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Transforming business with innovation



Discover the Possible

- a perspective on Retail

February 2019

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Discover the Possible - a perspective on Retail

/Introducing Invenica

Invenica is an independent technology development and consultancy company. We use technology innovation to solve difficult problems for our clients. We have deep technical and industry knowledge, and a breadth of experience delivering complex enterprise projects. We work for global blue-chip companies, delivering mission critical solutions in the most demanding of environments. We help our clients develop a clear IT strategy – working with them on POCs and Prototypes that deliver a tested and “fast tracked” approach.



Gareth Mee
CEO, Invenica

Gareth is responsible for the growth and strategic direction of Invenica, a specialist software services business. He is currently working extensively within the emerging technologies space covering AI, Blockchain, Chatbots and Conversational Language, with experience in enterprise integration, mobility and UX – delivering mission critical solutions and complex enterprise projects.



Moustafa Bounasser
CTO, Invenica

Moustafa is a Digital Strategist, Innovator & Inventor and an emerging technologies enthusiast with over 12 years’ experience in the information technology sector. He has helped multiple organisations across Europe transform their business with innovation, thought leadership and emerging technologies.

During the course of 2019 we will be investigating other emerging technology trends: Artificial Intelligence, Augmented Analytics and Internet of Things.

To keep up to date, visit www.invenica.com or follow us on **Twitter** and **LinkedIn**.

If you would like to get involved and discuss any of the themes of this industry article and our “**Discover The Possible**” program, email us at enquiries@invenica.com – we would be delighted to hear from you and start a conversation.

Introduction



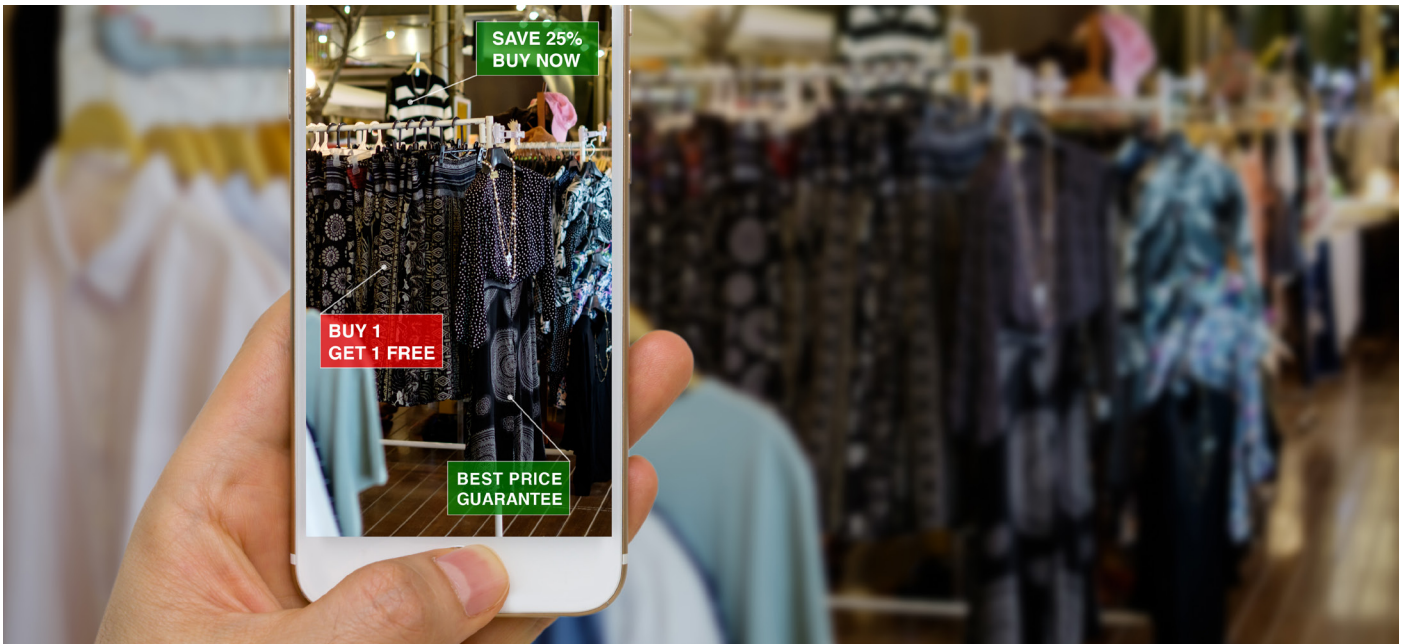
/Welcome to our “Discover the Possible” program

We launched our “Discover the Possible” program in January, and over the coming year, we will be exploring the challenges and opportunities of emerging technology. We will be separating the fact from the fiction, translating the buzz words and jargon into simple plain language, and analysing real business use cases. Our team will be collaborating with our clients, partners and subject matter experts across the markets creating whitepapers, webinars and industry articles to spark discussion and debate.

/About this paper

This industry article focuses on how emerging technologies are disrupting the Retail industry. We review innovation in Data Insight, AI & Machine Learning and Voice Technology. There has been a shift in customer buying habits. The modern-day consumer has a new set of expectations – the high-street is being replaced by an on-line, always accessible, on-demand shopping experience. Retailers who embrace and harness the power of this change will succeed in an ever-changing, digitalised world.

Retail at a glance



/The retail industry is at the intersection of a huge cultural and technological shift.

The sector is undergoing significant change as emerging technologies continue to disrupt and transform the shopping experience both online and in store. Consumer buying habits have completely changed their relationship with brands and the high street. With smart phones, online shopping and mobile apps, customers have been driving an immersive, on-demand and convenient experience.

This is hitting the high-street hard with growing competition from on-line, falling profits, increased cost base, store closures, and some struggling to move with the times. In order to successfully keep pace with this change, businesses need to consider several factors when defining their e-commerce and digital transformation strategy.

This paper overviews how Data Insight, AI Automation and Voice Technology are re-imagining and transforming retail – permanently.

“ The consumer is king and if they want to buy online, then that is their call.

Alan Hawkins

CEO of the British Independent Retailers Association
(BIRA)

Glossary of terms

/Artificial Intelligence

Artificial intelligence (AI) is the simulation of human intelligence processes by machines, especially computer systems. These processes include learning (the acquisition of information and rules for using the information), reasoning (using rules to reach approximate or definite conclusions) and self-correction.

/Chatbots

A chatbot is a computer program that simulates human conversation through voice commands or text chats or both. Chatbot, short for chatterbot, is an Artificial Intelligence (AI) feature that can be embedded and used through any major messaging applications.

/Conversational Commerce

Conversational commerce is the process of interacting with a brand or buying a product or service through non-traditional channels, such as voice assistants, SMS text and online and social media chat. Usually powered by artificial intelligence, a combination of technological advances and consumer preferences paved the way for conversational commerce to gain traction, primarily in B2C retail.

/Data Insight

Insight is the value obtained through the use of analytics. The insights gained through analytics are incredible powerful and can be used to grow your business while identifying areas of opportunity.

/Machine Learning

Machine learning is an application of artificial intelligence (AI) that provides systems the ability to automatically learn and improve from experience without being explicitly programmed.

Machine learning focuses on the development of computer programs that can access data and use it to learn for themselves.

/Natural Language Processing

Natural language processing (NLP) is a branch of artificial intelligence that helps computers understand, interpret and manipulate human language. NLP draws from many disciplines, including computer science and computational linguistics, in its pursuit to fill the gap between human communication and computer understanding.

/Predictive Analytics

Predictive analytics is the practice of extracting information from existing data sets in order to determine patterns and predict future outcomes and trends. Predictive analytics does not tell you what will happen in the future. It forecasts what might happen in the future with an acceptable level of reliability and includes what-if scenarios and risk assessment.

/Robotics

Robotics is the industry related to the engineering, construction and operation of robots – a broad and diverse field related to many commercial industries and consumer uses. The field of robotics generally involves looking at how any physical constructed technology system can perform a task or play a role in any interface or new technology.



/What is the technology and why is it valuable?

The retail sector is becoming an increasingly data rich environment, generating a huge volume of information and insights. As far back as 2015, a study conducted by Forbes found that '89% of business leaders believe big data will revolutionise business operations in the same way the Internet did'. Harnessing the potential of data insight informs decision making, enables a deeper understanding of customers, uncovers trends and reveals new opportunities. Today, customers interact with retailers through multiple touch points – mobile, social media and stores. This increases the complexity and variety of data types businesses need to aggregate and analyse. By unlocking data insight and using predictive analytics with targeted promotions, retailers are increasing customer acquisition and loyalty.

“ 89% of business leaders believe big data will revolutionise business operations in the same way the Internet did.

Forbes, 2015 study

/What does it mean for retailers?

Analysing data gives retailers a 360-degree view of their customers and prospects – correlating data from multiple channels (social media, online, apps, in-store), monitoring interaction on social media and recording customer purchase histories allows retailers to target advertisements and personalise promotions. Using sophisticated algorithms, retailers are tracking and measuring data from sourcing, through the supply chain management, all the way to consumer fulfilment. Always on, always watching and always learning.

Amazon are an example of a retailer who have utilised the potential of data insight. Over the last decade, they have been embarking on fraud prevention projects, using tools which use a scoring approach. They have also used data to drive sales, using customer browsing cookies and wish lists to suggest relevant products to their customers. Furthermore, by using analytic systems, Amazon can regularly fluctuate their prices based on the market – scanning other sites, collating data and using this insight to make appropriate adjustments.

A 2014 Accenture survey found that nearly '80% of survey participants agree that companies must embrace big data or else risk facing extinction'. Costco are a great example of a retailer that is leveraging the power of big data - before big data existed. In 2014 they were using the data generated by their shopper cards to customise the consumer experience, enabling better target marketing and notifying shoppers of possible contamination in foods they purchase. As a result, when later that year a fruit packing company sent a warning to Costco about the possibility of listeria contamination in its fruits, Costco were able to send an email to the specific customers affected – allowing them to stay ahead of their competition and handle consumer notification of an urgent health and safety issue in a timely way.

“ 80% of survey participants agree that companies must embrace big data or else risk facing extinction.

Accenture, 2014 study

However, with so much personal data being exposed, and greater sophistication in the technology used to exploit this data, there are increasing concerns among consumers and legislators on how this information is being used and abused. Facebook and Google have been engulfed in controversy, ranging from fake news to user manipulation. Going beyond simple retail influence but broader social and political implications, brought into sharp public focus with the Cambridge Analytica scandal.

Regulators have sought to tighten the rules on data sharing and usage, on May 2018 the General Data Protection Regulation (GDPR) came into force, and was designed to modernise laws that protect the personal information of individuals. It also boosts the rights of individuals and gives them more control over their information. However, there is still some way to go, and with more firms understanding the economic potential, and “influencer” power of personal data – privacy, and how our information is being commercialised for corporate gain, will be an on-going area of debate and contention.

AI & Machine Learning



/What is the technology and why is it valuable?

AI is taking consumer interaction to a more immediate, smarter and interactive experience. A 2018 study conducted by Gartner predicts that 'by 2020, 85% of customer interactions will be managed without a human'. Looking to retail, analysts have estimated the global annual spending on AI by retailers to reach 7.3 billion by 2020. This is due to AI's ability to offer new ways to improve the customer experience and optimise operational efficiency. Across the industry, retailers are accelerating their AI deployments, with larger organisations taking the lead. Tesco is incorporating Machine Learning algorithms across its business, from customer-facing functions to operational departments. Online supermarket Ocado has also been a strong adopter of AI and Robotics technology. At its warehouses in the UK, thousands of robots' pick groceries out of storage and fulfil as many as 65,000 orders per week. These use cases highlight the possibilities of AI and Robotics – they deliver an efficient, frictionless process, prevent errors, spot potential problems and allow retailers to focus on other tasks.

“ **By 2020, 85% of customer interactions will be managed without a human.**

Gartner, 2018 study

AI & Machine Learning

/What does it mean for customer engagement?

Advances in Natural Language Processing (NLP) are being used in solutions across AI, Machine Learning and Voice Technology. A 2018 Capgemini Research study, involving 250 retailers, revealed that 74% of AI use cases in retail are consumer-facing. An example of AI-driven, customer-facing technology is chatbot platforms. Many retailers have integrated chatbots into their Facebook messenger channels, creating a personalised and conversational experience for their customers. Similarly, UK-based retailer Ted Baker has deployed a chatbot that helps customers track orders, answer queries and drive purchases. These functions are achieved with the introduction of Natural Language Processing (NLP). NLP enables chatbots to simulate human interaction – understanding the message and responding accordingly. Retail is a customer-facing industry, meaning NLP is a particularly pertinent development, it can transform customer interaction, extract key insights and collate vast amounts of data.

 **74% of AI use cases in retail are consumer-facing.**

Capgemini, 2018 research study

In this fast-paced arena, 'computer vision' is a hot innovation - enabling retailers to curate end-to-end customer journeys. In 2017, the multi-national fashion retailer, H&M, introduced "Image Search", a tool that helps customers move directly from inspiration to purchase via their app. Powered by the self-learning algorithms of image recognition technology, users feed a picture of an item they like to the app, which then presents one or several similar products to choose from. Purchasing at the power of a click.

Voice Technology



/What is the technology and why is it valuable?

Consumer facing businesses need to manage multiple routes and channels to market. From bricks-and-mortar to on-line, savvy firms have embraced innovation that puts the consumer experience at the heart of their channel strategy. From pop-up stores, through to experiential shopping events, the consumer “journey” is central. Huge advances in voice technology are being adopted across industries – improving the customer experience, while also reducing their support and operational cost base. The Financial Times reported in February 2019 that Citi Bank are likely to replace ‘tens of thousands of call centre workers with machines’. Chief Executive at Citigroup, Mike Corbat, believes that ‘automation can radically change or improve customer experience while cutting costs’ – a trend we’re seeing in other large organisations such as Google and Amazon.

/How are consumers harnessing the potential of this technology?

Voice technology is becoming prevalent in our everyday lives – it is changing how we browse the internet, purchase products and interact with our devices. Conversational user interfaces and voice assistants like Amazon Alexa, Google Home and Apple’s Siri are heavily used by consumers. Initially, chatbots were developed as a messaging-based platform. However, conversational commerce is expanding with the arrival of voice-based personal assistants, giving retailers the opportunity to build greater intimacy with their customers. As voice-based devices continue to evolve, retailers can reach consumers via a multitude of locations – at home, on the go and in store. This ubiquity of connection will allow retailers to extend the relationship beyond the physical store – enabling them to collect a rich source of information and insight to help build trust, relevancy and deeper customer connections. Adoption of voice technology is on the incline – a 2018 Capgemini study explored how many consumers already use voice assistants for making purchases. Over 5000 consumers took part, with 51% already using voice assistants to make a purchase, predominantly via smartphones.

Voice Technology

/How are retailers responding to increasing customer expectations?

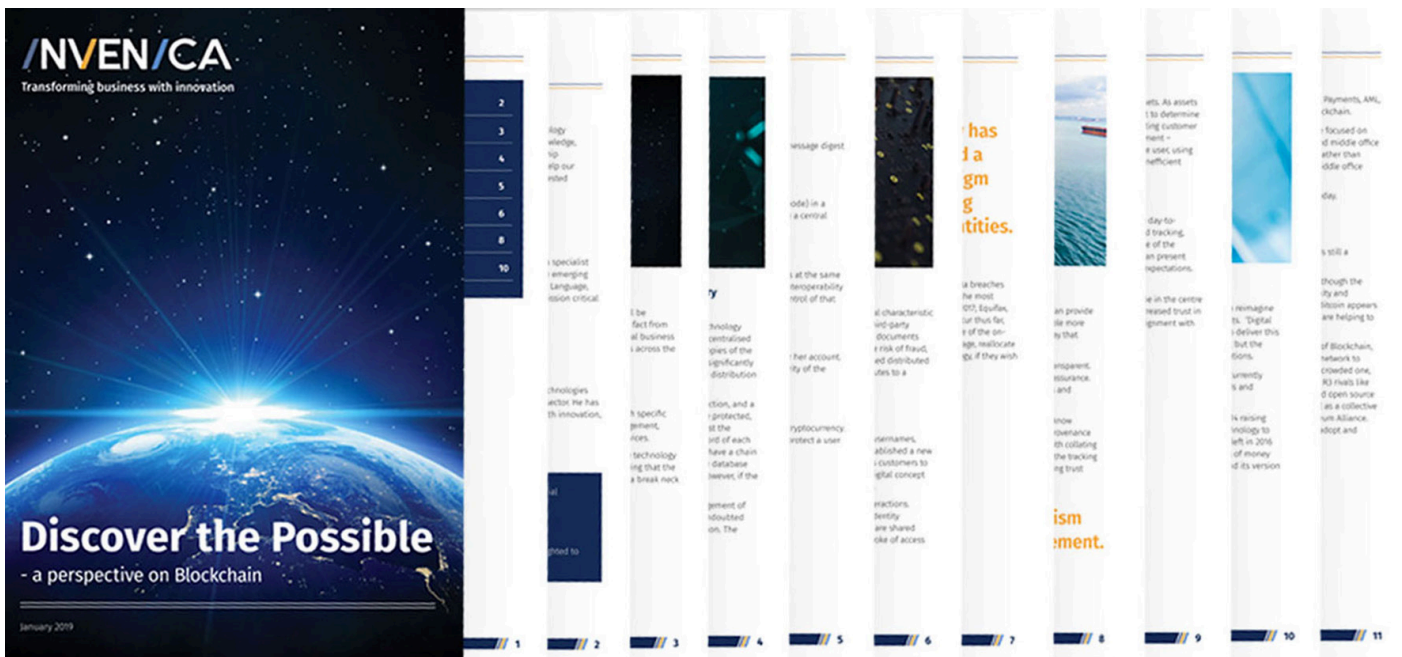
Retailers are responding to the increasing use of voice technology, looking at how they can integrate it within their current infrastructure. Walmart partnered with Google to provide highly personalised voice shopping. They launched a platform that allows customers to shop over two million items through voice. Another example is Ocado, who were the first British retailer to enable voice ordering capability on Amazon Alexa in 2017 – customers could add products to their order and seek information. Voice assistants can improve convenience, speed, the ability to multi-task and personalisation. A 2017 conversational commerce study conducted by Capgemini, containing consumers from Europe and the U.S, found that 52% of participants voted a voice assistant to be more convenient than a website or app. Conversational commerce and voice technology present a significant opportunity for retailers to interact with their customers in new, innovative ways. There is increasing customer demand for voice devices, presenting brands with an exciting opportunity to transform interaction across the lifecycle.

/Discover the possible

Our Discover the Possible program launched in January. Our aim for the program is to create and collaborate on topics that get to the heart of the challenges and opportunities of emerging technology.

Invenica's first paper in the "Discover the Possible" series focuses on the potential of Blockchain technology. It includes specific case studies across Retail, Manufacturing and Finance. We review innovation in Identity Management, Asset and Provenance Tracking, and also examine the adoption of Blockchain in Financial Services.

To download please visit www.invenica.com/discover





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