit of its clothes, there are multiple use cases of AI popping up within the retail market.

However, it is important not to over-state the penetration of AI within the industry. While chapter 1 showed that understanding of AI has progressed, budget has been allocated and investment plans have been plotted, retailers still find themselves at the foothills of the AI summit, with a path paved with learnings lying before them.

Globally, certain retailers have already set out on that path, providing valuable insights into what works and what doesn't – and this isn't just Amazon in the US and Ocado in the UK.

In this chapter, we take a closer look at three retailers, plus one organisation that represents the voice of numerous retailers in London's West End, to help illuminate the way forward.

WALMART

- In-store robotics ensure shelves remain stocked
- Data is used to personalise offers to customers
- AI is used internally for human resources

Digital transformation defines the strategy of the world's largest retailer. Traditionally a bricks-and-mortar business, Walmart has spent billions acquiring etailers Flipkart and Jet.com, and is transforming into a genuine multichannel business. It has become the world's third largest IT spender behind Amazon and Google. And AI has been an integral part of that journey.

Walmart has introduced shelf-scanning robots to identify gaps on shelves. Then, as trucks arrive with stock, robots are used to quickly sort crates and pallets, get items on the shop floor and replenish shelves. If an item is out of stock, the shelf-scanning robot will communicate with the robot in the truck, telling it to prioritise that item.

But it's not all about robots. Walmart also leverages customer data and feeds it into algorithms to provide shoppers with more personalised offers.

"Walmart's competitive advantage is the data we have," Walmart 's former chief technology officer Jeremy King said at NRF in New York in January this year. "We can tie an algorithm together with the data we have and have such expert merchants for every category that they can tell the AI when it has done a good job." This , in turn, helps to nurture the AI.

The company uses an in-house incubator called Store No 8 in San Bruno, California, to trial new tech and stay ahead of the curve. One idea Walmart is currently looking into is how to deliver groceries to a customer's fridge when they are not home.

Walmart – which recently combined its store and ecommerce tech teams – is also quick to pull the plug when something is not working. Its cashier-free Amazon Go-style stores are a recent example, which were scrapped when customers had problems with accidentally scanning multiple items.

And Walmart doesn't just use AI-powered tech externally. It also runs staff benefits via a chatbot and has worked with a Silicon Valley start-up to implement training.

NEW WEST END COMPANY

- Gaps in data led to unrealised potential
- AI linked mobile network, average spend and flight data
- Insight is now informing investment decisions

It's not just retailers using AI to their advantage. New West End Company represents 600 retail, restaurant, hotel and property owners across 74 streets in London's West End, anchored by Bond Street, Oxford Street and Regent Street.

It wanted to attract more people and encourage them to stay longer and shop more frequently – with the goal of achieving £100m in additional income by 2020.

To do so, the company partnered with PwC to bring together new sources of data and advanced analytics, so it could make more informed choices about where to invest and make improvements.

New West End Company had been collecting data through traditional on-street surveys and tax-free shopping providers.

However, these methods had their limitations. On-street surveys are subject to bias in the form of personal opinion and represent small sample sizes. Meanwhile, tax-free shopping data misses EU citizens, who are not eligible for VAT refunds, as well as people who spend under the minimum threshold to qualify for a refund, or those from cultures where they are unlikely to ask for one.

PwC brought together anonymised and aggregated data, including mobile network, average spend and global flight bookings data, to piece together a more insightful story and build a better profile of the visitors to the area and their preferences.

The data insight has enabled New West End Company to make better decisions. This included identifying affluent visitors from previously less visible markets and then ensuring retailers had staff that could speak their language. It also revealed that certain midweek days were the busiest periods, allowing retailers to better plan staffing patterns, while flight data told them who would be visiting and when.

ALIBABA

- Rapid investment in AI includes seven R&D labs
- Deep learning is used to identify demand and manage supply
- A leader in the use of robotics in warehousing

The gargantuan Chinese ecommerce group, which owns etail platform Tmall, marketplace Taobao and its namesake B2B marketplace, coined the phrase "new retail", and is also rapidly becoming a global leader in AI.

This is, in part, down to the support that the Chinese government – determined to become a global leader in emerging technologies such as AI – is providing to Alibaba, and other large Chinese tech companies, such as Baidu and Tencent. China has plans to build on its AI industry significantly by 2030, with forecasts that it will overtake the US as the world's leading technology provider.

For its part, in 2017, Alibaba announced it will invest more than $15bn over three years into a global research and development plan. The creation of its DAMO Academy – the Academy for Discovery, Adventure, Momentum and Outlook – involved setting up multiple research labs around the globe charged with, among other things, research and development in AI.

Alibaba's use of AI includes its Tmall Smart Selection, which uses deep learning and natural language processing to recommend products to customers on the highly lucrative Singles Day. Meanwhile, its Dian Xiaomi chatbot can understand 90% of customer queries, as well as prioritise them by reading the customer's emotions, and serves 3.5 million users a day.

And, like Ocado in the UK, Alibaba is a market leader in its use of robotics in warehousing, with 200 robots processing 1 million deliveries daily.

KROGER

- Has partnered with Microsoft to trial RaaS (Retail as a Service) in two stores
- Uses smart in-store checkout-free tech to drive personalisation
- Unveiled plans for robotic warehouses with Ocado

Earlier this year, the US grocery giant joined forces with Microsoft to launch two pilot stores combining grocery shopping with digital cloud technology.

Two shops, in Ohio and Washington, are trialling "digital shelves" that can display advertising and prices digitally, along with network sensors that can track what customers pick up and purchase.

Customers use Kroger's self-checkout app, which guides them through the aisles based on the items on their shopping lists, with displays of nutritional and dietary information, and promotions as applicable.

The cloud-based system combines Kroger-developed products, such as its Enhanced Display for Grocery Environment (EDGE) "smart shelves", with Microsoft Azure technology.

It was revealed in June last year that Microsoft was developing checkout-free technology, reportedly as a challenge to Amazon's much-lauded Amazon Go store concept, which launched in Seattle at the beginning of 2018. Kroger is keen to build on this.

At the time of the launch in January 2019, Rodney McMullen, chief executive and chair, said: "Kroger is building a seamless ecosystem driven by data and technology to provide our customers with personalised food inspiration."

Kroger also partnered with Ocado last year to build 20 robotic warehouses in the US over the next three years, a deal that Ocado boss Tim Steiner told delegates at World Retail Congress would transform the grocer into "the number one player in ecommerce in the US".

CHAPTER 4:

AI, DISRUPTION AND THE FUTURE

Looking ahead to the innovations of tomorrow

Delivering her keynote speech at Retail Week Live 2019, Walmart International boss Judith McKenna said the future of the global workforce will be significantly impacted by advances in AI and automation over the course of the next decade.

"Millions of jobs will be affected" and there is no sense in retailers "turning the other way and pretending it's not happening". She added: "At Walmart, we're looking at automation head-on. We're seeing benefits in some very unexpected ways – we're increasing our turnover and our sales, we're operating more efficiently, but we're also seeing a reduction in turnover in jobs that are hard to fill and retain."

Stores of the future

As suggested in chapter 2, data, IT and ecommerce will be where AI has the biggest impact. Numbers in those head-office departments are likely to swell as businesses are required to have employees on hand to nurture their AI activities, react to the data insights provided and then translate these insights for the wider business departments.

Tasks involving data and repetitive execution are areas likely to experience a great deal of automation across the whole business, with more creative roles that rely on emotional intelligence and instinct returning to the fore as a result. So, routine functions are likely to be automated, while creative skills become more valued.

In shops, for example, better use of data will enable managers and sales associates to personalise the service they offer, releasing them from mundane tasks to interact with

> **We're increasing our turnover and our sales, we're operating more efficiently, but we're also seeing a reduction in turnover in jobs that are hard to fill and retain**
>
> JUDITH MCKENNA, WALMART

customers more. Predictive merchandising will ensure they have the stock that customers want to buy, while robotics will replenish shelves.

Walmart is already reaping the rewards of its AI activities. "One of the things that's made the biggest difference is that automation is freeing our associates up to do what they love, enjoy and what our customers ask for, which is the freedom to sell and to serve," McKenna added.

"So, as an organisation, we're learning that we don't have to make a choice between doing good for the business and for our people as well."

The result is likely to be fewer store staff, with those remaining requiring excellent people and service skills. Gone will be the impersonal, transactional store environments of the past. In their place will be truly experiential, service-led environments, where the store associate plays a major customer-focused role.

However, Chris Oxborough, partner and emerging technology leader at PwC, says retailers will need to gauge how comfortable customers are with emergent AI-powered in-store technologies, such as facial recognition. "Facial recognition will be transformative, and could be used so you don't have to sign anything, or to recognise a valuable customer, for example. But there are likely to be concerns around privacy."

The technology was recently banned in San Francisco, for example.

Changing skills at head office

Better data insight will greatly benefit marketing teams, allowing them to not only react much faster to how their customers are behaving, but also base their activities on forecasted information.

AI will replace day-to-day activities such as A/B testing and social data gathering, with junior employees instead analysing data insights at regular intervals, while

senior marketers can focus on making creative and strategic decisions based on those insights.

AI will also have a significant impact on merchandising. Merchandisers will be able to react to both real-time and predictive information, with stores automatically replenished as product sells or – in areas such as fashion – as trends emerge, or the weather changes.

So, while data science skills will be important, so will creative skills, with more time for merchandisers to experiment and find ways to surprise and delight the customer.

Intelligent fashion

On a similar note, designers will be able to make decisions based on data gathered from thousands, if not millions, of social media images, combined with their own retail sales data and customer feedback to inform the design process.

Net-a-Porter did just that when it launched its own-label range in November. It used AI proprietary tools as a starting point to gather content across social media and fashion retailers in key markets. It then combined this insight with customer feedback and top trend searches to create a mood board for its design team to use when creating the collection.

Earlier this year, London College of Fashion head of innovation Matthew Drinkwater told Retail Week that, in 15 years, the skills of a fashion designer will be entrenched in data, rather than in illustration or textiles.

In fact, the fashion world has already made strides in this department. Amazon, for example, has invested in an AI-built designer. The tech is still in its early stages, but demonstrates the interest the retail giant has in all areas of AI.

And, in 2016, US label Marchesa worked with IBM AI platform Watson to design a dress for the 2016 Met Gala in New York. The process involved taking images of 200 of Marchesa's previous gowns and ranking them based on the number of times they were photographed, to determine the right material, colour and style for the brand.

Tommy Hilfiger also partnered with IBM and the Fashion Institute of Technology (FIT) in New York to see "how AI can identify upcoming trends faster than industry insiders to enhance the design process".

Using IBM Research AI tools and a library of Tommy Hilfiger runway and product images, FIT students created a slew of forward-looking designs incorporating patterns, colours and styles entirely generated by AI.

Reshaping the supply chain

The retail supply chain has proven to be a hotbed of innovation, and it is here that the automation of jobs has begun in earnest.

Ocado is arguably UK retail's best example of AI application, thanks to its use of robotics at its fulfilment centres, where multiple automated pickers and packers operate along a grid-like structure – known as the 'swarm' and the 'hive', respectively.

As the robots fulfil thousands of orders each week with 98.9% accuracy, it's little surprise the online grocer turned technology provider has become an in-demand tech supplier across the world.

Ocado also trialled driverless delivery cars in the London borough of Greenwich in 2017, and US grocer Kroger has already rolled out its driverless deliveries in the US. The US grocery giant has partnered with autonomous vehicle firm Nuro to deliver shopping using driverless cars.

So, supply chain is perhaps the one area set to see the greatest automation. As one retailer summarised to Retail Week:"In the long term, AI will make a number of staff roles redundant. This will lead to a reduction in staffing costs and liabilities linked to human errors, and give customers the exact service they require."

The chief executive of a fashion retailer – with 100 employees working with AI across data and analytics, customer service and warehouse stock management – agrees that logistics is a key area.

"Logistics is the linchpin. Everything goes in and out of our warehouse. If that warehouse doesn't function effectively, the business grinds to a halt."

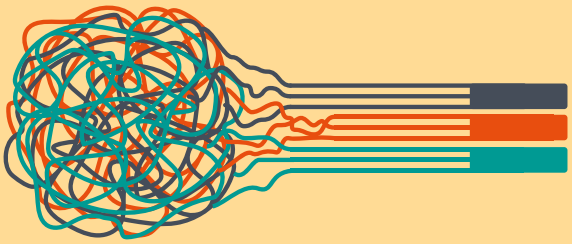
Megan Higgins, director of customer and retail analytics at PwC, agrees that automation will play a large role in the future as retailers drive efficiencies and reduce costs. However, she adds: "That is not to say all jobs are going to be replaced. There will always need to be a human element in customer service."

> **The challenge is finding the capability and mindset to change, and then driving that through a business from root to tip**
>
> MEGAN HIGGINS, PwC

The chief customer and digital officer we spoke to in chapter 2 agrees that the human element will always be required. "AI takes away the heavy lifting, but it needs to be combined with the human touch when required. AI can sometimes fail, so that is why I don't believe there's going to be an impact on overall employment from AI."

Higgins concludes: "I think all retailers understand and respect something needs to change. The ones that restlessly innovate will succeed. The worst thing is doing nothing. The challenge is finding the capability and mindset to change, and then driving that through a business from root to tip."

5 KEY TAKEAWAYS

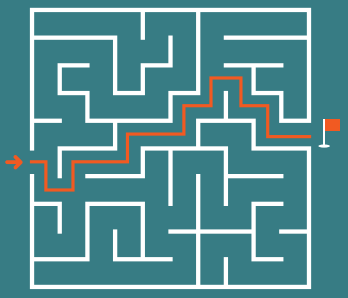


INVEST IN TECHNOLOGY

RETAILERS NEED TO BE BRAVE AND INVEST IN AI AND DATA ANALYTICS TO AID DECISION-MAKING AND IMPROVE CUSTOMER EXPERIENCE.

IDENTIFY WHERE AI WILL DELIVER ROI

DO NOT INVEST IN AI FOR AI'S SAKE. IDENTIFY THE TECH THAT IS MOST RELEVANT TO YOUR BUSINESS MODEL AND STAGE OF GROWTH, BUT BE PREPARED FOR A TEST-AND-LEARN APPROACH.



PUT THE RIGHT STRUCTURES IN PLACE

TO ENSURE BUY-IN AND DRIVE TRANSFORMATION, TEAMS MUST BE HELPED TO SEE THE OPPORTUNITIES AI WILL PROVIDE – INITIATIVES USUALLY LED BY CIOS OR CTOS.

SELECT THE RIGHT PARTNERS

CHOOSE PARTNERS THAT HAVE THE SKILLS YOUR BUSINESS DOES NOT, AND ENCOURAGE THEM TO INVEST ALONGSIDE YOU AND TO HELP UPSKILL YOUR TEAM.

RECRUIT THE RIGHT SKILLS

CREATE THE RIGHT ENVIRONMENT FOR DIGITAL RECRUITS. ENSURE THEY ARE A GOOD CULTURAL FIT, THAT THEIR ROLE IS EXCITING AND THAT THEY UPSKILL EXISTING STAFF.

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