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AI in Consumer and Retail

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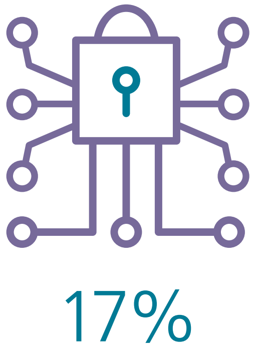
Disruption 2.0 – here we go again

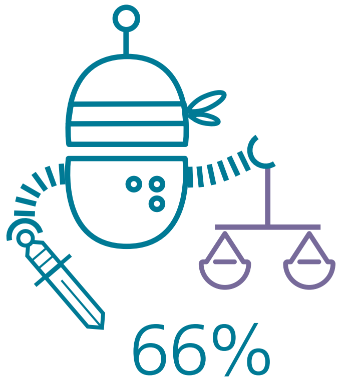
AI in Consumer and Retail

Thank You for Shopping Here!
PLEASE RETURN THIS BAG TO A PARTICIPATING STORE FOR RECYCLING.
WARNING:

Artificial Intelligence

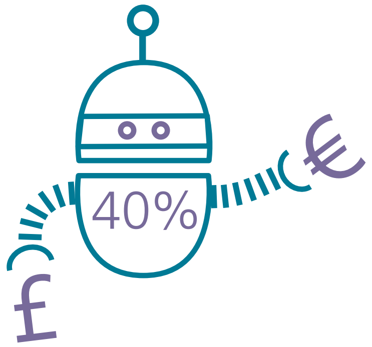


Only **17%** of consumers trust retailers and consumer companies to handle sensitive data properly.



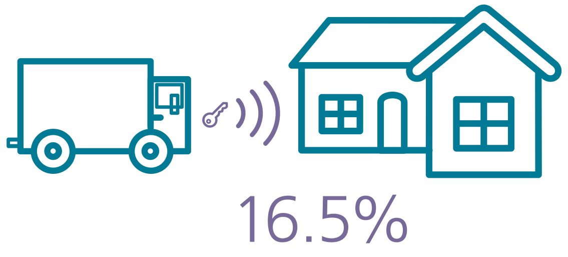
66% of organisations believe they will require roles managing data ethics.

Two-thirds of shoppers would be encouraged to visit a physical store if they could check real-time product availability first.



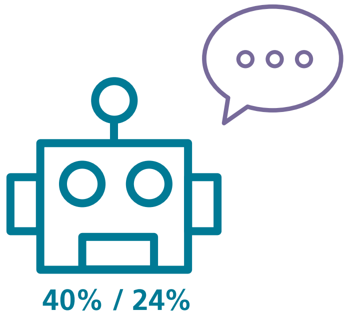
40% of shoppers said they would be interested in AI-assisted dynamic pricing.

Over 50% of organisations intend to invest in AI to support warehousing, distribution and fulfilment.

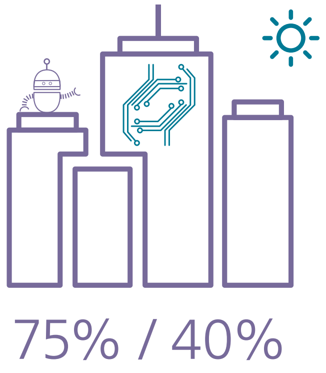


Only one in six consumers feels comfortable with AI-powered in-home delivery.

Nearly **60%** of companies feel they lack the specialised AI skills required.



Nearly **40%** of 18 to 24-year olds expressed high levels of comfort with chatbots vs. only **24%** of over-65s.



75% of organisations intend to enhance AI capabilities through external suppliers, while nearly **40%** plan to develop capabilities in-house.

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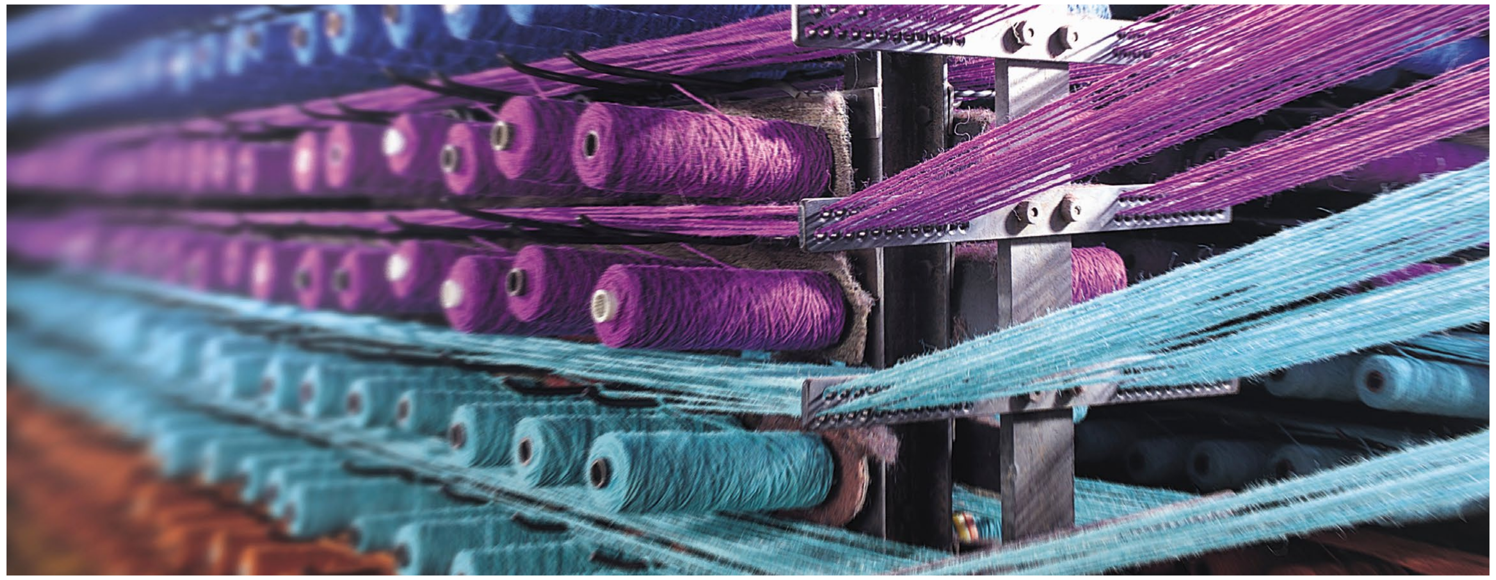

Executive summary

Once the preserve of science fiction movies and books, Artificial Intelligence, or AI, is not only a reality today but an increasingly common feature of life. Through voice and image recognition, natural language processing and machine learning, our smart phones and speakers are an integral part of our day-to-day.

While the development of AI may still only be in its infancy, the vast potential benefits are already clear. This is nowhere more evident that in the world of retail and consumer products which has already been through a period of significant technology-led upheaval.

Perhaps having learnt the lesson of failing to adapt quickly to emerging internet technology the first time around, many retailers and brands have been early adopters of AI, from 'chatbots' to AI-assisted customer analytics. This is only the start. The next wave will be ever more sophisticated. Already retailers are trialling checkout-less payment and there is talk of drones, autonomous in-home delivery and slick use of VR and AR to drive sales. For this reason we are pleased to have worked with **Retail Economics** to explore the impact of AI on the sector and get the views of companies and consumers on this next wave of disruption.

Our survey shows companies have high hopes for AI. Close to 85% said they thought that AI-powered data analytics would enable more sophisticated targeting of customers. Over 50% believe their organisations will invest in AI to support warehousing and distribution.

They see challenges in sourcing the skills required to develop AI solutions and they are also mindful of the regulatory and legal risks, but on the positive side they are seeing AI emerge that will assist the high street in fighting back against online and support a seamless approach between the physical store and their websites.

The enthusiasm of organisations is juxtaposed with reticence from consumers. Whether delivering by drone, delivering direct into fridges, or using biometric data, AI-powered business models require a heightened level of trust and our survey shows that consumer trust in retailers and consumer brands is low. However we were pleased to see that organisations understand that AI ethics must be a key area of focus for them.

While trust is crucial, retailers and brands also need to understand the nuances within their customer base and be savvy when implementing their AI-powered strategies. Age is an important factor. Millennials are increasingly at ease using AI-enabled technologies but older consumers are typically slower adopters and show far greater reticence towards some of the more cutting-edge developments on offer. Overuse of AI may be a turn-off for this demographic.

While AI is certainly here to stay, companies need to be smart about how they use it and ensure they can implement it safely and effectively. We are still some years away from chief executives being replaced by AI but it is no exaggeration to say that bosses who fail to embrace AI effectively could well find themselves replaced by more forward-thinking peers.

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AI in the customer journey

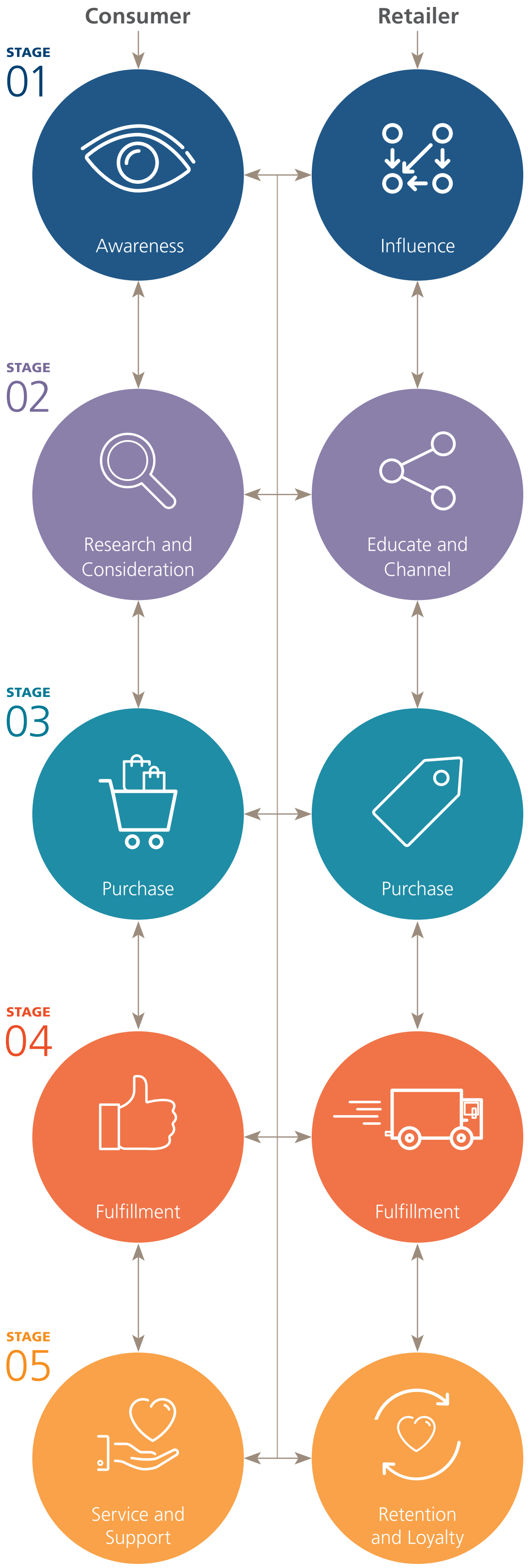
How can a retailer ensure that a particular brand or promotion will catch the eye of a millennial shopper when browsing products and prices online? How do they convert awareness into a sale online or in store? Once a product has been purchased online, what technology is needed to ensure the quickest and most cost-effective delivery to a customer? What about aftersales support, how is that best provided? And what can a retailer learn from a purchase about a shopper's buying habits which might help prompt further sales in the future?

International law firm **CMS**, in conjunction with **Retail Economics**, has conducted a major piece of research on **Artificial Intelligence**, its applications in the Retail & Consumer sector and attitudes towards its implementation.

An extensive consumer survey was carried out in which we polled consumers and shoppers across all age groups in the UK about their attitudes and concerns regarding the AI technologies they currently interact with and the cutting-edge applications beginning to emerge. To contrast the consumer research, we also conducted a business survey of senior leaders from Consumer & Retail organisations – national grocery retailers through to ecommerce organisations, FMCG manufacturers and fashion and luxury brands – to gauge their own attitudes towards these disruptive technologies and the opportunities and challenges they present.

In this report, we start by plotting some of the applications and implications of AI throughout the customer journey from the perspective of the customer and the retailer, using the **five stages of the Retail Economics Customer Journey** shown on this page. While not exhaustive, at each stage we look at the most prevalent or game-changing applications and, using the insights gleamed from our surveys, examine how ready consumers and business really are. We then take a deeper look at how businesses plan to adopt AI technologies in their organisations, the areas they will target for investment, and the key challenges they foresee.

The Retail Economics customer journey



Consumer perspective: Awareness

Awareness is a primary battleground for any consumer brand or retailer to win in the hunt for sales and profits. There are various ways a customer can become aware of a brand, including TV or print advertising, personalised emails, recommendations from friends and family, as well as targeted online advertising. Retailers, seeking any advantage they can in an increasingly competitive marketplace, are turning to AI technologies to help them create greater customer awareness. Two of the most dominant, if still nascent, that are being used are **personalisation** and **product recommendations**.

Personalisation

It is generally accepted that shoppers are more likely to purchase items in-store or online from retailers which send them relevant, personalised promotions and tailored offerings. Current personalisation includes online fashion retailers serving personalised landing pages, only displaying clothing available in a customer's size and or preferred brands. Shop Direct's technology allows 1.2 million versions of its very.co.uk landing page. Amazon attributes 35% of sales to its personalisation strategies (McKinsey).

In the past it has been possible to personalise experiences using simple rules — now machine learning can analyse enormous and seemingly disconnected sets of data deeply and quickly — and then act in real-time based on that analysis. This will take personalisation to a new level.

CMS' consumer panel survey found that while shoppers wanted greater personalisation only 45.3% believed targeted online adverts – the most prevalent current application of personalisation – provided appropriate content to them. Nevertheless, through advances in technology personalisation will continue to be a key tool for retailers. The survey results show the essential mantra to follow is: 'make sure it is effective and that shoppers' trust is not lost'. We are reminded of the legendary example of a retailer who accidentally exposed the pregnancy of a high-school teenager to her parents by sending her coupons for baby clothes and cribs.

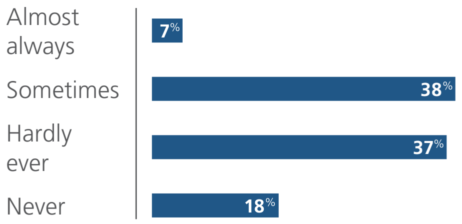
Product recommendations

One of the most recognised AI powered applications used today is the automated suggestion of products and services to shoppers. These AI-powered recommendation engines vary greatly in sophistication but advanced algorithms can correlate disparate data such as purchasing habits, images viewed, social media content, location or weather in real time. Retailers are already able to suggest holiday items for shoppers who recently booked an airline ticket. Adding biometric data into the mix will allow retailers to identify customers as they walk into a shop and then personalise their in-store experience. Retailers will be able to suggest garments that will fit a customer's body shape. On page 20 we analyse how such use comes at a time when regulation, most notably GDPR, is protecting the individual's rights around such data.

More sophisticated personalisation requires more personal data, however our survey of shoppers showed that more than half would not be comfortable sharing personal data, such as health, age, body shape and dietary habits, to enable companies to provide more targeted product recommendations. Although a key finding was that younger consumers are three times more likely to share highly sensitive data than older shoppers. Targeting younger shoppers with solutions that use sensitive data-is an obvious strategy for operators in the clothing & footwear, food & grocery, and health & beauty sectors.

Personalised ads frequently miss the mark

Consumer: thinking about online ads (e.g. website banners, ads on news feed); how often do you think they display appropriate products and services to you?



> Nearly 60% of businesses would trust fully automated marketing campaigns despite only 45% of customers believing personalised adverts are relevant to them.

Retailer perspective: Influence

Hyper-personalised multichannel marketing strategies provide an opportunity to influence consumers in ways never seen before, such as using data to pull customers to a product that could genuinely enhance their wellbeing rather than pushing potentially unwanted items on them. Alternatively, future subscription services will provide products based on a customer's behaviour rather than requiring an active purchase. Currently we are seeing AI technologies increasingly being used for **multichannel marketing**.

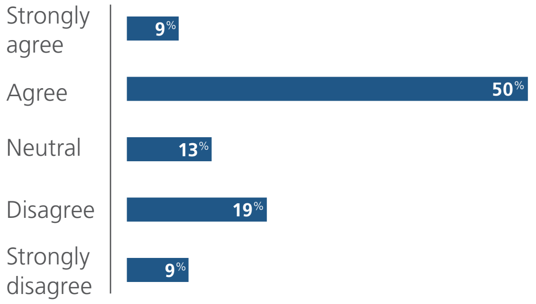
Multichannel marketing

According to a global survey conducted by Forrester Consulting and commissioned by Emarsys, 54% of retail marketers are using AI-driven personalisation across channels to drive growth in their business. The technologies will deliver multichannel marketing campaigns that seamlessly target consumers with personalised content and experiences across websites, mobile platforms and within physical stores. In the future this may include the use of AI-assisted facial recognition to register returning customers in a store, tracking data of a customer's journey through a shop to optimise store layout, or optimising the functionality and design of a site based on a user's unique profile.

In contrast to the consumer findings our survey shows that businesses have a high degree of confidence in AI's ability to deliver accurate marketing content. But is this trust well placed? Nearly 60% of businesses trust fully automated AI-driven marketing campaigns to deliver content to their customers. In contrast, only 45% of customers believed personalised adverts displayed to them were relevant.

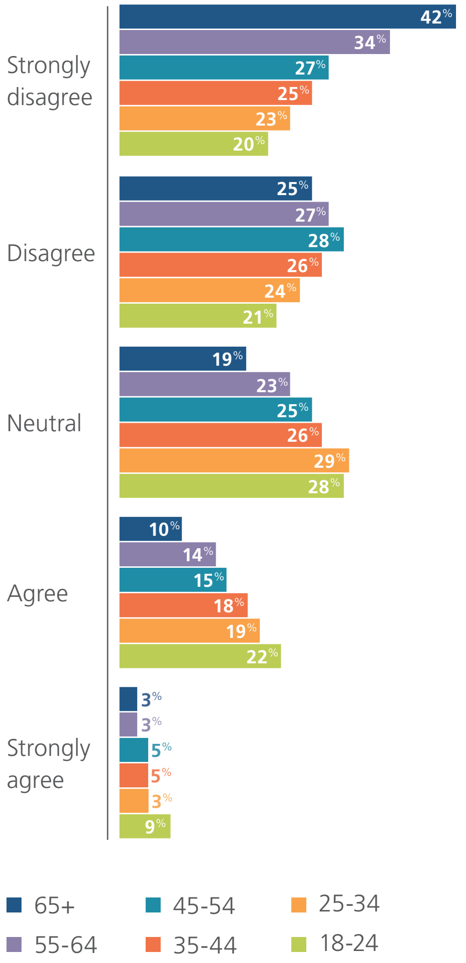
Brands and retailers may be overestimating AI's ability to deliver meaningful personalisation to their consumers

Retailer: I would trust fully automated, AI-driven marketing campaigns to deliver content to my customers without human involvement.



Biometric data – a step too far for some?

Consumer: thinking about personal information; I'd be prepared to share personal data (e.g. body shape, diet, health, age) if it led to 'meaningful', real-time product recommendations.



> >50% of shoppers would not be comfortable sharing personal data, such as health, age, body shape and dietary habits, to enable more targeted product recommendations.

Consumer perspective:
Research and Consideration

Most consumers buying anything from a kettle to the latest car conduct research online or in-store beforehand, seeking out product information, online reviews or price comparisons. Companies can leverage AI to enhance how they educate consumers and provide information about their offering. We are already seeing that human advice is being replaced by intelligent **virtual assistants** and **augemented and virtual reality** to inform customers.

Chatbots, virtual assistants, self-service kiosks and in-store robots

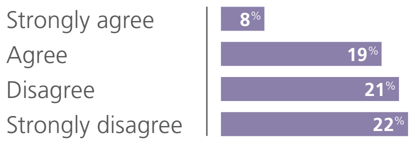
Perhaps the most established use of AI technology are chatbots that simulate human conversations in text or speech and often handle customer service enquiries, FAQs, delivery updates and product recommendations. Virtual assistants such as smart speakers perform tasks in response to verbal commands using natural language systems. They are always on, there is no need to visit a webpage, and they are increasingly being integrated into other systems such as phones or smart homes.

Chatbots and self service kiosks are common across the sector. However our survey of consumers showed that 43% might be put off from a store or brand if helped by a non-human assistant, suggesting they either still value human interactions or that the technology does not yet mimic human behaviours well enough. Again, age can be a factor though. Nearly 40% of 18 to 24-year olds expressed high levels of comfort with chatbots versus only 24% over 65.

Brands from Nestlé to Target have trialled in-store robots to perform functions including recognising faces, greeting customers, serving promotions, providing directions and recommending products. In the US, Amazon Go stores deploy AI technology to enable checkout-less shopping. Obviously the performance of the technology will ultimately determine its success but our survey suggests that brands should be aware of the generational divide in deploying AI.

Adding the non-human touch – approach with caution

Consumer: I would 'not' be put off from a store or brand if I was helped by a non-human assistant (eg. touchscreen assistants, chatbots).



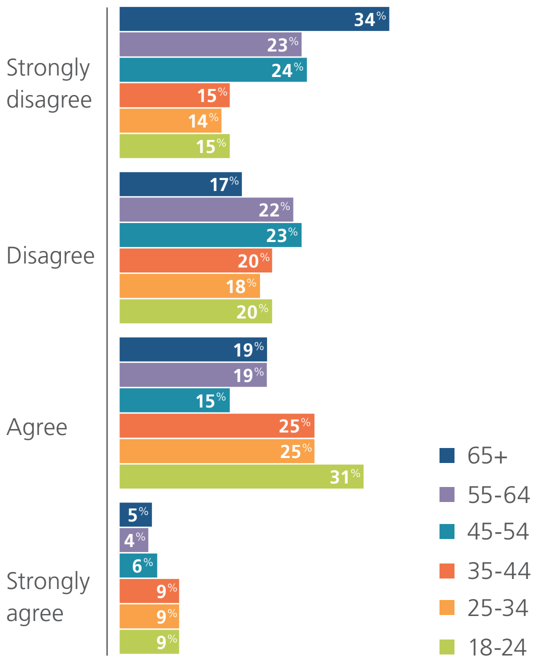
Virtual reality and augmented reality

Virtual reality (VR) is an immersive, computer-generated experience that provides a fully simulated environment, such as a flight simulation with headset. Whereas augmented reality (AR) provides an interactive experience where real-world objects are enhanced, or augmented, with computer generated information.

In this stage of the customer journey, AI offers consumer companies exciting possibilities including virtual stores, immersive marketing experiences and product visualisation. Already used by furniture retailers to allow shoppers to see what a product might look like in their homes before they make a purchase, advances in technology can also show the drape and texture of fabric giving an online buyer a better appreciation of a garment, for example. However, while it is an exciting area of development, our survey showed that businesses believe that virtual assistants and chatbots will have a bigger impact on the industry than VR and AR technology (see figure on page 17).

Chatbots – a clear generational divide

Consumer: thinking about in-store/online customer service, I would 'not' be put off from a store or brand if I was helped by a non-human assistant (eg. touchscreen assistants, chatbots).



Retailer perspective:
Educate and Channel

AI can take data analytics to the next level and this will assist retailers in optimising the **omnichannel** approach. Some of the most advanced technologies involve AI powered image recognition to capture **shopping environment analytics** and robotics for **remote stock checking**, both creating the stores of the future.

AI-powered omnichannel

Omnichannel is probably one of the most-used buzzwords in retail. In short, it refers to a business model where there is a seamless experience for shoppers whether they are browsing online, on their phone or in a store. For example, a shopper in a store discovering that a product they want is out of stock should be able to buy it online using either their mobile or perhaps with the assistance of an in-store assistant equipped with an iPad. A true omnichannel business should also have a cohesive sales, marketing and customer-service strategy – there shouldn't be better customer experience in one channel of shopping versus another.

AI powered technology and data analysis can greatly help retailers pursuing an omnichannel strategy, which, as past history has shown, is not an easy business model to perfect. Advanced data analytics will identify patterns of shopper behaviour making it easier to determine which marketing strategies are most effective within the various channels. Perhaps an advert on Facebook was better at driving footfall to stores while an Instagram promotion may have driven more online sales. Analysing customer dwell time in a shop or on a particular web page will help retailers identify the high footfall areas where highest margin products should be placed. As with most AI applications – data is king.

Shopping environment analytics

At a time when footfall to shops is declining and many high streets are in decline, shopping environments are more important than ever. Top flight AI systems can collate a host of different data sources to monitor store traffic, suggest optimised store layouts, enhance display advert placements, or provide more targeted promotions in a bid to make shops more attractive destinations and help retailers compete more effectively with online rivals.

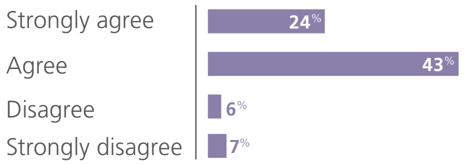
Remote stock checking

The use of robots to remotely check stock levels can also improve the shopping environment and help increase footfall. Increasingly retailers are integrating stores into their online offering using them as micro warehouses for click and collect or local delivery. Timely stock accuracy is paramount to this approach and so some of the world's biggest grocery retailers are already using autonomous shelf-scanning robots. This also allows customers to check accurate and real time stock availability in stores. Companies like Bossa Nova are deploying robots on shop floors to scan shelves and report findings back to in-store staff and retailers' central stock and marketing systems.

Our survey showed that more than 50% of retailers and consumer brands believe that AI-driven, real-time inventory management systems would have a significant impact on demand planning, automatic stock replenishment and stock rotation. Similarly two-thirds of shoppers polled said they would also be more likely to visit a store if they knew they could check real-time product availability online first.

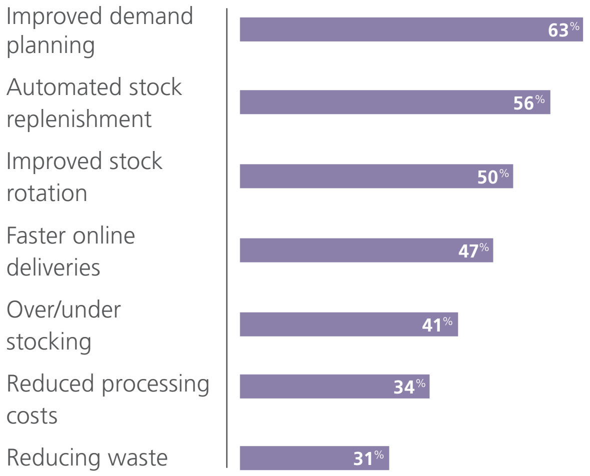
Effective AI boosts footfall in physical stores

Consumer: if I could instantly check that a retail store had a specific product in stock (e.g. on my smartphone) this would encourage me to actually go to the store.



AI drives smart stock management

Retailer: I feel that AI-driven, real-time inventory management systems would have the biggest impact on my operations in the following area:



Consumer perspective: Purchase

In recent years there has been a revolution in the way we pay for goods and services as cash-based payments increasingly make way for frictionless, cashless, technologically secure payment systems.

As payment methods change, so too does the system of checkouts in stores and online, best illustrated by **checkout-less payment**.

Checkout-less payment

Retailers, particularly grocers, have been installing cashier-less payment systems in their shops for decades. The next phase is checkout-less payment where retailers use embedded sensors, deep learning and computer vision to help automate the process so shoppers can simply select their products and walk out of the store with minimal friction.

However, despite the proliferation of cashier-less systems, retailers need to be aware that in our survey consumers still tend to prefer staffed tills. Just 22% of consumers polled said they favoured cashier less payment options, compared to nearly half who said they liked to use a manned till. Again as in other areas, the age of shoppers can determine how willing they are to adapt to new technology. Our research showed that 18 to 24-year olds were more than twice as likely to choose a cashier-less payment mode over those aged between 55 to 64. In deploying new technologies retailers will need to consider whether this is result of the previous deployment of poor technology or if there is a generational divide.

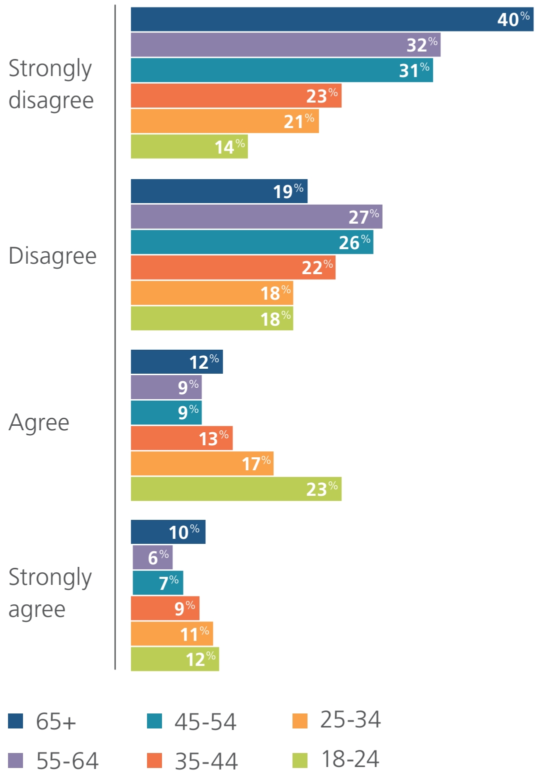
Dynamic pricing

Dynamic pricing refers to the practice of pricing an item according to a customer's perceived willingness to pay. The best-known example of this is airlines setting flight costs which can vary according to the destination, time of day or time of year a passenger may be travelling. However the next stage may determine the price based on the consumer's search history, other buying habits or the tone of their voice. AI opens up possibilities for real-time and personalised price changes. The primary advantage for the consumer is that dynamic pricing should lead to more competitive pricing and better deals.

Our research shows that implementing dynamic pricing can be an effective tool for brands and retailers in attracting and retaining customers. Just over 37.2% would favour a brand who offered them personalised dynamic pricing if they thought it would lead to more competitive prices, compared with 24% who would prefer fixed prices. This was also one area of AI where the age or gender of the shopper does not, for now, have any bearing on preference, making it additionally attractive for retailers to consider.

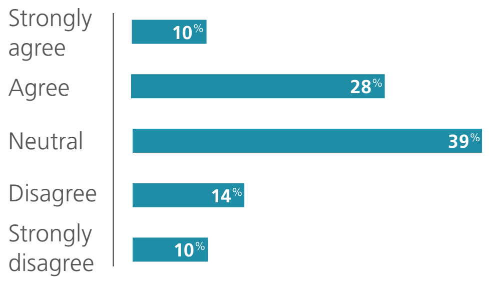
Cashierless payment may be a turn off

Consumer: I would prefer to shop at a retail store that offered 'cashierles' payment options.



Dynamic pricing is appealing to consumers

Consumer: I would prefer to shop with a retailer who offered me 'personalised dynamic pricing' (e.g. 'unfixed', like flight costs) if I thought it would lead to more competitive prices.



Retailer perspective: Purchase

Over the decades, a key focus for retailers has been how to effectively price their goods to win sales. With the arrival of the internet and the ease with which consumers can compare pricing this has become an even more important consideration.

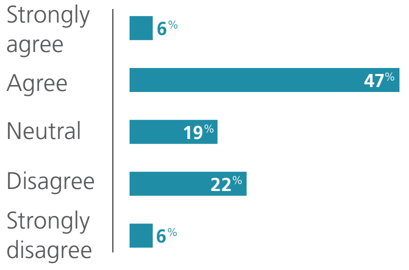
Dynamic pricing

Dynamic pricing as a concept is not new. However, what has changed is that with the use of AI, the implementation of dynamic pricing can be far more sophisticated and nuanced, responding not just to stock levels or general demand patterns but to an individual's unique profile, habits and needs. The benefits of dynamic pricing for retailers and brands can be enormous including improved sales conversion, optimisation of margins and an ability to react to changing market trends.

However, organisations should be careful with personalised pricing, sometimes termed price discrimination, as it could lead to customers feeling frustrated by price changes, victimised or unable to budget effectively. In the worst case, shoppers may feel that retailers have misused their data to devise a price discrimination strategy and lose trust in the brand. More than half of retailers and consumer brand companies polled in our survey said they believed that consumers would prefer real-time, personalised price changes if it led to a more competitive market. Only 37% of consumers agreed. Similarly, an over-reliance on dynamic pricing can lead to adverse customer behaviours, such as shoppers postponing purchases in the hope of even lower prices.

Retailers and brands are more bullish than consumers on dynamic pricing

Retailer: thinking about AI-driven, dynamic pricing strategies; I feel that consumers would prefer real-time, personalised price changes if it led to a more competitive market.



CMS legal view – dynamic pricing and competition law

Dynamic pricing is a hot topic for competition regulators. The EU, the OECD and the CMA have all recently looked at the effect of pricing algorithms on competition. They identified pro-competitive effects e.g. pricing algorithms can reduce transaction costs for firms, reduce friction in markets and give consumers greater information on which to base their decisions. However, there is concern around pricing algorithms leading to price collusion. This can lead to consumers paying higher prices and having less choice. Collusion may occur, for example, if competing sellers use the same independent algorithm to determine their prices, giving the algorithm an understanding of several suppliers' pricing policies. A concern may arise if this gives the algorithm an incentive to increase prices above the competitive level in order to maximise profits. Algorithms can also be used to monitor an existing agreement to fix prices e.g. in the recent online posters cartel case where competitors used an algorithm to automatically match each other's price increases.

Personalised pricing

The CMA considers that personalised pricing makes it less likely that algorithms could lead to price collusion because, if pricing is truly personalised, there is no longer a single observable price that pricing algorithms can match. To date, there is no case law where personalised pricing has been established as an infringement of competition law. However, as these practices become more common, some competition authorities may decide to open investigations and tackle some forms of personalised pricing using existing competition law tools such as finding it to be an abuse of dominance.

> Just 22% of consumers polled in our survey said they favoured cashier-less payment options, compared to nearly half who said they liked to use a manned till.

Consumer perspective: Fulfilment

One of the hardest, and sometimes most expensive challenges, for brands and retailers is the fulfilment of orders generated online. Customers want parcels delivered in the shortest time possible, often to their front door, for the cheapest amount possible. Companies have been deploying AI in this area with providers like Satalia assisting them to optimise all aspects of their logistics.

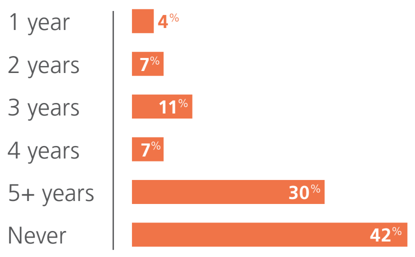
Retailers need to not only ensure their current delivery and logistics systems are up to scratch but they need to ensure they have future capacity built into their systems. Not least because the last mile of a delivery to a customer's home can often reach or exceed 50% of the overall transportation costs (McKinsey). This is why companies are enthusiastically talking about next generation logistics systems such as **drones** and **AI-powered in-home delivery**.

Drones

While the recent saga of drone usage over airports will inevitably hasten greater regulation of the devices, drones powered by AI are considered to be a potentially exciting new development in online order fulfilment. The average commercial drone can hit speeds of 100 miles per hour and can safely carry a 2.2kg load with a deployment cost of just 78p per shipment (Ark Investment Group) so it is easy to see why retailers and consumers alike might be keen on drone deliveries. And with tech giants already exploring drone delivery systems, the quick proliferation of this technology might feel like a given. However the enthusiasm has yet to win over the consumer.

Consumers don't think drones will become mainstream

Consumer: thinking about shopping online; I think that 'drone deliveries' will become mainstream within:



42% of shoppers forecast that drone deliveries will never become mainstream, while a further 30% believe it will be at least five years before they are commonplace. Organisations do see a future for drone delivery, but over 50% think that we are at least 5 years off from mainstream use. Although we would note the similar scepticism to other technologies. For instance Seth Porges' prediction in 2007 that 'a virtual keyboard will be about as useful for tapping out emails and text messages as a rotary phone,' in his TechCrunch piece titled 'We Predict the iPhone Will Bomb.'

In-home delivery

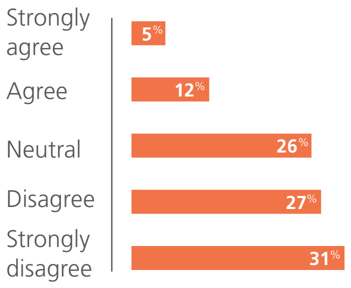
Not so long ago a well-known UK supermarket chain hit the headlines when a delivery driver let themselves into a customer's home to not only deliver but put away groceries ordered online. Many consumers were horrified at the thought of letting a stranger into their home, while others saw it as a hugely convenient innovation. In the future, this may be a common occurrence. A key aspect of this will involve ensuring customer trust through the use of advanced security, using AI technologies to identify faces, vehicles and behaviours.

Only one in six consumers polled in our survey said they were comfortable with the concept, with younger consumers only marginally more at ease with the idea than over 35s. Discomfort though is often high with very early stage technologies perceived to be invasive or unsafe, so this is probably not surprising.

In contrast to less-trusting consumers, businesses were far more bullish on the prospect of in-home delivery with a third believing that shoppers would trust it. Half of all businesses still believe it may take some time before consumers will accept in-home delivery however.

In-home delivery… the jury's still out with consumers

Consumer: I would trust a delivery driver to have 'controlled and monitored' access to my home (using an AI-powered delivery service) to ensure my package was delivered on time if I was out.



Retailer perspective: Fulfilment

Living in an era of 'me-commerce' where instant gratification is paramount for most consumers, the importance of retailers and brands getting fulfilment right cannot be understated. The current AI-related applications being showcased within supply chains and logistics is likely to continue yielding significant levels of disruption in the immediate future particularly around **distribution** and **inventory management**.

Distribution

The world of distribution is on the cusp of a revolution. AI-powered autonomous vehicles and optimised routing systems will deliver incredible cost-reductions for many businesses by removing inefficiencies from existing systems. When combined with AI-assisted distribution analytics these new technologies can also help businesses improve forecasting and customer service, mitigate risk and achieve faster delivery times.

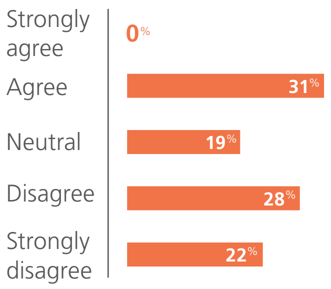
There are already examples around the world of self-driving freight vehicles, such as Uber trucks currently operating in Arizona, as well as 'platooning', a concept where a single HGV driver leads a convoy of several driverless vehicles. In our survey of retail and consumer brands, 36% polled said they believed autonomous vehicles would be one of the AI-enabled technologies to have the greatest impact on the consumer and retail industry in general.

Inventory management

Mastering complex stock management issues is a crucial area for retailers to control. Fully automated inventory management processes provide numerous advantages over systems that rely partially or solely on human diligence. Next generation inventory management systems are using AI for image recognition and real-time data sensing to more accurately manage stock levels as well as predict future demand.

In-home delivery… companies are more bullish than consumers

Retailer: I think consumers would trust an AI-driven, home delivery service whereby authorised delivery drivers would have controlled and monitored access to their homes in order to ensure packages were delivered on time.



> 31% of organisations believe consumers would trust an AI-powered in-home delivery service. Only one in six consumers agrees.

Service and Support

Stage 05 – Consumer perspective

Consumer perspective:
Service and Support

Outstanding or poor customer service can make the difference between a customer for life or one who never shops with a brand again. Many of the ingredients that make up good human service and support, such as consistency, personalisation, accurate product information and clear communication can now be replicated or enhanced through AI applications. As consumers become increasingly acclimatised to non-human interaction for customer service issues, the use of AI applications is only likely to increase.

Back to chatbots, virtual reality and augmented reality

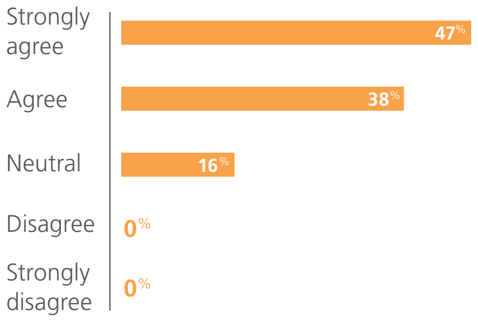
By 2020, 85% of all customer service interactions will exclude human involvement according to Gartner, a global research firm. Available every day of the year and every hour of the day chatbots can help reduce a retailer's issue resolution time and increase customer satisfaction. For most consumers, use of messaging apps to interact with retail chatbots is now a familiar method to raise a product query, file a complaint, check an order, give feedback or troubleshoot a problem with a product.

The use of VR and AR also heralds interesting new possibilities such as in service centres, using the technology to ensure that accurate product information is at a staff member's fingertips via a facility that allows two parties to see exactly what the other is looking at, through a VR library of thousands of products, model variants, colours and sizes. This can help with swift issue resolution and help increase customer retention through effective communication. More than 80% of retailers and consumer brand companies feel that consumers would accept being served by AI-related technology but, as our survey suggests, there is a generational divide in the acceptance of this technology by consumers.

> >80% organisations believe AI will increase customer loyalty. However, less than one in five consumers currently trusts retailers and consumer companies to responsibly handle their sensitive data.

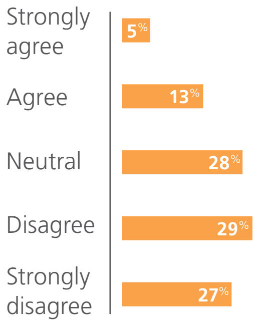
AI will create more meaningful relationships with consumers

Retailer: AI-powered data analytics will enable more sophisticated and personalised targeting of customers which will improve loyalty and lifetime value.



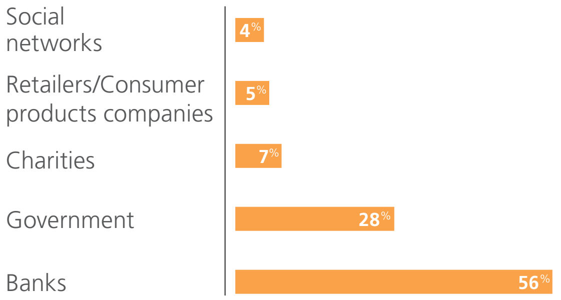
Trust in retailers' ability to responsibly manage data is low

Consumer: I trust retailers and consumer goods companies to responsibly manage personal data about myself.



Retailers and consumer companies are trusted only slightly more than social networks

Consumer: Who do you trust the most to handle your personal data?



Stage 05 – Retailer perspective

Retention and Loyalty

Retailer perspective:
Retention and Loyalty

Retaining customers and instilling a sense of loyalty in them is the Holy Grail. Retail and consumer brands have for decades been at the forefront of using data to understand and connect with their customers. Today customer retention largely relies on brands possessing large amounts of data on their customers and what they like and do not like as well their typical shopping behaviour. AI-driven technologies are making the amassing, and more importantly understanding and acting on, the vast amount of information much easier.

This will usher in a new generation of customer service; for instance delivering products before a customer buys them and fixing issues before a customer realises they have one (**post-sales analysis**). We predict that the success of these strategies is dependent on **customer trust**.

Next best action/post-sales analysis

Next best action marketing is also known as recommended action and refers to a customer-centric focus where retailers consider the different actions that can be taken for a customer and then decide on the best one.

Some of the next best actions that retailers might consider could include providing a personalised offer to an individual customer via social media to reward them for repeat custom, offering some advice on how to use a product recently purchased, texting or sending a catalogue in an attempt to sell associated products to an already loyal customer or delivering samples of a product that customer is likely to buy.

Our research revealed that more than 85% of retailers and consumer goods companies think that AI-powered data analytics will enable more sophisticated and personalised targeting of customers which will improve loyalty and life time value.

Customer trust

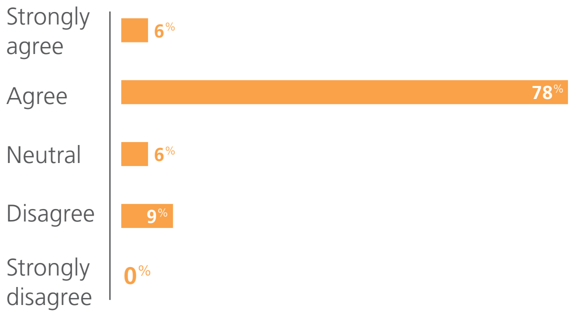
Many of the technologies rely on vast amounts of customer personal data. Data is used to train neural networks and decision forests and then these AI systems use these networks to absorb more personal data provided by the customer. The adoption and overall success of AI technology within retail and consumer products is dependent on customers' acceptance and trust.

However, trust in retailers is low, and with AI-acceptance hugely variable between technologies and age-groups, consumer companies should not be over confident in their ability to implement AI without alienating their customers. Our research shows that only 17% of consumers trust retailers and consumer companies to handle sensitive data properly. They are, however, more trusting of banks and government bodies.

Retailers are only trusted slightly more than social networks, a rather scathing indictment given recent scandals that have hit the headlines. Although we would note that social networks have huge amounts of personal data and billions of active users, despite consumers having a low level of trust in them. This is perhaps why more than 85% of organisations believe that customers will be accepting of AI powered technologies.

Companies are confident that consumers are willing to engage with AI technologies

Retailer: thinking about in-store and online customer service; I feel that consumers would accept being served by AI-related technology (e.g. touch screen assistants, AI natural language use, chatbots).



> Trust in retail and consumer brands is low. They are trusted only slightly more than social networks.

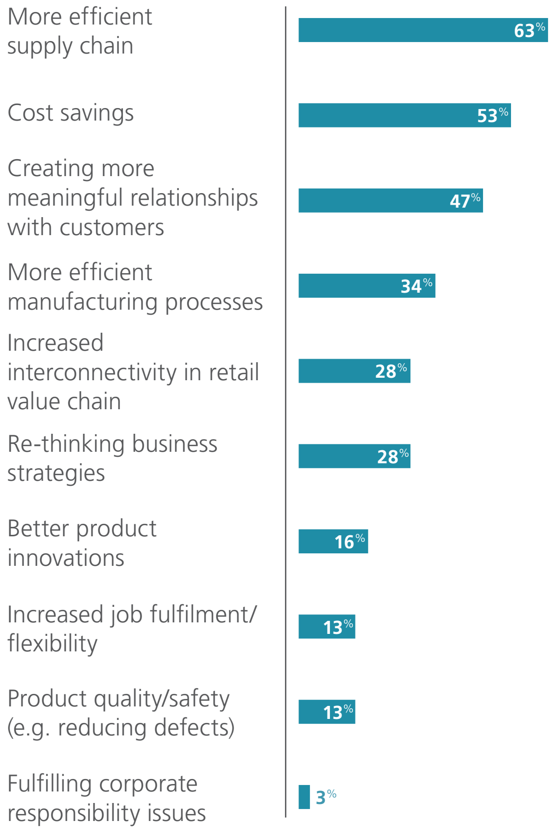
How are retailers and brands adopting AI technologies?

Investing in, and procuring, AI – where do companies see the opportunities?

Companies across Britain are overall positive about AI-powered technologies and their ability to improve their businesses and interactions with consumers. This is likely because there are a host of areas which can benefit from AI, with our research indicating that 62.5% of retailers and consumer organisations believe that achieving 'more efficiency in the supply chain' presents the biggest opportunity for them. Just over 53% said that realising cost savings would provide the greatest benefit followed by 46.9% who feel that 'creating more meaningful relationships with customers' would have the greatest impact on their operations.

Greatest areas of opportunity

Which three areas below pose the greatest opportunities when considering the widescale implementation of AI-related technology within your company?

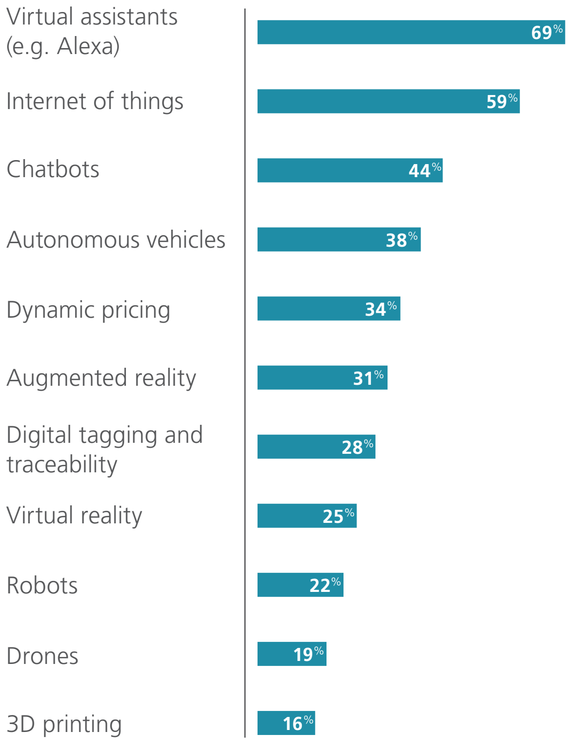


When asked which AI-related technologies would have the biggest impact on the industry, nearly 70% of the organisations polled said that virtual assistants would be one of the most positively disruptive forces in the industry, followed by 59.4% who said they believed that the 'internet of things' would have the greatest impact. Chatbots, autonomous vehicles and dynamic pricing were the next most cited technologies.

Perhaps most surprisingly were the technologies that scored the lowest. Despite the media interest, high profile technologies such as drones, virtual reality and 3D printing do not appear to be high on companies' radars.

Most impactful AI technologies

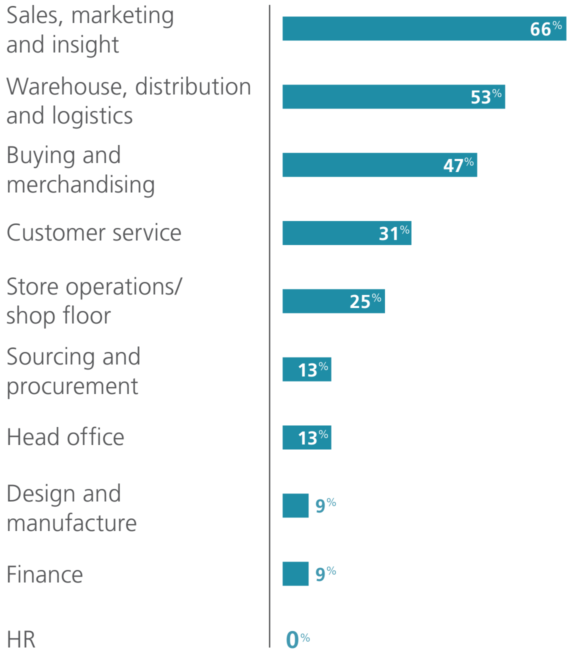
What specific types of AI-related technology do you think will make the biggest impact to the consumer and retail industry in general?



Identifying which area of a business to target for AI investment is a fundamental exercise for retailers to carry out. Customer engagement and enhancing the way in which goods reach consumers seem to be the top priorities. 65.6% of businesses in our survey felt that 'sales, marketing and insight' was the most essential area to focus on, in part because improved sophistication of AI-centric marketing strategies is resulting in a better return on investment. More than 53% of retailers said they would focus AI investment on their warehousing and distribution divisions, while 46.9% said they were keen to improve their buying and merchandising through the use of AI. Back office functions such as HR and finance do not appear to be prominent targets for investment.

Targets for investment

Which area(s) of your business do you think your company will target for AI investment?

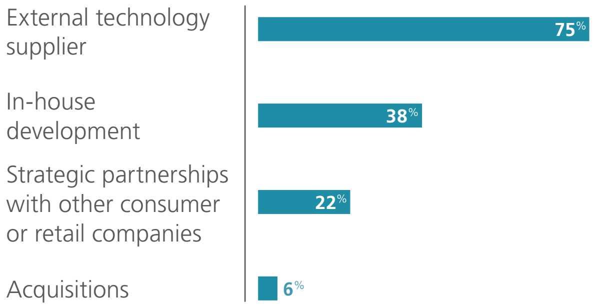


How to implement the technology

While most businesses want to adopt AI technologies many do not have the internal capabilities meaning they either have to recruit and build up an in-house team or bring in an external provider. An overwhelming 75% of the organisations we spoke to said they intended to engage an external technology supplier to enhance their AI capabilities, compared to just 37.5% who felt they had the requisites in-house skills. Our research also showed that some companies preferred to form a strategic partnership with a third party or potentially even buy a company that could provide the technology.

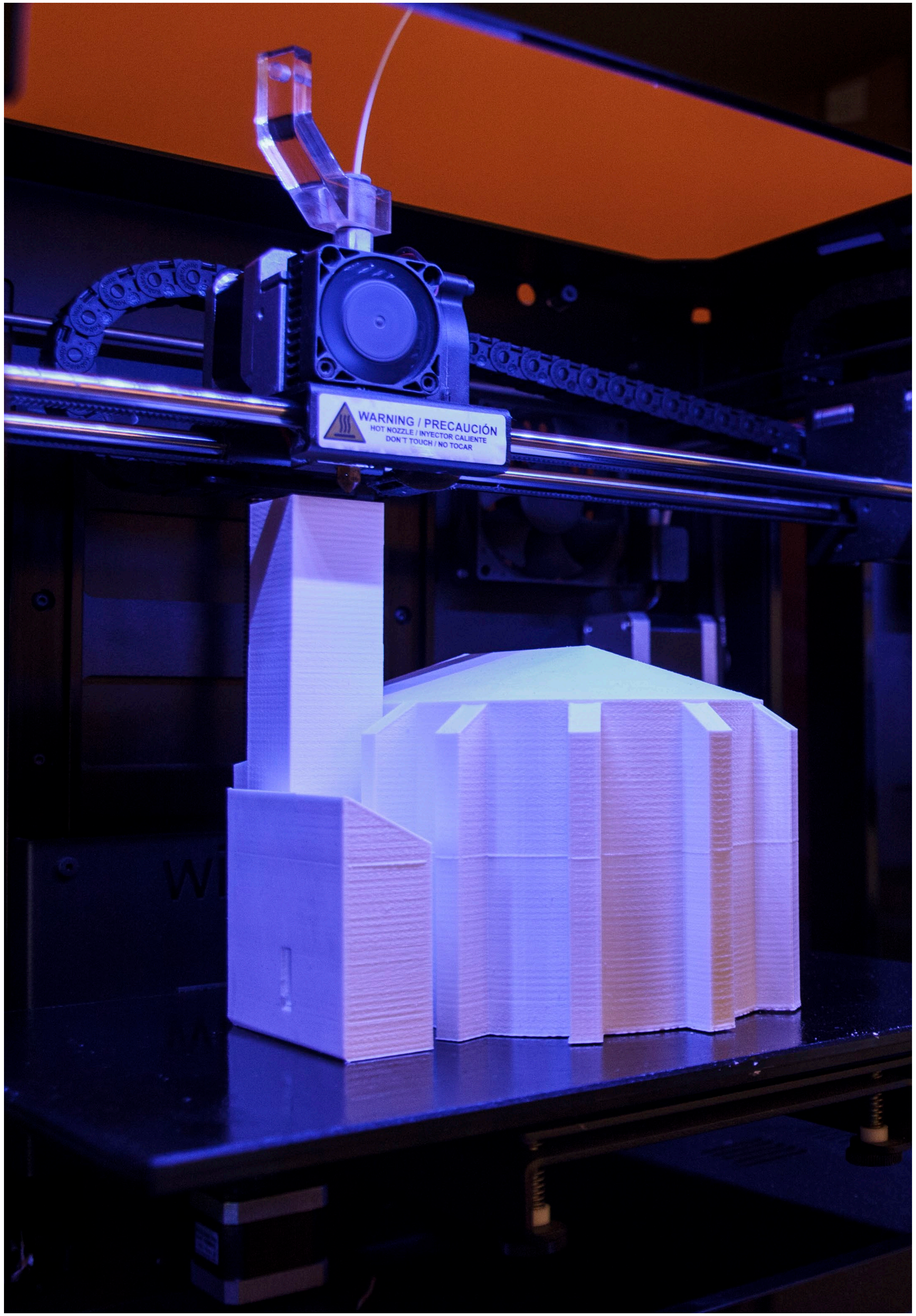
Building AI capabilities

How do you intend to enhance your AI capabilities?



> 75% of organisations believe they will enhance their AI capabilities through external suppliers. 38% think they will develop in-house.

> Sales, marketing and insight, and warehouse distribution and logistics are key targets for AI investment.



Challenges of implementing AI

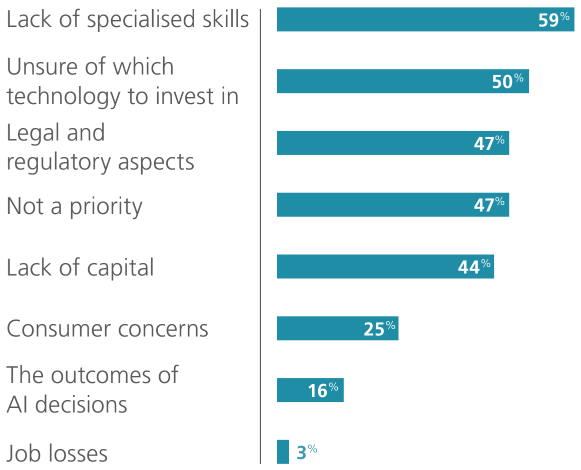
Shortage of AI expertise

Adopting any technology can be tricky for a business but AI technologies may additionally involve job losses and trust issues with customers. However nearly 60% of the retailers and consumer brands we spoke to said they felt that a 'lack of specialised skills' was the principle challenge they faced in rolling out AI within their organisations.

This goes some way to explaining why 75% of organisations polled think they will use external technology partnerships to enhance their AI capabilities. The 38% that said they would develop capabilities in house will need to reflect on how to plug the apparent skills gap.

Barriers to adoption

What do you feel the main barriers of adoption are for investing in AI-related technology?



Legal and regulatory barriers

46.9% of the organisations we polled said that one of the main barriers to AI investment involved the legal and regulatory issues related to its use. The complex patchwork of rules governing the use of AI within an organisation can be a minefield to navigate. There are a host of laws around the use and storage of personal data while some AI-technologies, such as a dynamic pricing, may fall within the realm of competition law.

CMS legal view – GDPR and automated decision making

Where AI involves automated decision making (ADM – making a decision about an individual solely by automated means) or profiling (automated processing of personal data to evaluate certain things about an individual), there are regulatory hurdles to clear under GDPR. At a minimum, an organisation must inform the individual that this is happening. AI processes are rarely transparent though. If decisions cannot be explained, it makes them difficult to challenge and raises issues of liability for errors and harm. Organisations must find a way to meaningfully explain the rationale and consequences of decisions, and also implement some type of decision review process for when concerns are raised.

In addition, if the ADM produces legal effects (or effects that are similarly significant) then the organisation cannot utilise it unless an exemption applies (explicit consent of the individual, an authorisation under law, or that the decision is necessary to perform the contract). More stringent exemptions apply if the personal data being used is 'special category' data (e.g. relating to race or ethnic origin, health data or certain types of biometric data). GDPR discourages using ADM that concerns children and profiling of children must be done only subject to additional protections.

What constitutes a legal or similarly significant effect centres on the impact on the individual, in particular if the decision is likely to affect their rights or lead to discrimination or material prejudice. This may include decisions that have the effect of cancelling a contract or offering differential pricing based on personal details, e.g. if an individual is effectively barred from certain goods or services because prices are prohibitively high. Certain types of intrusive online advertising based on ADM or profiling may also have a 'similarly significant effect'.

If the AI technology does rely on this more restrictive category of ADM, the organisation either: (a) will be required to obtain an individual's explicit consent or find another basis for the ADM, or (b) will need to introduce some measure of human intervention (so that the processing is not 'solely' automated).

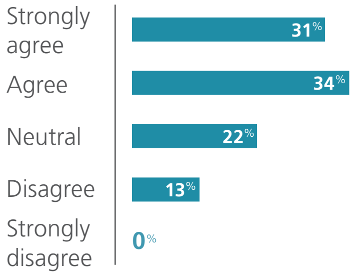
Trust and ethics

Perhaps in answer to our research around trust (see page 15), in order to properly handle the issue of data security, companies need to firstly not underestimate its importance and secondly think about hiring skilled people to help manage data ethics in an organisation. This was reflected in our survey where over 60% of companies think they will need to invest in roles managing data ethics.

As AI technologies make more 'decisions' within organisations, there will be greater scrutiny from customers and regulators as to how these decisions are made. We believe a key component of any AI strategy will be the use of an AI Ethics Board.

Managing data and ethics

I think my organisation will require job roles in managing data ethics (e.g. ensuring ethical use of data, or to manage biases in AI algorithms)



AI-readiness amongst consumers is hugely variable.

Businesses also need to reflect on whether AI is always called for in every instance. Just because something can be done, does that mean it should be? Our survey of consumers shows that perceptions can differ wildly by technology type and by age category. There is also significant divergence between how receptive consumers claim to be and how ready organisations perceive them to be. Consumers and retailers are not always on the same page. For example, while some businesses are investing in drone technology and autonomous in-house delivery in a bid to lower logistics costs, consumers were far more reticent about these new technologies.

> A key component of any AI strategy will be the use of an AI Ethics Board.

CMS legal view – ethics boards

The function of an AI ethics board is to provide thought leadership and guidance on how the organisation exploits AI technology and associated data. Companies such as Google, IBM, Microsoft and Amazon have boards in place, but we believe this will need to replicated beyond tech companies.

Duties

Core duties should include:

- Establishing policies/procedures regarding AI ethics.
- Providing thought leadership regarding AI ethics.
- Auditing use and proposed use of AI and data.
- Establishing AI ethics training programmes.
- Handling complaints about use of AI and/or associated data.
- Maintaining an inventory of AI use.

Accountability

A key property of an AI ethics board is that it should be accountable to another body so that it can be challenged if there are any doubts regarding its behaviour; for example to the organisation's overall board, or to the public by virtue of published annual reports. It should not be the sole arbiter of what is 'right'. At the same time it needs to have real power within the organisation so that it cannot be vetoed by an individual, so it needs to have a role similar to that of an 'audit committee'

Composition

Composition is also key. Diversity of views is essential, therefore diversity of composition is paramount.
We would suggest the following:

- At least some members with detailed technical understanding of AI.
- Members who understands the legal and regulatory aspects, human resource and education issues.
- Representation of different AI stakeholders e.g. customers, partners, researchers, business leaders.

We also would recommend that one or more members are well conversant in the fundamental aspects of ethics, perhaps even from other industries, such as life sciences, with a mature understanding of ethical decision making

Collaboration

Since AI is a rapidly developing field it will be very beneficial to collaborate, where appropriate, with others working in AI ethics, including competitors. For instance we are supportive of ventures like Partnership in AI.

What is AI?

Artificial intelligence, or AI, is a branch of computer science in which scientists use computers to study human intelligence. The following definition of AI is given by the Council of Europe in its **glossary**: 'A set of sciences, theories and techniques whose purpose is to reproduce by a machine the cognitive abilities of a human being.'

Examples of AI technologies include computer systems that can quickly and accurately perform tasks that ordinarily require human intelligence, such as visual perception, speech recognition, planning, reasoning, and translation between languages. One type of AI technology is machine learning, which refers to machines that can 'think and learn' by processing enormous amounts of data and spotting patterns that would be beyond the realm of even the smartest human brain.

The current and future uses of AI are immense. For the purposes of this research we take a broad view of what AI means to include AI-enabled technologies such as virtual reality, smart speakers, and the Internet of Things. In the world of retail and brands, AI can involve aiding the efficient operation of a warehouse, autonomous deliveries or the advanced use of virtual and augmented reality to completely transform the physical and online shopping experience. Other examples of the use of AI in retail include chatbots which are widely used in call centres such as at Marks and Spencer's.

The use of AI in retail customer relationship management is a field in itself and includes the use of AI in recommender systems, for predicting customer intent, algorithmic pricing and other uses.

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