

Image: SoftBank Robotics Europe

▲ AI robots such as Pepper can understand natural language and emotions when interacting with shoppers

Omnichannel AI

Marks & Spencer is testing the capabilities of artificial intelligence (AI) and machine learning as part of its plan to transform itself into a digital-first business. *Emma Herrod* investigates the challenges and opportunities that come with machine learning.

M&S Retail Labs has formed a strategic partnership with Microsoft, which will see the businesses working together to explore how technologies such as artificial intelligence (AI) can be used within retail to improve the customer experience in stores and to optimise operations.

Marks & Spencer sees the partnership as an important next step in its business-wide transformation programme and one which the company says could be a “game changer” for it. “Working together with Microsoft to understand the full potential of how technology and artificial intelligence can improve the in-store experience for our customers and the efficiencies of our wider operations could be a game changer for M&S – and for retail,” says Steve Rowe, CEO, M&S.

But what is AI and why is it so important to the future of retail? Cliff Crosbie, Co-founder, emotion recognition technology company Emrays, explains that it involves more than a simple algorithm or mathematical calculation. True AI, once trained, has to be able to work independently, to be able to continually learn and give insights into the data that’s feeding it rather than providing more data. IBM calls it

augmented intelligence – the combination of human and a machine to deliver an outcome that’s better than either one could achieve on their own.

However, an AI engine is only as good as the information that it’s given. “If you feed it bad data it will feed you bad results,” warns Crosbie. “So you have to make sure that it’s looking at good data all of the time so that it can be effective and learn.”

He adds: “What people are looking for is insights from the data, learning from the data, things that give them some kind of competitive edge through that data to be able to do something that works in terms of what the customer or the company needs.”

CHALLENGES

Alex Rutter, Director of Watson Customer Engagement UK & Ireland at IBM, agrees that an AI engine is only as good as the data that has trained it initially and the information with which it’s later fed. IBM’s Watson AI engine, for example, has been developed for different industries and fed data that is applicable to each, so the reply it gives to a medical query would be different to that for a retail one. By tailoring



Image: Marks & Spencer

▲ Marks & Spencer is exploring how AI can be used in stores

the AI engine to each industry – in this case, retail – it can understand retail in the same way as a retail expert.

The artificial aspect uses the technology to deliver the interaction and the intelligence part enables it to mimic what a human being would do. “In order to do that you need the complexities of machine learning, because the richness of the information required in the short space of time, or in advance of this happening, is what’s different,” says Andrew Fowkes, Head of Retail Centre of Excellence, SAS UK & Ireland.

He explains that this is all enhancing the demand forecasting that retailers have been doing for years; looking past an empty shelf in a store to the different demand indicators such as browsing behaviour, social reaction, abandoned baskets and so on. AI and machine learning takes real-time data and predicts what is needed at which locations so subscription services could have the product with the customer before they even know they need it.

He also says that retailers can’t deliver really rich contextualised information or customer experience from an AI point of view unless they have some elements of machine learning that understand what the customer might be looking to ask for next and are able to put that into a place that’s ready to provide the answer to the customer.

The quality of the data is therefore key not just to the initial training of the AI engine but to what is continually fed in from across the business. Retailers able to tie their technology stacks together and scale AI and machine learning across the customer journey, rather than at specific channels and limited data points, are going to be at an advantage – especially

since many retailers are still struggling to break down organisational barriers and siloed operations.

A retail AI engine will become even better over time since it is continually learning how the specific business works, the rules of how it should interact and the individual behaviour of each customer. For example, over time, the AI engine used by a cutting-edge young fashion chain will respond differently to one used by 1-800 Flowers.

This time to market is where early adopters of AI will be gaining a competitive advantage, explains Rutter, since they will not only have the advantage of using AI now but their AI engine will have longer to learn from their business and customer data rather than being a generic retail AI engine.

IS AI KEY?

However, only a quarter of businesses think that AI is key to their business, according to Fujitsu. Many implementations of AI and machine learning around the world are still at the level of pre-packaged applications and they have been integrated into existing processes such as chatbots and voice recognition.

“I think that will change over the coming years as they see the competitive advantage that organisations that have adopted AI will generate. They will look to follow suit and it will become strategic and start to be surfaced with the board more as a topic to drive differentiation and value,” says David Nicholls, Retail Chief Technology Officer, Fujitsu UK & Ireland.

The UK is leading the way in terms of the number of companies assessing the strategic value of AI. Reducing

errors, improving quality and enhancing the customer experience are all cited by respondents to Fujitsu's 'Digital Transformation PACT' study as benefits of the technology.

For many of the respondents involved with digital transformation, the technology cannot be implemented fast enough since 2 out of 5 say they are frustrated by the slow speed of change.

The majority, though, recognise the fact that AI is expected to transform the kind of skills required within three years. As the Fujitsu report says: "Turning a digital vision from a grand plan into a practical reality is about much more than wise technology investments or putting best practices in place. It's about making sure that you have the right people with the right mix of skills across your business."

PEOPLE

As with any 'new' technology being inhouse by retailers, there is a shortage of staff able to generate the desired ROI. "Should retailers be trying to become data scientists?" asks Fowkes. M&S believes so – to a certain degree – since more than 1,000 members of its staff will be undergoing training as part of a data skills initiative.


The M&S Data Academy will take staff from every part of the business – from store managers and visual merchandisers to finance and buying – and create a new

raft of data-skilled leaders to lead digital transformation across the company.

The leadership team will embark on a Data Leadership programme, enabling them to get hands-on with machine learning and AI technology while other staff can enrol on The Data Fellowship, an 18 month in-work data science skills scheme. Participants will learn how to harness cutting-edge data analytics tools including R and Python and adopt technologies such as machine learning.

Steve Rowe says: "This is our biggest digital investment in our people to date and the creation of the M&S Data Academy will upskill colleagues and provide them with an in-depth level of digital literacy as well as a data analytics qualification. Transformation of our business is key to survival and a huge part of this lies with our colleagues."

AI and machine learning are not just bandwagons to be jumped upon, although the technology suppliers are making many claims about them. Technologies are fast transforming the retail industry but retailers need to think about whether any application will save them money, attract more customers, generate more sales and money, or make them better at what they do.

AI should be saving you time, because it's doing things quicker than a human being, saving you money because less people are involved in gaining the insight. It should give you an instant result that will either save you money or increase your sales. 

10 WAYS THAT AI IS BEING USED IN RETAIL

Linking shopper behaviour with inventory levels and locations – AI and machine learning can enhance demand forecasting, pulling out insight from a complex array of demand indicators such as social media and abandoned carts, in real time, and predict what customers are going to do next, the locations in which stock will be needed and even having product ready for a customer before they know they need it.

Personalisation – AI is being adopted on ecommerce and mobile sites, through marketing and in stores, to help scale the optimisation of channels and pinpoint the best times to communicate with shoppers. It is becoming pivotal in understanding the shopper and recommending products.

Warehouse – Ocado uses machine learning in its warehouses. This governs the layout of products in the zone-pick area where a number of items are located within easy reach of each manned pick station. Customer totes then visit the relevant pick station on their route around the warehouse.

Chatbots & customer service – Chatbots are the new customer service channel, especially when combined with a natural language processor and an AI which understands emotion. From telephone calls, which may need to be passed seamlessly to a human if they need escalating, through to 'robots' in stores which are able to interact with shoppers, AI bots have been springing up all year. They are also able to 'sell'. H&M's Kik, for example, can interact via text with customers and recommend clothes. It asks the customer questions in order to narrow down and learn what they want. It then delivers relevant product information to their phone so customers can choose to buy.

AI is also useful with email communication. Inbound emails at Ocado are automatically analysed and prioritised, so instead of being handled in the order that they are received, customer emails which need urgent attention are dealt with ahead of acknowledgments or those giving general feedback. The analysis is done by an application which was developed in-house by Ocado's technology division utilising Google Compute Engine, Google Cloud Services and its Tensor Flow machine learning service along with a natural language processor developed and trained by Ocado.

Omnichannel – AI is open to retailers of all sizes. A Cornish fashion retailer with a turnover of £20m is using AI across its business and has seen a 46% reduction in marketing costs while growing overall revenue by 30%.

Predicting store interaction – An AI engine can understand people's emotional responses and predict how situations may develop. By monitoring CCTV, it can tell if someone in a shop is picking up an item because they are showing interest in the product, why they decided to put it down, or raise the alarm if unusual behaviour is likely to occur such as the item being about to be shoplifted.

It can also be used with geolocation data to map customer and staff interactions. Japanese department store Isetan, for example, found that sales staff located on the periphery of the sales floor had better interactions with customers than those standing in the centre. Those at the periphery generated as much as 10% more revenue.

Store design – Monitoring sentiment is more than a case of using facial recognition. By analysing semiotic feeds from people as they look at a shop design or walk into a store, the AI can tell if someone is being made unhappy by the conversation they are having on their mobile phone rather than the store.

Semiotic feeds also enable AI to analyse how customers will react to a store design in its entirety and by separate sections, either collecting feeds through a camera on a mobile phone as they walk around a store space or as they look at a design. It can also reduce the bounce rate as customers walk in, scan the store quickly and walk straight out again.

Marketing impact – AI can monitor for brand sentiment across news and social media and give insight into how people will react to marketing campaigns, videos or messages.

Analysis and instant feedback – You have one chance every time a customer walks through the store door and retailers can't miss many of them. Instant feedback can highlight if another cashier is needed, if an area of the store isn't working, and whether people aren't going along a specific aisle or picking up certain products. In the same way that personalisation works online with product highlighted to the right customer, the same can be done in store.

Fraud reduction – Transaction records can be analysed along with CCTV images in real time to monitor for fraud, such as items not being scanned at a self-service checkout or an expensive item being scanned with a different bar code for a cheaper item such as being weighed as carrots.