IJARSCT
ISSN (Online) 2581-9429
International Journal of Advanced Research in Science, Communication and Technology (IJARSCT)
Volume 2, Issue 3, January 2022
Impact Factor: 6.252

Analysis on the impact of Artificial Intelligence [AI] on Retail sector

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Abstract: *The retail industry will profit greatly from the application of artificial intelligence (AI) technology, both for the retailers and the prestigious customers. According to how retail activity is carried out, online and offline clusters are used to classify the various platforms for AI utilisation in the retail sector. The current study aimed to assess the value of quality, customer relationship management, and big data in building a futuristic retail model and analyse how retailers and consumers intended to experience the rise of AI. Disproportionate multistage judgement sampling approach was applied. The intention of consumers toward the introduction of AI into the Indian retail industry was described using a descriptive research design. The applications of AI technologies in online and offline retail are categorised independently, and their influence on big data, quality-building, and customer relationship management has evolved.*

Keywords: Artificial Intelligence, Machine learning, Big data , Consumer satisfaction , Online Retail, Retailers intention.

I. INTRODUCTION

There is no doubt that the retail industry is undergoing significant shift and retail business transformation. The entire retail sector is attempting to adapt to rapidly evolving consumer shopping trends and placing priority on moving traditional trading on the internet. In order to become more competitive, customer-focused, and responsive to demand and opportunity, the retail sector has reportedly invested more money in supply chains that are more web-centric and a variety of technologies, including Artificial Intelligence (AI), robotics, logistics automation, data analytics, and self-service technologies. Amrita Nair-Ghaswalla (2018) claims that a few other brands, along with retail behemoths like Amazon, Walmart, and Starbucks, are rapidly modernising their retail industries through technological advancements. These companies are using tools like augmented reality, facial recognition, staffless trading, and virtual apps to increase their marketing. Artificial Intelligence User Interface (AIUI) assists retailers in making decisions about what to stock, when to order it, what to stock at the front of the store, on the home page of their website or blogs, how to cross-sell and up-sell to customers based on past purchases and the contents of their basket, and much more. Businesses and customers will benefit from lower labour and inventory expenses, increased productivity, and more options thanks to AIUI. The consumer is evolving more quickly than ever in this era of "always on" consumers. Customers demand seamless, linked experiences that simplify their lives. To fully reap the rewards of AI, certain holes must be filled. For instance, there is a dearth of interdisciplinary research and application knowledge (Use of AI, 2018).

1.1 The effects of AI on the Retail Sector

The big data era has here for retailers. Big data is a term that is used to describe data that is high volume, high velocity, and high variety; requires new technologies and techniques to capture, store, and analyse it; and is used to improve decision-making, provide insight and discovery, support, and optimise processes, according to Mills et al. (2012) and Sicular (2013). Businesspeople and artificial intelligence employ big data from a range of newly developed sources, such as social media, machine learning, audio and video files, data accessed on the web, facial recognition, text, image, RFID, and Global Positioning System, to learn about their customers (GPS). Additionally, these sources have put pressure on conventional relational database administration systems, leading to the development of a number of fresh technologies, strategies, and platforms. The success of the big data analysis process depends on the employment of the appropriate analytical tools and analytically adept individuals (Watson, 2014). As seen in Fig. 1, big data is frequently

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used by AI and its algorithm-based sub branches, including machine learning, deep learning, and neural networks, to deliver the required outcomes for merchants and customers. The primary source of big data is consumer mobile phone use for retail purposes. Big data is crucial to the fourth generation of decision support data management because of the paradigm shift in the customised data process, particularly in online businesses like Google and Facebook. Big data can provide accurate consumer insights, enabling shops to suggest more specialised products and customer services both offline and online.

Shopping centres are evolving into dynamic environments that rely on sensors to collect data and conduct cognitive analyses in real time while customers buy. These shopping centres are utilising cutting-edge AI technologies to provide customers with richer in-store experiences. Retailers and IT sector companies have recently made large investments in AI solutions to automate supply chain scenarios and improve business processes. Technology behemoths like Apple, Google, and Facebook are applying the principles of artificial intelligence (AI) and machine learning (ML) more broadly than ever (Technology Trends, 2017). On the RFID-enabled digital screen, one can view all product details and information, including price, size, colour, fabric, washes, weight, etc. One can also see how the product appears on studio image models wearing it. With a virtual reality area, a TV wall with a multi-touch interface for product discovery, minimal or no employees, and self-checkouts that take five minutes, there are offline standalone stores. Google and Amazon have been investing a lot of money in recent years to develop virtual assistants that are as intelligent as people. They make money through advertising, and everything they do is based on the information they have on their clients.

II. REVIEW OF LITERATURE

Retailers have been using AI systems as part of their operations for an average of two years, according to recent independent research by Infosys (2017) in the retail sector. Of those, 44% have been using AI technology for between one and three years, and another 20% have been actively using AI for more than five years. In total, 87% of retailers surveyed have implemented some form of automation or AI into their retail operations and decision-making procedures. In order to better understand the relationships between product involvement, word-of-mouth, and purchase intent for medical equipment when buying online, Lee et al. According to the study's findings, elements like product information, pricing, involvement, and word-of-mouth have a favourable influence on buy intention, however product quality had little bearing on willingness to make a purchase. According to a study by Imagica (Brand Wagen, 2018) titled "Consumer's Leisure Behaviour," cellphones are much more user-friendly than laptops or desktop PCs when it comes to using the internet. The study also revealed that 44% of people use the internet for financial transactions, 71% use it for social media, 40 to 45 percent use it for bookings or shopping, and so on. 94% of people use their smartphones on average to access the internet. According to a recent analysis by Cognizant on the retail industry (Amrita, 2018), new revenue and economic models are paving the way for a rewired retail experience, and merchants are focused on omnichannel/unified commerce to boost their revenues. The way of delivering it will be through instant gratification. To support this claim, extremely large retail behemoths like Alibaba, Amazon, and others are implementing the AIUI paradigm both offline and online (Sindhu, 2018a). According to the Harvard Business Review (Juan Pablo Vazquez Sampere, 2014), by investing $300 million in Bigbasket, an Indian online food shop, Alibaba totally alters the Online to Offline Commerce (O2O) retail paradigm. According to a survey by Kallari Capital, there are close to 300 start-ups in India using AI in one form or another across a range of industries, with 29% of those start-ups concentrating on solving issues in the retail sector (Technology Trends, 2017). The following questions are brought up by the analysis of several researches on AI's rise in the Indian retail sector:

A) How successfully AI approaches contribute to Indian retailing, both online and offline;

B) Whether these techniques will support quality, CRM, and big data management for decision-making; and C) what the early adopters' intentions are as AI emerges in Indian retail.

Impact of Artificial Intelligence on retailers' intentions and consumer satisfaction

The application of artificial intelligence techniques in the retail sector will produce magnificent results and blossoming gains for both the clients and the retailers. The method of implementing AI technologies in both online retailing in terms of e-commercial activity and offline retailing in terms of legacy store operations was assumed to be the

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independent variables. The effect of the use of AI technologies is further involved in turning the daily commercial transaction that occurred in both online and offline as a big volume of database, which will tends to serve as a huge value assets and authenticated resource to predict the future.

Merchants seek to create a rapport with their consumers by satisfying their requests even before they are made known to the retailers. The daily transactions that take place in the retail business were meticulously observed and stored in the database. The past purchase histories of the individual customers and their intentions towards various products, how long they spent with a particular category of products, their eye-ball movements, search requests, and other factors are used to assess each customer's level of interest. When the product they have searched for and are eager to purchase is immediately available at the store, a message will be fired in their communication devices as a signal of this fact. Only after AI technology has intervened in the retail sector can retailers build these kinds of relationships and attract customers. Based on how retail activity is carried out, two distinct clusters—online and offline—are categorised to discuss the various platforms for AI usage in the retail sector.

Large-scale AI techniques are, of course, already being used in online retail to track customers' every click. The AI technology has occasionally assisted in gathering, storing, and disseminating customer information. It also aids the development of Big Data and Big Data analytics. At the same time, AI technology has revealed a different side of itself in front-line retail operations, including product display and demonstration, cart operations, store management, and customer relationship management. Virtual reality, Voice Recognition Technology (VRT), Augmented Reality, Customized Assistant, Carrier Billing, Review Mechanism, Product Comparison, Massive Information, and Intuitive Signals are the factors that have been listed as the employment of AI technologies under the internet cluster. Cross-selling, up-selling, M-POS (Mobile Point of Sales), auto billing, shoppers' profiles, self-checkout, virtual assistant, hologram window, and feel of touch are some of the ways that AI technologies are used in offline clusters. The use of AI technologies in both online and offline retail is improving the efficiency of operations, exploring a wide range of Customer Relationship Management (CRM), and actively assisting in the building of Big Data bases. These technologies tend to explore different customer profiles, buying patterns, seasonal variation in sales and promo combo effectiveness, impact of advertising, causes of impulse buying, customer attracting factors, and sales charts.

All other costs related to labour, material procurement, maintaining safety and buffer stock limits, EOQ determination, Costing department, Assortment Collection, Variety management, and even the cost required to make arrangements for visual display and visual presentation of the assortments in retail store are completely eliminated by affording the cost of implementing AI technologies. Additionally, in the case of offline retailing, the AI technologies completed the majority of the loading and unloading of assortments at the aisles, maintaining relationships with supplier agreements and logistics management as in the case of an online retailing cluster. The ultimate beneficiaries of the customers' paradigm shift are shown in the changes in their lifestyles and, in particular, in their excitement about incorporating the newest technologies into their everyday work.

The introduction of AI technologies into the retail sector, in both the online and offline cluster, through various ways, is characterised and taken as one of the study's independent variables. To assess the effectiveness of the use of AI technologies in escalating retailer benefits and customer enchantment, three mediating variables are thought to be the caliber of retail operations, the development of Big Data bases, and engraving the customer relationship management through AI technologies. Retail intention to go with Staff less and Stockless, achieving the customers' delight by paradigm shift in their life style behaviour, and providing the exhilaration for developing good harmony with the retailers are the outcome variables in the model being developed for evaluating the impact of AI usage in the retail sector.

III. CONCLUSION

AI will inevitably play a long-term role in the retail industry. Making ensuring that both staff and consumers are on board is essential when deploying AI technologies in the offline retail sector. Since early adopters are witnessing this greater automation AI technologies, the successful application of AI in all retail places demand balance and equal attention on people involvement and skills development. Quality, customer relationship management, and big data were proven to have a substantial impact on identifying the retailers' goal and consumers' satisfaction. This study only examined four capital cities of southern Indian states, hence the results may differ geographically in other regions of the

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world. A strong intellectual property regime is also required as India joins the AI wave. Since there is no official legislation for data anonymization, privacy and security are key issues (Use of AI, 2018). The Indian retail industry has recently adopted an Online-to-Offline (O2O) business model whereby potential customers from online channels make purchases in physical locations (Sindhu Kashyap, 2018). To determine the effectiveness of this retail strategy, a study may be conducted in this area in the future.

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