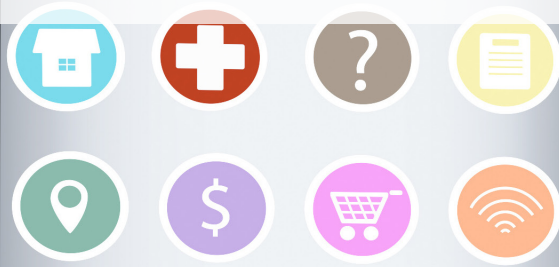Global Consumer Insights Survey 2018

Artificial intelligence: Touchpoints with consumers

pwc

Artificial intelligence (AI) is moving very rapidly into the consumer packaged goods (CPG) and retail sectors. Already, more and more shoppers are using so-called 'voice commerce' on home-based devices to replenish household supplies and groceries. AI is also helping stores optimise real-time inventory and improve shelving techniques. The technology is also transforming logistics and delivery, as well as revolutionising how companies profile and segment customers. In the next two to three years, the industry's first movers will capture major advantages over the laggards. PwC's latest research offers insight into how fast AI is gaining ground and which consumers are the most likely early adopters.

Home-based devices are finding a voice

PwC's 2018 Global Consumer Insights Survey reached out to more than 22,000 consumers in 27 territories across the globe. Our survey found that, even though it's still early days for the technology, the outlook for AI devices is promising. While just 10% of respondents globally said they currently own AI devices, such as robots and automated personal assistants like Amazon Echo or Google Home, nearly one in three (32%) said they plan to buy an AI device. "I think that's a healthy sign," says Anand Rao, PwC's Global Leader of Artificial Intelligence.
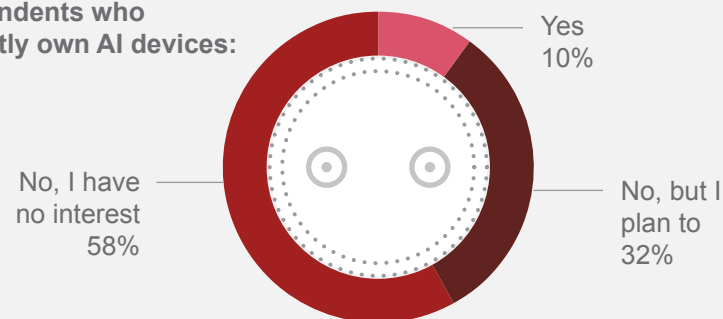
PwC's 2018 Global Consumer Insights Survey reached out to more than 22,000 consumers in 27 territories across the globe.

"As it stands now, personal assistants are still relatively primitive—they can understand single commands but not context and patterns of behaviour. You are going to see a lot more capability in the next three-to-five years." Although 58% said they have no interest in owning an AI-based device, interest is likely to increase as the technology matures (see Figure 1).

Voice commerce is in its infancy and it's unclear what impact it has had so far on sales. Among consumers who own an AI device, nearly half (48%) said that they spend around the same amount on shopping as they did without one, while 18% said they spend more. Thirty percent said they spend less, which may reflect the fact that early adopters are more likely to shop in a very targeted way by shopping list, ordering bulk purchases of everyday items (70%), rather than making impulse purchases inspired by visual displays, for example.

Figure 1: Artificial intelligence (AI) devices are gaining traction in the home but it's still early days

Respondents who currently own AI devices:

Yes
10%

No, but I plan to
32%

No, I have no interest
58%

Q: Do you currently own any artificial intelligence (AI) devices (robots, automated 'personal assistants') such as Amazon Echo or Google Home?
Base: 22,480
Source: PwC, Global Consumer Insights Survey, 2018

How AI devices affect shopping spend:

I spend less
30%

I spend around the same
48%

I spend more
18%

Don't know
5%
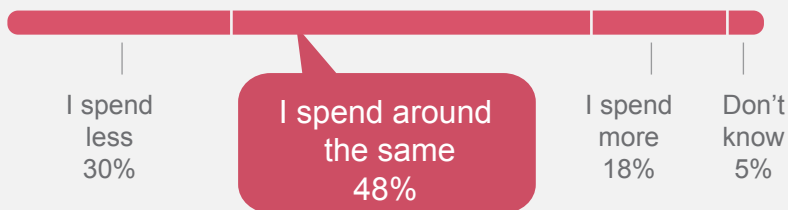
Q: How has the use of an AI device affected your shopping spend?
Base: 2,355
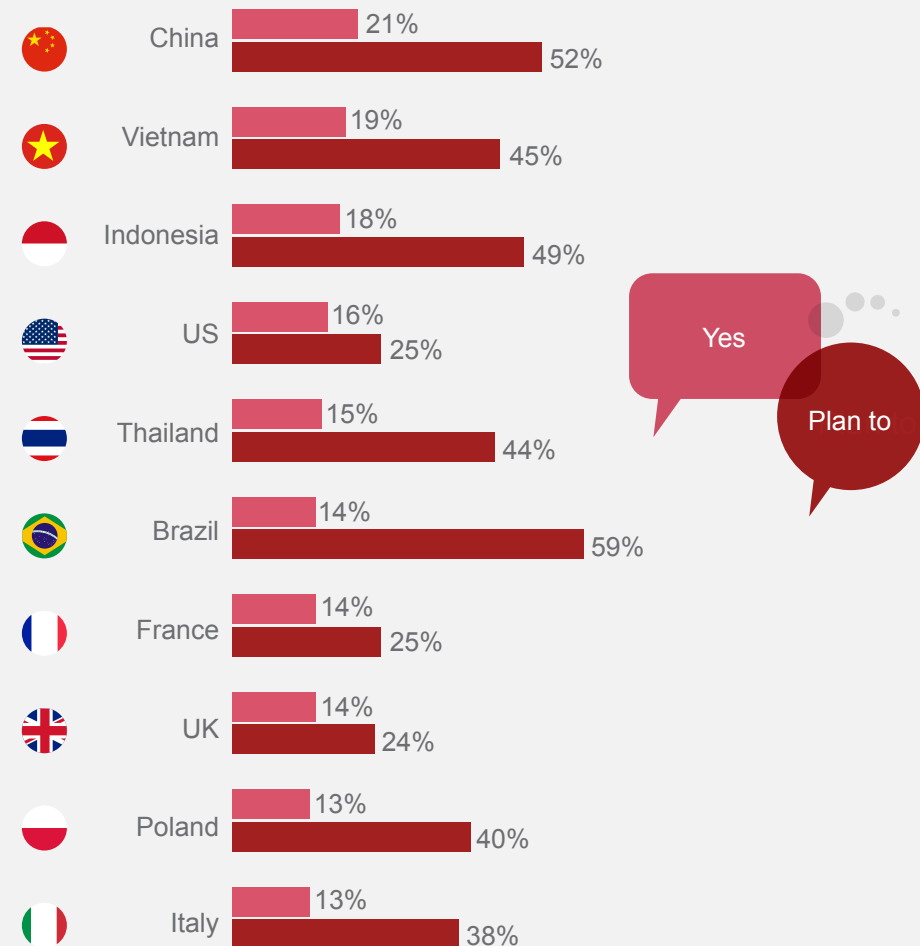Source: PwC, Global Consumer Insights Survey, 2018

Go east, Alexa

Asian consumers appear to be the most receptive to adopting AI devices for shopping. In China's massive consumer market, more than one in five respondents (21%) already own an AI device and more than half (52%) plan to buy one. The story is similar in Vietnam (19% own, 45% plan to), Indonesia (18% own, 49% plan to), and Thailand (15% own, 44% plan to). Asian consumers' openness to buying AI devices reflects their preference for voice interaction with electronics, as well as lower levels of concern about online privacy and security.

In contrast, demand is generally lower in developed markets: in the US, the UK, and France, current adoption levels are—as Figure 2 illustrates—around 15%, and about a quarter of respondents in these countries say they plan to buy an AI device.

Brazil stands out as the market having the greatest upside potential, with 59% of respondents looking forward to buying a device. Rounding out the top 10 countries, respondents in Italy and Poland also showed strong interest going forward, as around 40% of respondents plan to buy an AI device.

Figure 2: Ownership of AI: Top 10 countries

Country	Yes	Plan to
China	21%	52%
Vietnam	19%	45%
Indonesia	18%	49%
US	16%	25%
Thailand	15%	44%
Brazil	14%	59%
France	14%	25%
UK	14%	24%
Poland	13%	40%
Italy	13%	38%

Base: 22,480
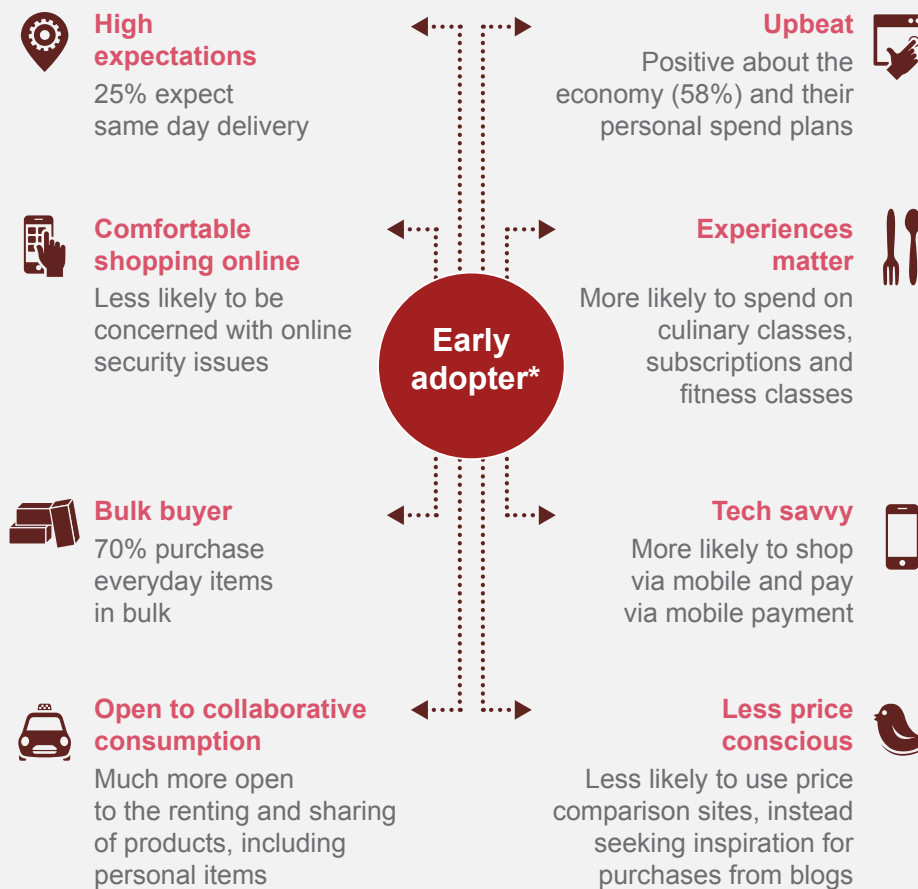Source: PwC, Global Consumer Insights Survey, 2018

A portrait of the early adopter

Connecting the dots across our survey responses, we were able to discern the characteristics of the early adopters of AI devices (see Figure 3). They are most likely men, aged 18 to 34. They are more likely to shop via mobile on a daily and weekly basis, pay via mobile payment, more comfortable shopping online, and less likely to take action to reduce the risk of online security issues and fraud. The gender discrepancy is particularly interesting. For our female respondents, 9% indicated ownership of an AI device, while 27% planned to buy one and 64% had no interest. For our male cohort, 12% indicated ownership while 36% planned to buy and 52% had no interest.

Recommendations matter more than prices to early adopters, as they seek inspiration for purchases from blogs and social network and are less likely to use price comparison sites. They are also open to collaborative consumption, expressing a willingness to rent and share products—even personal items such as footwear. They place large orders, with 70% purchasing everyday items in bulk, and they want these orders to reach their doorstep fast, with one in four expecting same-day delivery.

Finally, these early adopters seem to be looking for opportunities to spend money and enjoy new experiences. They have an upbeat attitude about the economy and personal spending plans, and they are more likely to spend on culinary classes, subscriptions and fitness classes.

Figure 3: Characteristics of the early adopter of AI

High expectations
25% expect same day delivery

Upbeat
Positive about the economy (58%) and their personal spend plans

Comfortable shopping online
Less likely to be concerned with online security issues

Experiences matter
More likely to spend on culinary classes, subscriptions and fitness classes

Early adopter*

Bulk buyer
70% purchase everyday items in bulk

Tech savvy
More likely to shop via mobile and pay via mobile payment

Open to collaborative consumption
Much more open to the renting and sharing of products, including personal items

Less price conscious
Less likely to use price comparison sites, instead seeking inspiration for purchases from blogs

*More likely to be male, aged 18-24
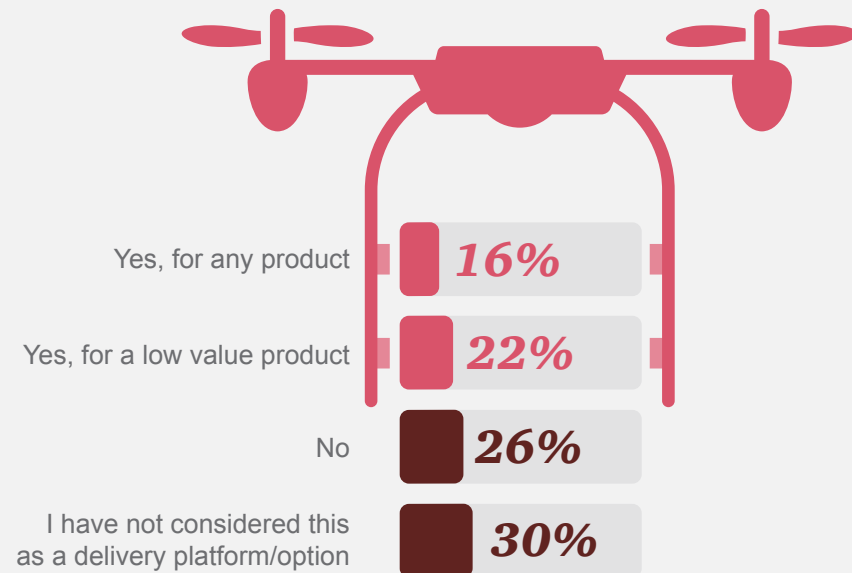Source: PwC, Global Consumer Insights Survey, 2018

Drones, coming soon to a doorstep near you

AI is having an impact not only on how consumers place orders, but also on how retailers fulfill and deliver orders. The technology is enabling autonomous vehicles—whether ground-based delivery robots or aerial drones—to manage many more warehousing and logistics jobs and improve last-mile delivery to consumers.

Are consumers ready to have the delivery person replaced by an autonomous vehicle? Among our global sample, almost 40% of consumers said they would trust a drone as a delivery method, especially for low-value products (see Figure 4).

Amazon has been testing drones for several years, but the online giant is not alone in exploring the technology. In China, JD.com already does drone deliveries to rural areas. As for other delivery technology, Postmates, the on-demand delivery service, has partnered with Starship Technologies, a developer of delivery robots, to test the use of autonomous vehicles for delivery in Washington, DC. The robots are especially valuable for short-distance deliveries (like getting a sandwich from the corner deli), for which it is usually not worth paying a delivery fee.

Figure 4: Almost 40% of consumers would consider a drone as a delivery method

Yes, for any product	**16%**
Yes, for a low value product	**22%**
No	**26%**
I have not considered this as a delivery platform/option	**30%**

Q: Would you trust a drone device to deliver your package?
Base: 22,480 (7% of consumers selected 'Don't know')
Source: PwC, Global Consumer Insights Survey, 2018

Looking ahead, Postmates expects the use of robots to drive down the cost of short-distance deliveries by 80% to 90%.[1] The Starship delivery robot is also being introduced in Europe. In London, for instance, take-out restaurants are using the technology and the German retailer Metro is testing it domestically.[2]

But there are 'Last Mile' challenges to using autonomous vehicles. Within urban environments GPS technology is notoriously unreliable for pinpointing a location, so successfully navigating the final few hundred feet may require a different solution. Computer visioning technology, for example, uses photos of milestone markets to create high density urban maps.[1] These maps could be part of a robot's software and allow it to home in on the correct address for delivery. An app like What3Words, which divides geo-locations into three-by-three metre squares and labels them with three words, might be a suitable partner to help with identifying exact delivery places. This would be ideal for robots, certainly, but also for human delivery in countries where street signage and the building address system isn't well developed.

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The disruptive power of next-generation technologies

AI—including the Internet of Things (IoT) and image recognition—is among the next-generation technologies that are considered to be disrupting consumer goods and retail. These technologies have applications in the home and in the store and are providing companies with a valuable trove of consumer information. Here are some of the many examples:

- Samsung has developed a smart refrigerator, called the Family Hub, which is integrated with the company's SmartThings ecosystem. Using a touchscreen on the refrigerator door, household members can control or monitor their connected home, including adjusting the thermostat and seeing who's ringing the doorbell. The SmartThings app enables users to see inside their refrigerators when they're in the supermarket and remotely manage connected devices. The 2018 edition of the Family Hub includes Bixby, Samsung's voice assistant. Bixby recognizes individual voices, allowing it to provide tailored responses to a household member's questions.[3]

- Retailers are exploring the use of facial recognition technology and biometric data to analyse patterns of buying behaviour. The technology could be used to improve customer service—for example, a customer who appears to be struggling to choose among various brands could receive a text or voice message offering assistance. Retailers could also use the technology to gauge the effectiveness of displays and store layouts.[4]

- The Sephora Virtual Artist app lets customers take their picture to try on—through an augmented reality (AR) overlay—eye, lip, and other make-up products and receive customised suggestions for looks to try. Similarly, though in a different product category, IKEA's AR-based app lets shoppers preview furniture and interior design items in their own living space.

- In stores and warehouses, robots create new opportunities for improving customer service and provide the ability to automate manual processes. For example, Walmart is testing the use of shelf-scanning robots developed by Bossa Nova Robotics. The robots will save hours of labour activity by recognising the inventory on shelves in stores and fulfillment centres. The robots operate while the store is open, using 3D image to navigate around obstacles. By checking for stock levels and misplaced items even during store hours, the robots collect information constantly that sales associates can use in real time to keep shelves full and correct errors.[5] Given that for traditional retail managing the hourly workforce is a significant challenge, AI-powered inventory control could be a game changer. "Using image recognition software,

Retailers are exploring the use of facial recognition technology and biometric data to analyse patterns of buying behaviour.

robots can report which goods are running of stock, so you can improve customer satisfaction because you minimise out-of-stock goods," says Sanjiv Taneja, an entrepreneur who focuses on computer vision/machine learning startups. "And because computer vision software can flag inaccurate and/or missing price tags, products can get priced more consistently, which also makes consumers happy."[6]

- Consumer goods companies and retailers have partnered with technology providers to develop the 'connected cooler.' For example, the Coca-Cola Company is using cameras, sensors, and other IoT technology to monitor the technical performance of its coolers at points of sale (such as compressor cycles and power consumption) as well as sales performance (such as how many times the door is opened).[7]

- Personalised design and production is one of the most-promising retail applications for next-generation technology. Instead of being produced uniformly, apparels and consumables can be tailored on demand. Take fashion and clothing, for example. The industry could eventually move to fully interactive and customised design and supply in which AI-created mock-ups of garments are sold online, made in small batches using automated production, and subsequent changes are made to design based on user feedback.

Oregon-based textile innovation company Unspun, for example, uses 3D image processing and AR/VR to develop bespoke dresses, and then emails the designs to customers for approval.[8] Another example of small-batch, fast-to-market production of running shoes is the Adidas Speedfactory, which has produced runs of 500 pairs of a certain design. Manufacturers will eventually be able to anticipate customer demand—for example, retailers are beginning to use deep learning to predict customers' orders in advance. Ultimately, consumers will benefit from on-demand customisation and greater availability of what they want, when and how they want it. To reach this stage, businesses will need to adapt design and production to this more agile and tailored approach. They will also need to strengthen trust over data usage and protection.[9]

AI holds great promise for consumer brands and retailers, but the challenges are different. For CPG companies, their issue is that customer data is largely still owned by retailers. For traditional retailers, the challenge is using AI to enhance the customer experience so that the in-store experience is something consumers value enough to keep coming to the physical store. For Amazon and other big e-retailers, the challenges are concerns about privacy and security. Companies that implement AI while maintaining the human touch will likely be the winners in the years ahead.

Personalised design and production is one of the most-promising retail applications for next-generation technology.

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About PwC's Global Consumer Insights Survey

Since 2010, PwC has annually surveyed thousands of consumers around the globe to track shopping behaviour, and then chronicled these findings in various global reports on the future of retail under the "Total Retail" banner.

This year we decided that a new umbrella term for our findings was warranted: PwC's Global Consumer Insights Survey. We want to acknowledge that the once bright lines demarking retailers, manufacturers, technology companies, logistics service providers, and healthcare organisations are becoming more and more obscured as consumers are more open than ever to non-traditional solutions.

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