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The impact of artificial intelligence (AI) on the world of retail cannot be underestimated. From the boutique to the supermarket, physical shop-front to internet purchase, AI has the capacity to entirely change the face of the industry.

The savvy service provider is realising that this isn't a promise for the future – the journey can begin today. Pioneers are using AI to power virtual agents and chatbots, to improve operations and more. In this issue we discover how Microsoft and its partners are facilitating this journey, equipping retailers with everything they need to reap the rewards of AI and deliver new experiences for shoppers and employees alike.

A new tool for retail success

MICHAEL BOYKIN AND DANIEL MUNYAN: DXC TECHNOLOGY

Geomatics and omnilocation services can help retailers to capture data from their physical stores so they can meet, and exceed, the needs of their customers

Despite all the data retailers can collect about their operations today, the figurative last mile – the brick-and-mortar store – is still a black box.

Retailers can easily track every move online shoppers make, but when it comes to brick-and-mortar stores, they don't have a way to monitor where customers linger, which displays catch their eyes, or which products they pick up and then put back down without buying. Without that information, retailers find it hard to optimise in-store operations.

This is where geomatics – the analysis and management of geospatial data – comes into play. Geomatics provides retailers with a powerful

> "Geomatics provides a powerful tool for tracking and analysing brick-and-mortar stores"

tool for tracking and analysing their brick-and-mortar stores, allowing them to create a digital picture of a retail space that is automatically updated to accurately portray customers' experiences. Consequently, when it is combined with in-store location-based metrics, geomatics can help retailers to better understand and improve their customers' in-store experience.

To gather in-store location-based data, retailers can use advanced presence technology, such as lasers in the form of light detection and ranging (lidar) sensors; 3D facial sensors;

long-range low-power wireless systems for internet of things applications; Bluetooth tags with multi-sensor functionality and machine learning technology; real-time location systems; geofencing; wi-fi tracking; and radio-frequency identification technology.

However, it's not enough for retailers to simply capture tracking and in-store presence data. This in-store data needs to be combined with information about what customers are actually purchasing if retailers want to have access to the same kind of insights they get online. By applying analytics to this combined data, retailers can get all the information they need to fine-tune customer interactions and customer intimacy. They can also optimise demand forecasts; improve product placement, floor plans and in-store design; and adjust employee scheduling, tasks and placement.

Many retailers are moving to omnichannel strategies, a multichannel approach that enables customers to enjoy the same seamless experience whether they are shopping in-store, online, via mobile or using a catalogue. To deliver a consistent retail experience across all channels, retailers need services that track, measure, analyse and optimise their end-to-end operations – from the moment inventory is ordered, to the minute a customer makes a purchase either in store, online or via a mobile device. Retailers can easily achieve this by using in-store geomatics to get real-time information about their shoppers' experience in brick-and-mortar stores and integrating it with data collected from their online and mobile operations.

Cloud-based omnilocation services can also help. These services help retailers to manage their entire operations, starting with real-time track-and-trace technologies that can be used to monitor shipments, distribution and estimated time of arrivals, so scheduling, workforce management and inventory planning is more accurate. For example, if a retailer is alerted to delays or shipping issues as soon as they happen, they can make decisions to mitigate any fallout, rectify the situation and minimise harm to the customer experience. Services such as DXC OmniLocation integrate online and real-world data to enable comprehensive logistics planning, monitoring, management and in-store geomatics.

Retailers know more about their supply chain operations, logistics, inventory and customers than ever before. But there's always opportunity for more insights, and new technologies are emerging to deliver these. By digitally transforming in-store retail operations with geomatics, retailers can automatically capture the information they need to better understand shopper experiences. Then, they can refine their brick-and-mortar stores so they offer seamless interaction with customers and can dynamically adjust their offerings to meet customers' needs, wants and expectations. By putting the right product in front of the right customer at the right time and creating a frictionless and more fulfilling shopping experience, brick-and-mortar retail will continue to play a vital role in the consumer's path to purchase. ▪

Michael Boykin is industry chief technologist for DXC Technology's Consumer Packaged Goods and Retail in the Americas, and Daniel Munyan is geospatial logistics and internet of things product manager for the company's analytics business segment

Sensors enable retailers to track how customers behave in store so they can improve the shopping experience

How AI is powering a new era of retail

Microsoft's ShiSh Shridhar explains how retailers are using artificial intelligence-enabled virtual agents, robots, analytics and more to empower their employees, optimise their operations and delight customers

BY REBECCA GIBSON

A modern way to find products

Bunsar Visual Product Search API enables users of Turkish mobile shopping app provider to take a photo and instantly receive information on products

Turkey-based company Hopi is using Bunsar Visual Product Search API to enable customers to upload photos and live video streams to its mobile shopping app and instantly get recommendations for similar or complementary items from its retail members' product catalogues. Bunsar Visual Product Search API does this by using artificial intelligence and Microsoft's cloud technologies to identify apparel products in customers' images.

Currys PC World, a subsidiary of UK-based electronics and telecommunications retailer Dixons Carphone, has a new employee named Cami. She's 'mildly geeky', 'quite confident' and available 24/7 to help customers find the products that best meet their needs. She can provide detailed answers to any product questions, check stock levels and help customers locate items all within a matter of seconds. Cami isn't a typical human store associate. In fact, she's a conversational bot powered by artificial intelligence (AI), the Microsoft Bot Framework and Microsoft Cognitive Services.

Programmed with information from Dixons Carphone's online buying guide and store colleague training materials, Cami can be accessed via Currys PC World's website and Facebook Messenger. She currently accepts text-based questions and photos of product shelf labels from customers, and also enables store associates to check stock and access customers' wish lists.

"It would be impossible for Currys PC World to have associates who can provide 24/7 expert advice on all products at every single store, so customers may leave dissatisfied and empty-handed if they can't find someone who can help," says ShiSh Shridhar, Microsoft's Retail Industry lead for data and analytics. "Cami removes the risk of lost sales and customer churn by quickly providing the detailed information customers want – whenever and wherever they want it. Customers are satisfied because they don't have to wait for store associates, and shop assistants are happy because they are free to provide a personalised customer experience."

US department store Macy's is also using a Microsoft Dynamics 365 AI-powered virtual agent to resolve 25% of customer queries. Available via Macy's website, the chatbot can also seamlessly transfer customers to a human operator. The ability to do this makes virtual agents particularly effective in retailers' call centres.
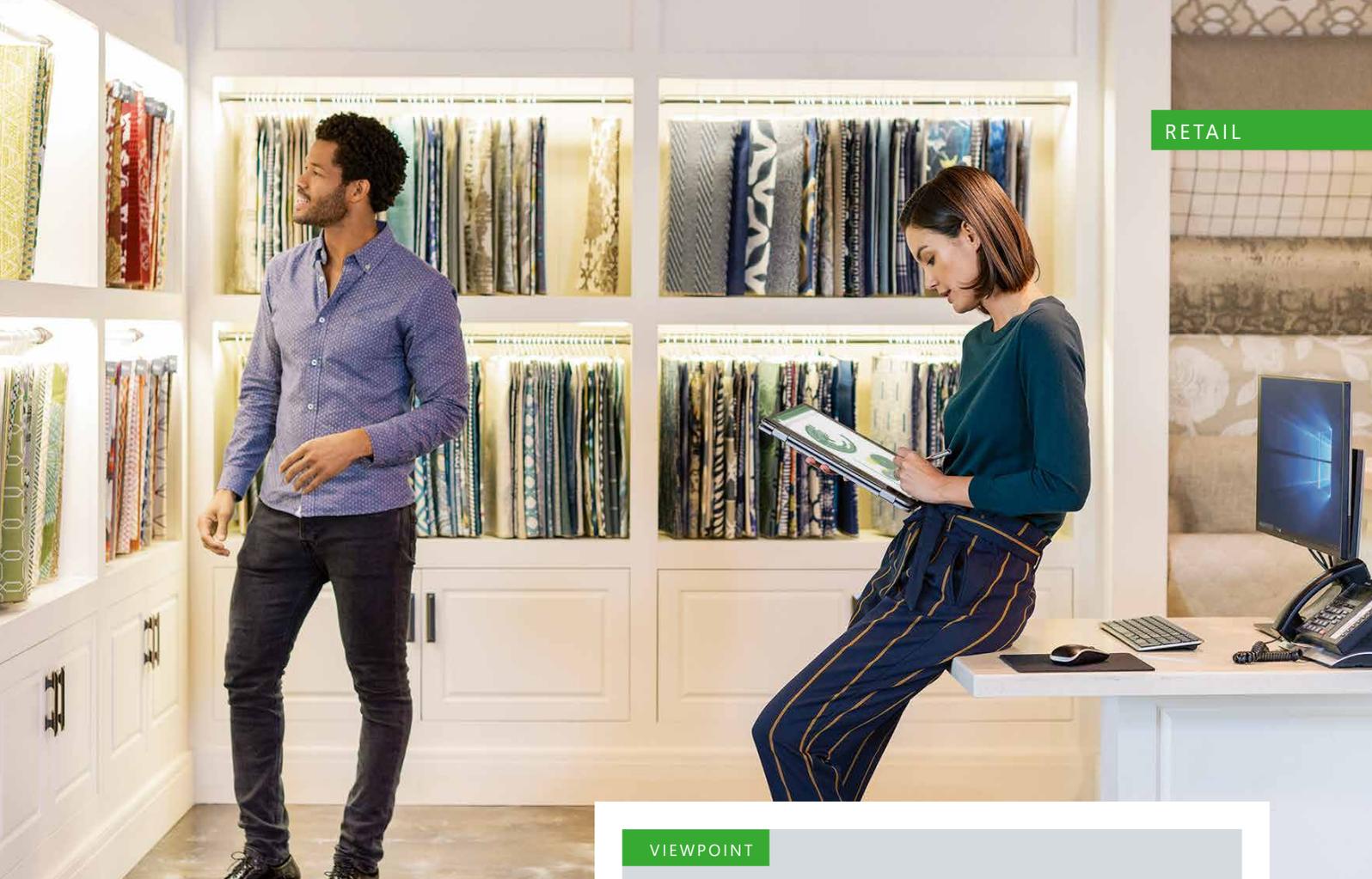
"While the customer is speaking to a human call centre operative, a chatbot will transcribe the call and simultaneously connect to the retailer's back-end systems to find data related to their query," Shridhar explains. "The chatbot will surface this information to the live agent in a matter of seconds, allowing them to provide customers with a quick, accurate and personalised response. The technology does all the work in the background, but customers get the all-important personal touch because they're hearing the information from a human. And, because the call centre operator doesn't need to manually search for data, they can serve more customers in a shorter space of time."

Using chatbots and other AI-powered solutions to augment human capabilities is fast becoming a key priority for retailers worldwide. Many are adopting AI systems that empower employees with the data insights and tools they need to work more efficiently, while simultaneously optimising in-store operational processes.

"AI-powered systems are ideal for finding patterns in retailers' data and combining them with contextual information about weather, socio-economic trends, geographical location and other factors to unlock insights that help them to make operations more efficient," remarks

Creating a retail story

Artificial intelligence is changing the face of retail by preventing its total disruption, says Styla's Philipp Rogge

Longstanding cornerstones of our traditional shopping universe, physical retail stores are struggling to survive because people want to shop online. However, many retailers have forgotten the basic element of selling when it comes to their online channels: they must provoke an emotional response from customers by showing them why they should buy a product.

Constructing a solid visual experience on a website is difficult, so most retailers end up with websites that have blocks of visuals in repetitive patterns that don't provoke any emotional response in customers. Successful retailers are those that include photographs in product grids, create visually striking landing pages on their websites, and use social media to turn product fans into brand advocates.

Styla uses artificial intelligence to help retailers tell the stories of their products so their digital touchpoints are just as inspiring and exciting for customers as a personal visit to the opening night of a flagship store. We track and analyse website content and traffic, change the look and feel of graphical pieces, and we can integrate seamless shopping opportunities.

Philipp Rogge is founder and CEO of Styla

Hitting gold in the retail data mine

Mindtree's Sudhakar Shivashankar explains how artificial intelligence can help retailers to create data-driven and customer-centric in-store experiences

Artificial intelligence (AI) is the most exciting technology today and it will likely be the biggest change agent to shape the future of businesses. As retail is an industry with many customer touchpoints, it's only natural that retailers have been early AI adopters.

Traditionally, retailers have made decisions using information about customers and their shopping behaviour, but the rapid growth of new technologies and consumer channels means that many are now sitting on a gold mine of data that is too big for them to process manually. This is where AI can help.

Mindtree's Flooresense intelligent video analytics solution uses AI and deep learning technologies to help retailers increase customer conversion rates and reduce revenue loss. It does this by analysing video surveillance feeds to pinpoint friction points within the shopper journey, identify where customers spend time in store, or establish how they react to promotions.

Flooresense also provides in-store associates with real-time recommendations, alerting them to empty shelves so they can replenish items quickly, predicting traffic at POS terminals so they can improve the customer experience, and much more. These insights help retailers in creating customer-centric, data-driven in-store experiences.

Sudhakar Shivashankar, general manager of Retail Platforms at Mindtree

Digitising retail shelves

Dick de Haas explains why Opticon's new electronic shelf label will help retailers to optimise prices and improve the customer experience

Time is precious for modern consumers, so when it comes to purchasing their weekly groceries or other goods, they want the process to be quick. They also want to be sure that the advertised price is correct, particularly if they have found a product online and wish to buy it in a physical store.

To help retailers meet this demand, Opticon has developed EE-292. The new electronic shelf label (ESL) has an LED display, an integrated near-field communication chip and a powered rail that doesn't need external batteries. Retailers can link the ESL to their back-end content management system to provide customers with real-time pricing, product information, and promotional offers. They can also use the ESL to manage stock levels on in-store shelves and in warehouses. This will boost sales because retailers will be able to better match pricing and inventory levels to customer demand.

Meanwhile, customers no longer need to queue at checkouts. Instead, they take the product from the shelf and tap their NFC card to the ESL so the money is automatically withdrawn from their bank account.

Currently on trial at one of the largest supermarkets in the Netherlands, Opticon EE-292 will transform the physical shopping experience for retailers and customers alike.

Dick de Haas is international sales manager at Opticon

Automating processes with AI

Metafile Information Systems' Alyssa Putzer outlines how paperless automation solutions can help retailers improve back-end business operations

Artificial intelligence (AI) is changing the way that retailers are doing business and managing data. It's automating back-end routine functions, like information capture and accounting processes, that were previously carried out manually by employees.

Retailers recognise that to manage future growth without adding staff, they need to change how they invest in, and use, technology. Many legacy systems require extensive manual data entry and don't provide the flexibility or visibility that retailers require to make informed business decisions. However, a paperless automation solution that integrates with

Microsoft Dynamics enterprise resource planning platforms – such as Metafile Information Systems' MetaViewer – can deliver the AI benefits retailer are looking for. MetaViewer reads and classifies each document as it is scanned, indexed, routed and archived to capture important information that retailers can use to improve business processes, increase efficiency, enhance compliance and make more informed decisions.

Alyssa Putzer is a marketing communications specialist for Metafile Information Systems

Shridhar. "Retailers are using AI solutions to accurately create hyper-local inventories for individual stores, predict optimum product pricing, and to track product demand and stock levels in real time so they can reduce out-of-stocks."

Europe-based multichannel retailer OTTO, for example, has boosted sales and decreased product returns by using Blue Yonder's Microsoft Azure Machine Learning-based Price Optimization solution to determine the best product prices according to predicted changes in customer demand throughout the year. US supermarket chain Giant Eagle has deployed Powershelf, which uses sensors to track stock levels and AI algorithms to automatically update products prices based on multiple factors. Meanwhile, US-based home improvement retailer Lowe's, Japanese electronics retailer Yamada-Denki and San Jose Orchard Supply Hardware Store in California are all using Microsoft Azure and Power BI-enabled robots from Fellow Robots to monitor stock levels on shelves in real time.

"All three of these solutions automate what were previously very time-consuming and resource-intensive processes for retailers, freeing up store associates to focus on engaging in personalised interactions with customers," says Shridhar. "Plus, Fellow Robots' autonomous robots can answer customer queries in multiple languages, connect them to human experts via video, or take them to products on the shelves so

Courtesy of Fellow Robots, Inc
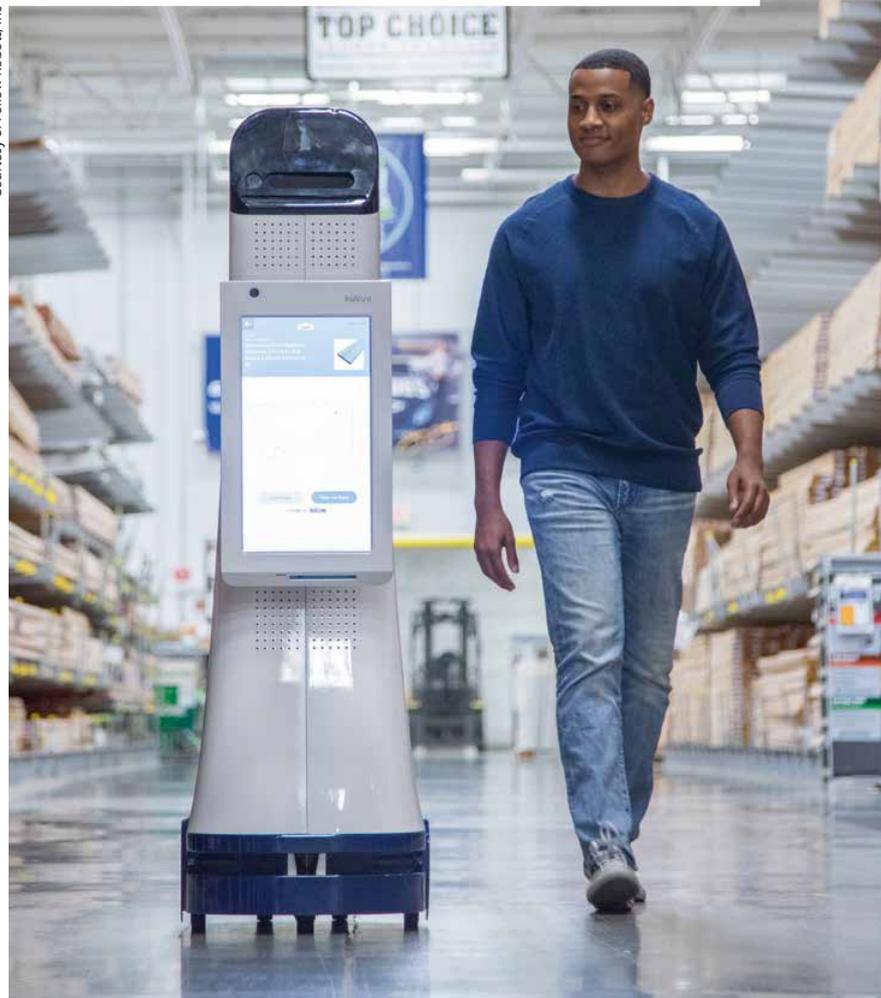
they're improving the in-store customer experience in multiple other ways too."

Other retailers, such as US outlet chain Nordstrom Rack, are using Microsoft cloud-based beacon technology from partners like Footmarks to monitor customer behaviour in their stores.

"By using AI and machine learning systems to analyse customer behaviour data – and combining it with information from other sources – retailers can optimise their workforce so there are always sufficient employees to meet predicted demand on the store floor, at the checkouts or in the stock room," says Shridhar. "Retailers can also use insights from this data to identify customer preferences so they can capitalise on new opportunities to boost loyalty and drive revenue. If a retailer has a 360-degree understanding of each customer, they can personalise all interactions and ensure that product recommendations, promotional offers and marketing messages are fully relevant to the individuals who receive them. For example, Microsoft has helped website AllRecipes to deploy an AI-driven engine that recommends specific recipes to specific users."

Shridhar adds that retailers could take personalisation a step further by identifying which products customers have been buying on a regular basis for a long period of time – such as bread or cleaning products – and enable them to buy these items on an automatic subscription basis. "If customers no longer have to buy basic items, they can concentrate on the enjoyable parts of the shopping experience – discovering new products, communicating with store associates on a personal level and trying out the new experiences retailers are offering via mixed reality and other technologies," he comments.

"AI-powered systems are ideal for finding patterns in retailers' data"

As more retailers harness AI to help with customer engagement, employee empowerment and optimising operations, Shridhar predicts the shopping experience will become more enjoyable for customers.

"AI is driving many of the things that retailers have being doing for years, but it's doing them far more efficiently, cost-effectively, quickly and accurately than ever before, transforming the customer and employee experience, and operational processes," he says. "The beauty of AI is that it's largely invisible – customers simply notice that their shopping experience is more intuitive, personalised and enjoyable. Meanwhile, retail employees can work more efficiently and serve customers more proactively and personally." ■

VIEWPOINT

It's all about the data

Machine learning and artificial intelligence can help retailers acquire and retain customers, says MPP Global's Paul Johnson

Machine learning and artificial intelligence (AI) are transforming how customers acquire and retain customers. These technologies enable retailers to provide lots of product and bundle options that will help them to acquire customers, particularly in the subscription space. Meanwhile, predictive algorithms powered by AI and machine learning help retailers to accurately identify up to 90% of the customers that are likely to churn in a month's time

MPP Global's Microsoft Azure-based eSuite platform includes up to 40 different data points and uses machine learning to run thousands of permutations against a known outcome (yes customers will churn, or no they will not) on 70% of the data it captures. eSuite runs an algorithm against the remaining 30% of the dataset to predict churn rates for all subscribers. Retailers then receive a monthly report identifying the customers at risk of churning, so they can effectively re-engage with these individuals and minimise their churn risk. At the same time, they can increase the rate of first-time subscription renewals. eSuite has helped our customers to cut overall churn by 80%, which is a game-changer.

Paul Johnson is CEO and co-founder of MPP Global

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