



AI in Retail Industry: Reshaping Shopping Experience and Business Profitability

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Abstract

Artificial Intelligence (AI) is depicted as the actions of machines doing tasks that usually require human intelligence. Though the idea of Artificial Intelligence can be traced back to Greek mythology, it was only during modern history that the world witnessed the development of programme-driven computer machines. Now it has become a web of millions of codes and algorithms and is increasingly playing an integral role in every industry sector. The E-commerce Industry had once disrupted the age-old traditional retail industry, especially in India where the retailers now largely depend on these platforms for their product sales. Today it is coming in the form of Artificial Intelligence which will be a great advantage for the retail industry. To be competitive today, retailers need to respond to their customers like never before, at the same time reduce the amount of waste and inefficiency in their operations. They can get there with data, but it takes intelligent analysis to make sense of the vast amount of data. This article analyses the emerging trends and practices of using Artificial Intelligence in the retail industry in order to enhance customer experiences and result in value additions to retail businesses.

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1. Artificial Intelligence in Retail Sector

In this fast-evolving retail industry, the retailers are re-examining their policies as the market is changing too quickly. They are introspecting on what they are doing, how they are doing, and how they are developing their products and services in this time of digitisation and intelligence. The efficiency of Artificial Intelligence (AI) helps retailers become smarter in providing customer delight, better services and better response to customer needs in this era of Artificial Intelligence and Big Data. Whether offline or online, AI can harness extensive and intricate data including images and videos, and consumer behaviour and response, from enormous sources, which is revolutionising the retail sector.

Connecting components is only one aspect of the retail digital transformation. It involves turning data into intelligent insights that lead to decisions that improve company outcomes. These insights must be produced, which requires AI in retail, including machine learning and deep learning. This opens up the possibility for retailers to provide outstanding customer experiences, boost revenue, innovate more quickly, and run their businesses more efficiently – all of which might set them apart from their competition.

2. AI Applications in the Retail Sector

Globally, the AI market has seen substantial start-up enrolment. These main players are collaborating with industries and offering them customised AI solutions for business growth at a faster pace than before. The retail industry has been implementing AI-based systems to benefit several of its functions. The retail sector has been undergoing a digital revolution over the past few years. Thanks to sophisticated data analytics methods and predictive analytics technologies that support organisations in making data-driven business choices, the speed, accuracy, and efficiency of every aspect of the retail industry has increased. Without the Internet of Things (IoT), and particularly AI, none of those insights would mean anything. AI in retail has provided businesses with essential data, information and knowledge that are used to improve retail strategy

and to expand commercial interests. AI in retail business is essential for retailers who want to stay competitive in the sector.

Delivering a personalized customer experience that is valuable and relevant for customers is challenging for retailers in the dynamic retail business, which is based on a novel concept of data-driven shopping experiences and high consumer expectations. The businesses who can redesign the existing retail channels will become market leaders, as the physical and digital channels of purchase converge in today's world.

Today, a large number of retailers use AI in some capacity. They utilize predictive analytics to identify which customers are most likely to buy particular products, or AI in CRM software to automate marketing efforts. The cloud enables AI capabilities that require large amounts of data from various sources to be processed and stored.

Running AI within the physical store has various benefits. In the retail industry, edge computing serves as a provider of insights, capturing and transforming enormous volumes of unstructured data into insightful and useful information. Robots would automatically replenish the shelves, digital signage would adapt to the audience, and sensors would track customer circulation patterns and alert store managers to potential upselling and cross-selling options.

Computer vision is one particular application of deep learning in artificial intelligence that is gaining popularity in physical retail businesses. Computer vision can *see* and decipher visual information, acting as your eyes wherever you require them to. It is creating possibilities for innovative retail use cases in demand forecasting, inventory management, customer experience, etc.

3. Customer Experiences that are Convenient and Personal

Retailers want to provide customised, practical, and delightful shopping experiences, whether they are a little shop or a large global superstore. Customers should be made aware of the best ways to

easily find what they are looking for, get assistance when needed, and walk out from the store. AI simplifies these processes to create more enjoyable client experiences.

Customers can be worried about catching diseases through point of sale (POS) devices, for example. What if they could avoid making contact with anything? Computer vision makes it possible to precisely *see* the goods that are in a customer's shopping basket. In addition, audience-relevant advertising in real-time, can be displayed out on digital signage that has electronic camera vision built-in to trace user engagement.

AI increases opportunities for experiencing personalisation across the retail edge and the cloud. A POS system records information about what was bought, which is then used to provide fresh product suggestions to specific customers. Digital signage gathers information on the types of shoppers and the times they shop so that merchandising can choose the best time to promote products. All of this results in more precise segmentation and customised consumer experiences based on behaviours and preferences.

4. Forecasting the Demand and Merchandising

One can better meet demand and deliver the best items if you have a deeper understanding of client buying habits and trends. AI aids merchants in better demand forecasts, pricing, and product placement. Customers thereby come across appropriate goods at the appropriate time and place. Predictive analytics can assist in placing the proper amount of inventory orders so that shops don't have too much or too little stock. AI is also capable of tracking data from online sources, which is beneficial for designing e-commerce strategies.

At the retail interface, new types of AI can be used to determine client intent which can then be used to customise the customer's experience. One such technique is heat mapping inside the store. The things that are taken, returned, and the locations of customers after they leave the shelf are all revealed by cameras and computer

vision. With the aid of this knowledge, one can design experiences that encourage consumer interaction with the store's offerings and aid in their education.

Although the revenue from retail sales is an important performance metric, in-depth analysis of poor sales performance is rare. Insights can be drawn from each store's sales performance during busy and slow periods by integrating transaction data with vision analytics.

5. Automation in Inventory Management

For retailers, keeping an accurate inventory is a huge concern. Retailers may improve inventory management by gaining a full understanding of their stores, customers, and items by linking more aspects of their operations and implementing AI. The ability to gather and analyse data from cameras, sensors, and other sources is made feasible by responsive retail technologies. The platform integrates sensors and software from multiple third party companies and was created to eliminate data silos and connect technological islands.

Smart shelves are used in certain applications of AI inventory management to detect pricing issues and out-of-stock products in a proper and systematic manner. For more current inventories, inventory robots could warn personnel to short stock or lost items. Furthermore, checkout systems enabled with camera vision would instantaneously minimise product loss. Retailers can manage their stores more effectively as a result, and employees have more time to concentrate on enhancing the customer experience. Here are a few examples of how AI is revolutionising the retail industry as a whole:

Demand Forecasting - Better demand forecasting is possible with AI in retail. By extracting knowledge from market, consumer, and competitor data, artificial intelligence (AI) business intelligence systems anticipate changes in the market and make proactive adjustments to the merchandising, marketing, and business strategy of the company. Planning for the supply chain, pricing, and promotions are all impacted by this.

Adaptive Personalised Web page - Mobile and other digital portals recognise customers and then tailor the online shopping experience for them based on their circumstances, past purchases, and purchasing patterns. The digital experience of a user is continually evolving thanks to AI systems, which produce incredibly relevant displays for each encounter.

Agile Outreach - Through repeated contacts, sophisticated marketing and CRM the preferences and habits of a consumer is clearly understood which is then used to create a thorough profile of that shopper. They then use this data for sending responsive and targeted outbound promotions, such as customised content, rewards or recommendations.

Interactive Chat Bots - Developing interactive chat programmes is a good method to make use of AI technologies, thereby enhancing customer service and engagement in the retail industry. The chatbots interact with clients, respond to frequently asked inquiries, and guide them to beneficial outcomes using AI and machine learning. These bots then gather crucial information about customers that could be applied to business choices in future.

Image-based Curation - The use of image-based search and analysis by customers for finding existing or associated products—curating recommendations centred on aesthetics and similarity—translates real-time browsing behaviours into digital retail potential.

Guided Selection - Automated assistants can assist customers in filtering their options as they put an effort to boost their trust in a purchase decision by making product recommendations based on the preferences, needs, and suitability of the client.

Conversational Assistants - Using natural language processing, AI-powered conversational assistants aid customers by easily resolving FAQs, questions, issues and by redirecting users to live experts, if needed. By offering on-demand, round-the-clock assistance and streamlined solutions, these assistants enhance the customer experience.

Customisation & Consumer Insights - Through biometric recognition, smart retail stores identify customers, and customise in-store merchandise displays, service and price to match consumer profiles, loyalty options, or upcoming incentives and promotions, thus offering unique shopping experience to every store-visitor. Additionally, shops are utilising artificial intelligence and sophisticated systems to determine what the client would be looking for, based on parameters like demographic information, usage of social media, buying history etc. They can utilise this knowledge to further enhance both the in-store and online buying experience and provide a more individualised service.

In-the-moment Emotional Response - AI devices can detect shoppers' on-the-spot emotions, mentality, or reactions by recognising and analysing aural, biometric, and facial cues, and thus give the right product, advice, or support, thereby making sure that a retail interaction does not lose its target.

Cashierless checkouts - A checkout without a cashier is one that does not need a person to bill at the checkout counter. Instead, a consumer enters the store, adds items to their shopping basket, pays for the items, and leaves without ever having to interact with a human assistant. Retailers may transform conventional shopping into smart shopping with computer vision and big data analytics. Using tens of thousands of cameras, IoT sensors, and computer vision-based technologies, a cashier less retail store can recognise and comprehend client interactions, keep track of the flow of goods and automate price detection.

Consumer Engagement - Retailers can engage with customers and learn important information about their behavioural preferences without ever having to speak to them directly, by using IoT-enabled technologies. For instance, take the case of a tablet computer that guests may use to surf through the menus, place orders, and try games in a restaurant. This tablet, powered by an IoT hub and enabled by machine learning, could take advantage of consumer information and trends in behaviour, enabling businesses to boost customer engagement and get the desired results.

Operations Optimisation - AI-supported logistics management solutions are used to alter a retailer's staffing, inventory, delivery and distribution plans in real-time in order to create the most efficient supply and fulfilment chains and meet customers' expectations for superior quality, instant access and assistance.

Responsive R & D - In order to promote the development of futuristic services and product innovations that effectively match consumer tastes and market demands, deep learning algorithms collect and analyse user feedback and response as well as buying statistics.

As per the study by the Boston Consulting Group (BCG, 2017, p.), "Brands that create personalized experiences by integrating advanced digital technologies and proprietary data for customers are seeing revenue increase by 6% to 10% – two to three times faster than those who don't."

Along with the potential business intelligence and speed that these platforms may provide, the digital transformation in retail is what separates successful companies from the unsuccessful ones. Artificial intelligence brings numerous advantages to the retail industry. The top five benefits that retailers may bank on are as follows:

- i. *Create Insights from Diverse Data* - Retailers must cut through the clutter to convert data from the different data sources from all areas of their business, from their supply chain to outlets and customers, into a consumer-first strategy.
- ii. *Fascinate Customers* - Traditional retailers should connect with customers in a personalized and pertinent way that is distinctive and exciting across all touch-points, due to the abundance of inventive competitors offering customers immersive shopping experiences.
- iii. *Create Thrilling Experience* - Retailers must offer customers engaging service and experiences while differentiating their products and services to maintain consumer interest. Retailers rather than only reacting to change, can take the

initiative in innovation by incorporating predictive analytics to get more market knowledge.

- iv. *Hybridise Offline & Online Retail* - Physical and digital retail platforms often function using separate sets of strategies and methodologies. However, considering these platforms as different business units results in operative inefficiencies and increases discord for consumers wanting a hassle-free and smooth shopping experience. A combination of brick-and-mortar and online modes can benefit both customers and retail businesses.
- v. *Enable Adaptive Logistics Networks* - Retailers must reconsider their old supply chain strategies in favour of agile, flexible and dynamic ecosystems that can swiftly react to evolving behaviours of consumers so as to meet a larger spectrum of customer needs that are transitioning from conventional to specialised areas.

Conclusion

Artificial intelligence is the key to the future of the retail industry. AI is becoming popular among retailers who want to stay competitive. AI will increasingly influence how businesses conduct product research, set product prices, and manage their inventories, as well as how consumers shop. Businesses have already begun implementing AI to improve customer experiences. They have access to streams of data thanks to AI, which enhances the speed and efficiency of their decision-making processes. Cameras are being used by retailers to track dwell and stare times, identify shoplifters, and several retailers have already implemented cashierless checkout systems. The integration of AI capabilities into the edge and cloud technological ecosystem helps organisations transform their data into insightful new knowledge. These kinds of solutions based on big data, result in more individualised service and product suggestions, precise price estimates, enhanced inventory management, and generally more wise business practices.

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